

ACKNOWLEDGEMENTS

THE FOLLOWING INDIVIDUALS SERVED ON THE 2006 MATHEMATICS CURRICULUM CORE COMMITTEE. THEIR PARTICIPATION IN AND SUPPORT OF THE MATHEMATICS PROJECT GREATLY ENHANCED THE CURRICULUM WRITING PROCESS.

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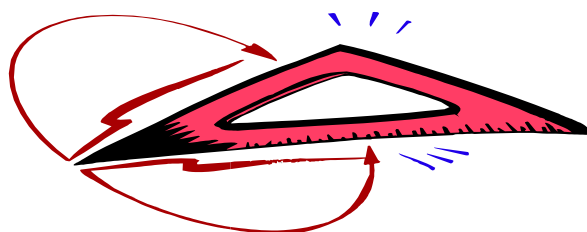
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Math Curriculum

Philosophy

The 2006 West Allegheny School District Math Curriculum reflects the philosophical orientation and instructional recommendations advocated by the National Council of Teachers of Mathematics (NCTM). Mathematical literacy is crucial for every child's future and a solid mathematics education is essential for an informed public. Improving mathematics education requires a commitment from a variety of stakeholders, including teachers, administrators, and families. Developing mathematical proficiency requires a balance and connection between conceptual understanding and procedural and computational proficiency.

The role of the student should be one of active engagement in the learning process. The student needs to make connections among mathematical concepts and build new mathematical knowledge through problem solving. Skills in problem solving are essential to productive citizenship. The student also needs to reason mathematically in order to make conjectures, gather evidence, and build an argument to support mathematical theory. Sound reasoning is as valued as the student's ability to find correct answers.

The role of the teacher is one of facilitator to the learning process. The teacher should use questioning techniques to facilitate and assess learning and needs to encourage students to explore multiple solutions. The instructor should also create a variety of opportunities- such as group work and class discussion- for students to communicate mathematically. To promote success, the teacher must model appropriate mathematical language and correct terminology for solving problems, choose problems that invite exploration of an important mathematical concept, and allow students the chance to solidify and extend their knowledge.

Assessment serves as an invaluable tool in that it informs teachers of what students know and need to learn. Instructional decisions can be made to challenge and support student learning. Assessment, both formal and informal, should become a routine part of the ongoing classroom activity. Technology is a tool to promote mathematical learning and supports effective mathematics teaching. It does not replace the mathematics teachers but rather enhances and reinforces skills and concepts that promote student proficiency.

The vision and implementation of the K-12 Math Curriculum empower and prepare the West Allegheny students to become mathematically literate and proficient in their everyday lives. The planned experiences promote the recognition of mathematics' role in a contemporary society.

WEST ALLEGHENY SCHOOL DISTRICT

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**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

KINDERGARTEN

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>KINDERGARTEN</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Count sets of 20 • Recognize numbers 0-31 • Print numbers 0-20 • Count to 100 • Solve addition problems with facts 0-5 • Solve subtraction problems with facts 0-5 • Use oral story problems • Use symbols +, -, = • Estimate more and less • Begin to identify penny, nickel, dime • Identify the fraction $\frac{1}{2}$ • Use vocabulary: plus, minus, equal, estimate, whole, part • Problem solving/reasoning • Use vocabulary: more, less, length, width, height, weight, cups, gallons, heavier, lighter, inch
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • A.M. and P.M. • Days of the week • Begin months of the year • Compare cups and gallons • Compare heavy and light • Measure to the inch
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Two dimensional shapes: circle, square, rectangle, triangle • Begin three dimensional shapes: sphere, cube, cone • Use vocabulary: up, down, left, right, over, under
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Sort, classify, and order • Use patterns • Problem solving/reasoning
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Organize data by sorting and classifying • Use graphs • Problem solving/reasoning

WEST ALLEGHENY SCHOOL DISTRICT

**Subject: MATH
 KINDERGARTEN**



ACADEMIC STANDARDS FOR MATH

ACADEMIC STANDARDS

2.1	2.6
2.2	2.7
2.3	2.8
2.4	2.9
2.5	2.11

COURSE DESCRIPTION:

The Kindergarten math curriculum focuses on introducing the students to basic math concepts in a developmentally appropriate manner and building a solid foundation for using mathematics in the everyday world.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Teacher-made worksheets
- Manipulatives
- Other published resources
- Literature

ASSESSMENT:

- Teacher-made tests
- Teacher observation

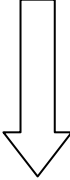
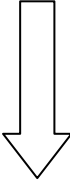
TECHNOLOGY USED:

- District approved web-sites
- Computers

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBERS AND OPERATIONS GRADE: Kindergarten

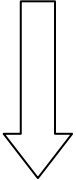
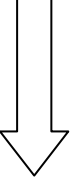
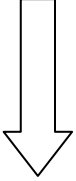
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. count and determine how many in sets of objects of 0-20. 2. recognize numerals to 31. 3. print numerals 0-9. 4. identify and print numbers 10-20. 5. count by rote to 100. 	<p>M3.A.1.1 Apply place-value concepts and numeration to counting, ordering, grouping and equivalency.</p> <p align="center"></p>	<p>M3.A.1.1.4 Order a set of whole numbers from least to greatest.</p> <p align="center"></p>	<p>2.1.3A 2.1.3B 2.1.3G 2.1.3 I 2.11.3A</p> <p>2.1.3 A 2.1.3 B 2.11.3A</p> <p>2.1.3 A 2.1.3 B 2.11.3A</p> <p>2.1.3 A 2.1.3 B 2.11.3A</p> <p>2.1.3 A 2.1.3 B 2.11.3A</p>	<p>1.1.3F</p> <p>1.1.3 F</p> <p>1.1.3 F</p> <p>1.1.3 F</p> <p>1.1.3 F</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT:	MATHEMATICS	STRAND:	NUMBERS AND OPERATIONS	GRADE:	Kindergarten
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
6. solve addition problems with facts 0-5.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.3 Identify the correct operation(s) to solve a word problem using + or -.	2.1.3 A 2.1.3 B 2.1.3 L 2.2.3 A 2.2.3 B 2.1.3 K 2.5.3 C	1.1.3 F
7. begin to solve addition problems with facts 6-10.				
8. solve subtraction problems with facts 0-5.	M3.A.3.1 Solve problems using addition and multiplication (straight computation and word problems).	M3.A.3.1.1 Solve single digit addition and subtraction problems without regrouping in vertical or horizontal form.	2.1.3 A 2.1.3 B 2.1.3 L 2.2.3 A 2.2.3 B 2.1.3 K	
9. begin to use oral story problems to solve addition and subtraction problems.			2.1.3 A 2.1.3 B 2.1.3 L 2.2.3 A 2.2.3 B 2.1.3 K	1.1.3 F 1.6.3 A 1.6.3 B 1.8.3 C

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT:	MATHEMATICS	STRAND:	NUMBERS AND OPERATIONS	GRADE:	Kindergarten
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
10. use the symbols +, -, and = correctly.	M3.A.3.1 Solve problems using addition and multiplication (straight computation and word problems).	M3.A.3.1.1 Solve single digit addition and subtraction problems without regrouping in vertical or horizontal form. M3.A.2.1.3 Identify the correct operation(s) to solve a word problem using + or -.	2.1.3 L 2.2.3 B	1.1.3 F
11. begin to estimate more and less using sets of concrete objects to 20.	M3.A.3.2 Use estimation skills to arrive at conclusions.		2.2.3 E	1.1.3 F
12. begin to identify the coins penny, nickel, and dime by name and value.			2.1.3 E	1.1.3 F
13. identify the fraction $\frac{1}{2}$.	M3.A.1.2 Use fractions to represent quantities as part of a whole or part of a set.	M3.A.1.2.1 Write the fraction that corresponds to a drawing or part of a set.	2.1.3 D	1.1.3 F
14. be proficient in using the vocabulary plus, minus, and equal.				1.1.3 F
15. begin to use the vocabulary estimate, whole, and part.				1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT:	MATHEMATICS	STRAND:	MEASUREMENT	GRADE:	Kindergarten
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. begin to identify times of the day and night as AM and PM.	M3.B.1.1 Determine and calculate time and elapsed time.	M3.B.1.1.3 Identify times of the day and night as AM and PM.	2.3.3 C	1.1.3 F
2. identify days of the week.				1.1.3 F
3. begin identifying months of the year.				1.1.3 F
4. compare capacities of cup and gallon.	M3.B.1.2 Use the attributes of length, area, volume and weight of objects.	M3.B.1.2.1 Select an appropriate unit for the attribute being measured.	2.3.3 A 2.3.3 E	1.1.3 F
5. compare objects as heavy or light.		M3.B.1.2.2 Compare and/or order objects according to length, area, or weight.	2.3.3 A	
6. measure to the inch.	M3.B.2.1 Determine the measurement of objects with non-standard and standard units.	M3.B.2.1.1 use a ruler (provided) to measure to the nearest ½ inch.	2.3.3 B	1.1.3 F 3.7.4 A 3.7.4 B
7. begin to use the vocabulary words more, less, length, width, height, weight, cups, gallons, heavier, lighter, and inch.				1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT:	MATHEMATICS	STRAND:	MEASUREMENT	GRADE:	Kindergarten
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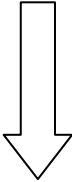
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>8. use rulers to measure common objects found in the classroom.</p> <p>9. use the calendar to answer questions.</p>	<p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.A.2.1.3 Identify the correct operation(s) to solve a word problem using + or -.</p>	<p>2.3.3.B</p>	<p>1.1.3 F 3.7.4 A 3.7.4 B</p> <p>1.1.3 F 3.7.4 A 3.7.4 B</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT:	MATHEMATICS	STRAND:	GEOMETRY	GRADE:	Kindergarten
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> recognize, name, draw, and sort two dimensional shapes including circle, square, rectangle, and triangle. begin to recognize three dimensional shapes. begin to use the vocabulary words up, down, left, right, over, and under. use geometric shapes to solve addition and subtraction problems. 	<p>M3.C.1.1 Identify and/or describe two-and-three-dimensional objects.</p> <p align="center"></p> <p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.C.1.1.1 Name/identify/describe geometric shapes in two dimensions (circle, square, rectangle, triangle).</p> <p>M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cylinder, cone, pyramid).</p> <p>M3.A.2.1.3 Identify the correct operation(s) to solve a word problem using + or -.</p>	<p>2.9.3 A 2.9.3 C 2.9.3 D</p> <p>2.9.3 A 2.9.3 D</p> <p>2.9.3 A 2.1.3 A 2.1.3 B 2.1.3 K 2.1.3 L 2.2.3 A 2.2.3 B 2.5.3 C</p>	<p>1.1.3 F</p> <p>1.1.3 F</p> <p>1.1.3 F</p> <p>1.1.3 F</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

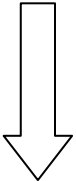
SUBJECT:	MATHEMATICS	STRAND:	ALGEBRAIC CONCEPTS	GRADE:	Kindergarten
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. sort, classify, and order objects by size, number, and other properties.			2.1.3 C 2.1.3 G	1.1.3 F
2. recognize, describe, or extend a variety of patterns.	M3.D.1.1 Recognize, describe, or extend a variety of patterns.	M3.D.1.1.1 Extend or find missing element in a pattern of numbers or shapes (pattern must show 3 repetitions – if multiples are used, limit to 2, 3, or 5).	2.8.3 A 2.11.3 D	1.1.3 F
3. use objects and drawings to represent addition and subtraction problems.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.3 Identify the correct operation(s) to solve a word problem using + or -.	2.1.3 A 2.1.3 B 2.1.3 K 2.1.3 L 2.2.3 A 2.2.3 B 2.5.3 C	1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

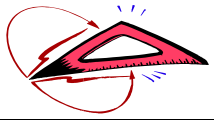
STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: DATA ANALYSIS/PROBABILITY GRADE: Kindergarten

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. organize data by sorting and classifying objects according to their attributes.</p> <p>2. represent data using concrete objects, pictures, and graphs.</p> <p>3. use tally marks to solve addition and subtraction problems.</p>	<p>M3.E.1.2 Organize or display data using tables, charts, bar graphs.</p> <p align="center"></p> <p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.E.1.2.1 Graph data or complete a graph given the data (grid is provided).</p> <p>M3.E.1.2.2 Translate information from one type of display to another (e.g., convert tally chart to bar graph). Limit to tally charts, bar graphs and tables.</p> <p>M3.A.2.1.3 Identify the correct operation(s) to solve a word problem using + or -.</p>	<p>2.6.3 A 2.7.3 C</p> <p>2.6.3 A 2.7.3 C</p> <p>2.6.3 A 2.1.3 A 2.1.3 B 2.1.3 K 2.1.3 L 2.2.3 A 2.2.3 B 2.5.3 C</p>	<p>1.1.3 F</p> <p>1.1.3 F</p> <p>1.1.3 F</p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 1

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 1</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Count by 1s, 2s, 5s, 10s • Number words • Write numerals • Numbers to 100 • Ordinal numbers • Place value/tens and ones • Addition/subtraction facts (mastery to 10, introduced to 18) • Solving methods • 3 addends • 2 digit addition/subtraction without regrouping • Coins (penny, nickel, dime, quarter) • Fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$) • Vocabulary (“number words”, greater, less, numeral, add, addition, subtract, subtraction, addends, more, equivalent, even, odd, ordinal, estimate, story problem, fraction)
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Order by attributes • Non standard, customary, metric units • Appropriate tool • Time-hour & half hour • Days of weeks/months of year • Reading thermometer • Measure to $\frac{1}{2}$ inch • Calendar • Vocabulary (feet, foot, pounds, degrees, temperature, kilogram, gram, liter, 2-liter, centimeter, meter, days, week, month, calendar, length, width, weight, volume, time, degrees)
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • 3 dimensional shapes (cone, sphere, cube) • Symmetrical shapes • Vocabulary (cone, sphere, cube, symmetry, position directions such as up, down, left, right)
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Sorting, classifying, ordering • Patterns • Commutativity • Drawing to solve problems • Vocabulary (patterns, sort, classify)
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Pictographs • Tally marks • Likely/unlikely/certain/impossible occurrences • Vocabulary (tally marks, pictograph, likely, unlikely, certain, impossible)

WEST ALLEGHENY SCHOOL DISTRICT

Subject: MATHEMATICS
GRADE 1



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1	2.6
2.2	2.7
2.3	2.8
2.4	2.9
2.5	2.11

COURSE DESCRIPTION:

The first grade curriculum addresses the place of mathematics in the world, through a focus on basic mathematical concepts, both computational and conceptual, in a developmentally appropriate manner, in order to create a solid mathematics foundation.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Text
- Teacher made materials
- Manipulatives
- Other published resources
- Literature

ASSESSMENT:

- Text, teacher made and other published assessments
- Teacher observation

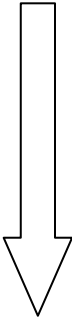
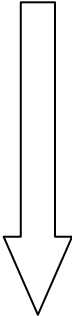
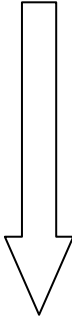
TECHNOLOGY USED:

- District approved websites
- Computers

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBER AND OPERATIONS GRADE: 1

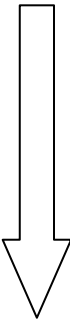
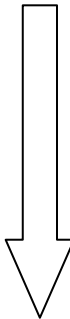

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. count to determine “how many” in sets of objects. 2. count by 1s, 5s, and 10s to 100. 3. begin counting by 2s. 4. connect number words and numerals to the quantities they represent. 5. write numerals 0-9. 6. identify and write numbers to 100. 	<p>M3.A.1.1 Apply place-value concepts and numeration to counting, ordering, grouping and equivalency.</p> 	<p>M3.A.1.1.1 Match the word name with the appropriate whole number. M3.A.1.1.5 Match a symbolic representation of numbers to appropriate whole numbers.</p>  <p>M3.A.1.1.1 Match the word name with the appropriate whole number. M3.A.1.1.4 Order a set of whole numbers from least to greatest.</p>	<p>2.1.3 A 2.1.3 B 2.1.3 H 2.1.3 A 2.1.3 B 2.1.3 A 2.1.3 B 2.1.3 C 2.1.3 G 2.1.3 B 2.1.3 A 2.1.3 B 2.1.3 F 2.11.3 A</p>	<p>1.1.3 F</p> 

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBER AND OPERATIONS GRADE: 1

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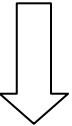
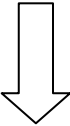
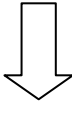
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>7. use ordinal numbers to describe position and/or events.</p> <p>8. develop initial understanding of place value with models.</p> <p>9. group objects by tens to aid counting.</p> <p>10. identify place value of tens and ones.</p> <p>11. begin to develop fluency with basic addition and subtraction facts.</p>	<p>M3.A.1.1 Apply place-value concepts and numeration to counting, ordering, grouping and equivalency.</p>  <p>M3.A.3.1 Solve problems using addition, subtraction and multiplication (straight computation and word problems).</p>	<p>M3.A.1.1.1 Match the word name with the appropriate whole number.</p> <p>M3.A.1.1.4 Order a set of whole numbers from least to greatest or greatest to least.</p> <p>M3.A.1.1.5 Match a symbolic representation of numbers to appropriate whole numbers.</p>  <p>M3.A.3.1.1 Solve single addition and subtraction problems in vertical or horizontal form.</p>	<p>2.1.3 C</p> <p>2.1.3 F</p> <p>2.1.3 G</p> <p>2.1.3 I</p> <p>2.1.3 C</p> <p>2.1.3 F</p> <p>2.1.3 G</p> <p>2.1.3 I</p> <p>2.1.3 I</p> <p>2.1.3 L</p>	<p>1.1.3 F</p> 

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 1
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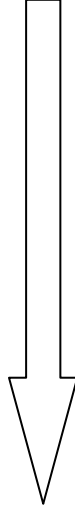
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
12. use addition and/or subtraction to solve problems.	M3.A.3.1 Solve problems using addition, subtraction, and multiplication (straight computation and word problems).	M3.A.3.1.1 Solve single addition and subtraction problems in vertical or horizontal form.	2.1.3 L 2.2.3 A 2.2.3 B	1.1.3 F 1.6.3 A 1.6.3 B
13. solve addition and subtraction facts to 10.				1.1.3 F
14. begin to solve addition and subtraction facts to 18.				1.1.3 F
15. use a variety of methods to compute including: counting objects, mental computation, estimation, paper and pencil, fact families and story problems.	M3.A.3.2 Use estimation skills to arrive at conclusions. M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.3.2.1 Estimate sums and differences of quantities. M3.A.2.1.2 Demonstrate the inverse relationship between addition and subtraction using fact families. M3.A.2.1.3 Identify the correct operation(s) to solve a word problem.	2.1.3 A,B,C 2.1.3 G 2.1.3 J 2.1.3 K 2.1.3 L 2.2.3 A,B 2.2.3 E 2.2.3 F 2.2.3 I 2.5.3 C	1.1.3 F 1.6.3 A 1.6.3 B 1.8.3 C 3.7.4 A 3.7.4 B
16. add three addends.			2.1.3 L 2.2.3 A 2.2.3 B	1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBER AND OPERATIONS GRADE: 1

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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>17. solve double digit addition and subtraction problems without regrouping.</p> <p>18. identify coins by name and value (penny, nickel, dime, quarter).</p> <p>19. begin to count groups of coins.</p> <p>20. identify commonly used fractions (1/2, 1/4, 1/3).</p> <p>21. identify fair shares.</p> <p>22. begin to use vocabulary: greater, less, numeral, add, addition, subtract, subtraction, addends, more, equivalent, even, odd.</p>	<p>M3.A.3.1 Solve problems using addition, subtraction, and multiplication (straight computation and word problems).</p> <p>M3.A.1.3 Count, compare and make change using a collection of coins and one-dollar bills.</p> <p>M3.A.1.2 Use fractions to represent quantities as part of a whole or part of a set.</p> <p align="center"></p>	<p>M3.A.3.1.1 Solve double-digit addition and subtraction problems without regrouping in vertical form.</p> <p>M3.A.1.3.1 Count a collection of coins (penny, nickel, dime, quarter).</p> <p>M3.A.1.3.2 Compare total values of combinations of coins (penny, nickel, dime, quarter).</p> <p>M3.A.1.2.1 Write the fraction that corresponds to a drawing or part of a set.</p> <p>M3.A.2.1.1 Create a drawing or set that represents a given fraction.</p> <p>M3.A.1.1.2 Differentiate between and/or give examples of even and odd number.</p> <p>M3.A.1.1.3 Compare two whole numbers.</p>	<p>2.1.3 L 2.2.3 A 2.2.3 B</p> <p>2.1.3 E</p> <p>2.1.3 A 2.1.3 B 2.1.3 E 2.1.3 D</p> <p>2.1.3 A 2.1.3 B 2.1.3 L 2.2.3 A 2.2.3 B</p>	<p>1.1.3 F</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 1
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. compare and order objects by attributes, such as length, volume, weight, and time.	M3.B.1.2 Use attributes of length, area, volume, and weight of objects.	M3.B.1.2.1 Select an appropriate unit for the attribute being measured. M3.B.1.2.2 Compare and/or order objects according to length, area, or weight.	2.3.3 A	1.1.3 F 3.7.4 A
2. measure with standard (customary and metric) and non-standard units.	M3.B.2.1 Determine the measurement of objects with non-standard and standard units.	M3.B.2.1.1 Use a ruler (provided) to measure to the nearest ½ inch.	2.3.3 A	1.1.3 F 3.7.4 A
3. select an appropriate unit and tool for measurement.	M3.B.1.2 Use attributes of length, area, volume, and weight of objects.	M3.B.1.2.1 Select an appropriate unit for the attribute being measured.	2.3.3 A 2.3.3 E 2.3.3 G	1.1.3 F 1.8.3 C 2.7.4 A
4. tell time to the hour and half hour.	M3.B.1.1 Determine or calculate time and elapsed time.	M3.B.1.1.1 Tell/show time (analog) to the half hour.	2.2.3 G 2.3.3 D	1.1.3 F 3.7.4 A
5. name days of the week and months of the year.	M3.B.1.1 Determine or calculate time and elapsed time.	M3.B.1.1.1 Tell/show time (analog) to the half hour.	2.2.3 G 2.3.3 D	1.1.3 F 1.6.3 D

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: MEASUREMENT GRADE: 1

Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. read a thermometer to the nearest ten degrees.</p> <p>7. measure to the nearest half inch.</p> <p>8. begin to use vocabulary: feet, foot, pounds, degrees, temperature, kilograms, gram, liter, 2 liters, centimeter, meter.</p> <p>9. measure common objects in the classroom.</p> <p>10. use a calendar to answer questions.</p>	<p>M3.B.2.1 Determine the measurement of objects with non-standard and standard units.</p> <p>M3.B.2.1 Determine the measurement of objects with non-standard and standard units.</p>	<p>M3.B.2.1.1 Use a ruler (provided) to measure to the nearest ½ inch.</p> <p>M3.B.2.1.1 Use a ruler (provided) to measure to the nearest ½ inch.</p> <p>M3.B.2.2.1 Match the object with its approximate measurement.</p>	<p>2.1.3 J</p> <p>2.1.3 J 2.3.3 B</p> <p>2.1.3 C 2.1.3 G 2.1.3 J 2.3.3 B 2.3.3 G</p>	<p>1.1.3 F 3.5.4 C 3.7.4 A, B</p> <p>1.1.3 F 3.7.4 A, B</p> <p>1.1.3 F 3.5.4 C</p> <p>1.1.3 F 3.7.4 A, B</p> <p>1.1.3 F 1.6.3 D 3.5.4 C</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 1
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. recognize, name, compare, and sort 3 dimensional shapes, including cone, sphere, and cube.	M3.C.1.1 Identify and/or describe two-and three-dimensional objects.	M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cone).	2.9.3 A 2.9.3 D	1.1.3 F
2. describe attributes of 3 dimensional shapes including cone, sphere, and cube.	M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cone).	M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cone).	2.9.3 A	1.1.3 F
3. be proficient in using the vocabulary: cone, sphere, cube; position directions (up, down, left, right, etc.) symmetry.	M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cone). M3.C.2.1 Apply the concepts of transformations and symmetry.	M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cone). M3.C.2.1.1 Identify/draw one line of symmetry in a two-dimensional figure. M3.C.2.1.2 Identify symmetrical two-dimensional shapes.	2.9.3 A 2.9.3 F	1.1.3 F
4. identify shapes that are symmetrical.	↓	↓	2.9.3 E 2.9.3 F	1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 1
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. sort, classify, and order objects by properties.	M3.D.1.1 Recognize, describe, or extend a variety of patterns.	M3.D.1.1.1 Extend or find a missing element in a pattern of numbers or shapes. M3.D.1.1.2 Identify/describe the rule for a pattern shown.	2.1.3 C 2.1.3 G 2.11.3 A 2.8.3 A	1.1.3 F
2. recognize, describe, and extend patterns.	M3.D.1.1 Recognize, describe, or extend a variety of patterns.	M3.D.1.1.1 Extend or find a missing element in a pattern of numbers or shapes. M3.D.1.1.2 Identify/describe the rule for a pattern shown.	2.1.3 C 2.1.3 G 2.11.3 A 2.8.3 A	1.1.3 F
3. illustrate the concept of commutativity with numbers.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.2 Demonstrate the inverse relationship between addition and subtraction using fact families and/or factors	2.1.3 K	1.1.3 F
4. use objects and drawings to represent addition and subtraction problems.	M3.D.2.1 Create/model expressions, equations, and inequalities to match a problem situation. M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.D.2.1.2 Choose the number sentence that matches a given story (one operation, + or – only). M3.D.2.1.3 Identify the correct operations(s) to solve a word problem (no more that 2 operations using +).	2.1.3 C 2.1.3 G 2.1.3 L 2.2.3 A 2.2.3 B 2.2.3 I 2.5.3 C 2.8.3 D	1.1.3 F 1.6.3 A 1.6.3 B 1.8.3 C 3.7.4 A 3.7.4 B

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS & PROBABILITY	GRADE: 1
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. collect data for use in a pictograph.	M3.E.1.2 Organize or display data using tables, charts, bar graphs.	M3.E.1.2.1 Graph data or complete a graph give the data. M3.E.1.2.2 Translate information from one type of display to another.	2.1.3 A 2.1.3 B 2.6.3 A	1.1.3 F
2. create a pictograph using objects or pictures.	M3.E.1.2 Organize or display data using tables, charts, bar graphs.	↓	2.1.3 C 2.1.3 G	1.1.3 F
3. use information on a pictograph to answer questions and analyze data.	M3.E.1.1 Answer questions based on data shown on tables, charts, bar graphs.	M3.E.1.1.1 Analyze data shown on tables, charts, or bar graphs using the concepts of largest, smallest, most often, least often. M3.E.1.1.2 Describe, interpret, and/or answer questions based on data shown in tables, charts, or bar graphs.	2.1.3 A 2.1.3 B 2.6.3 B 2.7.3 D 2.11.3 A 2.11.3 B	1.1.3 F 1.8.3 C
4. use tally marks to represent data.	M3.E.1.2 Organize or display data using tables, charts, bar graphs.	M3.E.1.2.1 Graph data or complete a graph, given the data (grid is provided). M3.E.1.2.2 Translate information from one type of display to another (e.g., convert tally chart to bar graph).	2.6.3 A 2.7.3 C	1.1.3 F
5. discuss events as likely/unlikely and certain/impossible.	M3.E.3.1 Predict and/or measure the likelihood of events.	M3.E.3.1.1 Make a prediction based on data or chance.	2.1.3 J	1.1.3 F 1.8.3 C
6. begin to use vocabulary: likely, unlikely, certain, impossible, pictograph.	M3.E.3.1 Predict and/or measure the likelihood of events.	M3.E.3.1.2 Determine the likelihood of an event (more/most likely, less, least likely, equally likely or impossible).	2.1.3 J 2.7.3 A	1.1.3 F

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 2

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 2</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Count 1 – 1,000 • Skip counting (2s, 3s, 5s, 10s) • Even and odd numbers • Ordinal numbers • Expanded number forms • Addition and subtraction facts 0-20 • Fractions (1/2, 1/3, 1/4, 2/3, 2/4, 3/6) • Double digit addition with regrouping • Introduce double digit subtraction with regrouping • Introduce multiplication facts (0, 1, 2, 5, 10) • Identify all coins and dollar • Calculate coins to a dollar • Introduce making change • Problem solving
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Appropriate tools • Measure inch, half inch, centimeter, foot, yard, ounce, pound, cup, pint, quart, gallon • Tell time • Calendar information, project dates • Problem solving • Appropriate techniques (i.e., perimeter, area)
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Two and three dimensional geometric shapes • Recognize right angles • Identify symmetry in a two dimensional figure • Problem solving
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Find a missing element in a pattern of numbers or shapes • Create or match a story to a given combination of symbols and numbers • Find the missing numbers or symbols • Problem solving
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Tally marks, tables, charts, bar, and pictographs • Locate a point on a grid • Predict fair/unfair results using a spinner • Problem solving

WEST ALLEGHENY SCHOOL DISTRICT

Subject: MATHEMATICS
GRADE 2



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1	2.7
2.2	2.8
2.3	2.9
2.4	2.10
2.5	2.11
2.6	

COURSE DESCRIPTION:

The second grade curriculum is centered around the mastery of addition and subtraction facts, regrouping, the concepts of time, money and measurement. Problem solving is a major part of each area.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- 2nd grade Math Text – Scott Foresman-Addison Wesley
- Rocket math
- Manipulatives
- Literature
- Teacher made materials
- Other published resources

ASSESSMENT:

- Teacher made test and observations
- Rocket math
- Math series tests

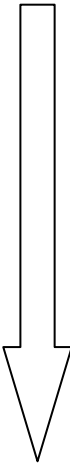
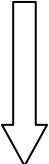
TECHNOLOGY USED:

- Computer lessons
- Calculators
- District approved websites

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> develop an understanding of the relative position and magnitude of whole numbers 1 – 1,000 by counting and writing. count by 2s to 20. begin to count by 3s to 20. compare two numbers 1-1,000. state even and odd numbers through 20. identify ordinal numbers through twelve. convert a given number into expanded form and write the corresponding number for an expanded form. 	<p>M3.A.1.1 apply place-value concepts and numeration to counting, ordering, grouping and equivalency.</p> 	<p>M3.A.1.1.1 Match the word name with the appropriate whole number.</p> <p>M3.A.1.1.2 Differentiate between and/or give examples of even and odd numbers.</p> <p>M3.A.1.1.3 Compare two whole numbers using greater than ($>$), less than ($<$) or equal to ($=$).</p> <p>M3.A.1.1.4 Order a set of whole numbers from least to greatest or greatest to least.</p> <p>M3.A.1.1.5 Match a symbolic representation of numbers to appropriate whole numbers.</p> 	<p>2.1.3 C 2.1.3 I 2.11.3 A</p> <p>2.1.3 F</p> <p>2.1.3 A</p>	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. understand the meaning of addition and subtraction of whole numbers and the relationship between the two operations.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.2 Demonstrate the inverse relationship between addition and subtraction using fact families and/or factors.	2.1.3 K 2.5.3 C	
2. solve addition and subtraction facts 0 – 20.	M3.A.3.1 Solve problems using addition, subtraction, and multiplication (straight computation and word problems).	M3.A.3.1.1 Solve single-and double- digit addition and subtraction problems with and without regrouping in vertical form.	2.1.3 L	
3. solve double digit addition problems with regrouping.		M3.A.3.1.3 Solve triple digit addition and subtraction problems without regrouping in vertical form.	2.2.3 B	
4. begin to solve double digit subtraction problems with regrouping.			2.2.3 B	
5. understand situations that entail multiplication and division.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.1 Represent multiplication as repeated addition.	2.2.3 C	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 2
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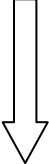
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
6. begin to multiply by 0, 1, 10, 2, and 5.	M3.A.3.1 Solve problems using addition, subtraction, and multiplication (straight computation and word problems).	M3.A.3.1.2 Solve problems involving multiplication	2.2.3 C	
7. solve story problems with a written equation or using concrete objects.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.3 Identify the correct operation(s) to solve a word problem (no more than 2 operations using +, -).	2.1.3 K 2.5.3 C	1.2.3 A 1.6.3 A
8. determine sufficient information to solve story problems.				
9. create story problems.				1.5.3 B
10. determine reasonableness of a calculated answer.	M3.A.3.2 Use estimation skills to arrive at conclusions	M3.A.3.2.1 Estimate sums and differences of quantities; round 2-digit numbers to the nearest 10.	2.2.3 E	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
11. identify the value of a penny, nickel, dime, quarter, half dollar, and dollar.	M3.A.1.3 Count, compare, and make change using a collection of coins and one-dollar bills.	M3.A.1.3.1 Count a collection of coins.	2.1.3 E	1.1.3 F
12. calculate the amount of a group of coins up to a dollar.		M3.A.1.3.2 Compare total values of combinations of coins.	2.1.3 E	1.1.3 F
13. begin to make change up to a dollar.		M3.A.1.3.3 Make change.	2.1.3 E	1.1.3 F
14. write a fraction for a given model including 1/2, 1/3, 1/4, 2/3, and 3/4.	M3.A.1.2 Use fractions to represent quantities as part of a whole or part of a set.	M3.A.1.2.1 Write the fraction that corresponds to a drawing or part of a set. M3.A.1.2.2 Create a drawing or set that represents a given fraction.	2.1.3 D 2.1.3 B	
15. begin to apply 1/6, 1/8, and mixed numbers.				

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. apply appropriate techniques and tools to determine measurements.	M3.B.2.1 Determine the measurement of objects with non-standard and standard units.	M3.B.2.1.1 Use a ruler (provided) to measure to the nearest ½ inch.	2.3.3 B 2.3.3 F	
2. determine perimeter (measure and/or count units).	M3.B.2.2 Estimate measurements of familiar objects.	M3.B.2.2.1 Match the object with its approximate measurement.	2.3.3 G	
3. determine area (count units).				
4. recognize and measure inch, half inch, centimeter, foot, yard, ounce, pound, cup, pint, quart, and gallon.	M3.B.1.2 Use the attributes of length, area, volume and weight of objects.	M3.B.1.2.1 Select an appropriate unit for the attribute being measured. M3.B.1.2.2 Compare and/or order objects according to length, area, or weight.	2.3.3 A 2.3.3 E	3.7.4 A 3.7.4 B 1.1.3 F
5. demonstrate an understanding of telling time.	M3.B.1.1 Determine or calculate time and elapsed time.	M3.B.1.1.1 Tell/show time. M3.B.1.1.2 Find elapsed time to increments of 5 minutes. M3.B.1.1.3 Identify times of the day and night as AM and PM.	2.3.3 C	
6. use the calendar to interpret information and project dates.				3.5.4 C

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 2
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>7. solve story problems with a written equation or using concrete objects.</p> <p>8. determine sufficient information to solve story problems.</p> <p>9. create story problems.</p>	<p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.A.2.1.3 Identify the correct operation(s) to solve a word problem (no more than 2 operations using +, -).</p>	<p>2.1.3 K 2.5.3 C</p>	<p>1.2.3 A 1.6.3 A</p> <p>1.5.3 B</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND:	GEOMETRY	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. analyze characteristics and properties of two and three dimensional geometric shapes.	M3.C.1.1 Identify two-and three- dimensional objects.	M3.C.1.1.1 Name/identify/describe geometric shapes in two dimensions (circle, square, rectangle, triangle, pentagon, hexagon, octagon).	2.9.3 A	3.1.4 B
2. investigate the results of putting together and taking apart two and three dimensional shapes.		M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cylinder, cone, pyramid, rectangular prism).	2.9.3 A	
3. recognize right angles.	M3.C.1.2 Identify/draw right angles.		2.10.3 A	1.1.3 F
4. identify the concept of symmetry.	M3.C.2.1 Apply the concepts of transformations and symmetry.	M3.C.2.1.1 Identify/draw one line of symmetry in a two-dimensional figure. M3.C.2.1.2 Identify symmetrical two-dimensional shapes.	2.9.3 E 2.9.3 F	1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: GEOMETRY GRADE: 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>5. solve story problems with a written equation or using concrete objects.</p> <p>6. determine sufficient information to solve story problems.</p> <p>7. create story problems.</p>	<p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.A.2.1.3 Identify the correct operation(s) to solve a word problem (no more than 2 operations using +, -).</p>	<p>2.1.3 K 2.5.3 C</p>	<p>1.2.3 A 1.6.3 A</p> <p>1.5.3 B</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. demonstrate an understanding of patterns, relations, and functions.</p> <p>2. analyze mathematical situations.</p>	<p>M3.D.1.1 Recognize, describe, or extend a variety of patterns.</p> <p>M3.D.1.2 Demonstrate simple function rules.</p> <p>M3.D.2.1 Create/model expressions, equations, and inequalities to match a problem situation.</p> <p>M3.D.2.2 Determine the missing number or symbol in a number sentence.</p>	<p>M3.D.1.1.1 Extend or find a missing element in a pattern of numbers or shapes.</p> <p>M3.D.1.1.2 Identify/describe the rule for a pattern shown.</p> <p>M3.D.2.1.1 Create or match a story to a given combination of symbols (+, -, x, <, >, =) and numbers.</p> <p>M3.D.2.1.2 Choose the number sentence that matches a given story (one operation, + or - only).</p> <p>M3.D.2.2.1 Find a missing number that makes a number sentence true (1-digit or 2-digit numbers up to 18 using +, -).</p> <p>M3.D.2.2.2 Identify the missing symbol (+, -, =, <, >) that makes a number sentence true.</p>	<p>2.8.3 A 2.11.3 D</p> <p>2.8.3 I</p> <p>2.8.3 D</p> <p>2.8.3 F</p>	<p>3.1.4 C</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS		GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will: 3. solve story problems with a written equation or using concrete objects. 4. determine sufficient information to solve story problems. 5. create story problems.	M3.A.2.1 Understand various meanings of operations and the relationship between them.	M3.A.2.1.3 Identify the correct operation(s) to solve a word problem (no more than 2 operations using +, -).	2.1.3 K 2.5.3 C	1.2.3 A 1.6.3 A 1.5.3 B

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS/PROBABILITY	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. answer questions based on data (including pictographs).</p> <p>2. organize or display data using tables, tally marks, charts, bar and pictographs.</p> <p>3. locate a point on a grid.</p> <p>4. predict fair/unfair results using a spinner.</p>	<p>M3.E.1.1 Answer questions based on data shown on tables, charts, bar graphs.</p> <p>M3.E.1.2 Organize or display data using tables, charts, bar graphs.</p> <p>M3.E.3.1 Predict and/or measure the likelihood of events.</p>	<p>M3.E.1.1.1 Analyze data shown on tables, charts, or bar graphs or pictographs using the concepts of largest, smallest, most often, least often, and middle.</p> <p>M3.E.1.1.2 Describe, interpret, and/or answer questions based on data shown in tables, charts, or bar graphs and pictographs.</p> <p>M3.E.1.2.1 Graph data or complete a graph given the data (bar graph or pictograph grid is provided).</p> <p>M3.E.1.2.2 Translate information from one type of display to another (e.g., convert tally chart to bar graph). Limit to tally charts, bar graphs and tables and pictographs.</p>	<p>2.6.3 B</p> <p>2.7.3 D</p> <p>2.11.3 B</p> <p>2.6.3 A</p> <p>2.7.3 C</p> <p>2.8.3 J</p> <p>2.7.3 A</p>	<p>1.2.3 A</p> <p>1.6.3 A</p> <p>1.4.3 B</p> <p>1.5.3 B</p>

WEST ALLEGHENY SCHOOL DISTRICT



STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS/PROBABILITY	GRADE: 2
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>5. solve story problems with a written equation or using concrete objects.</p> <p>6. determine sufficient information to solve story problems.</p> <p>7. create story problems.</p>	<p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.A.2.1.3 Identify the correct operation(s) to solve a word problem (no more than 2 operations using +, -).</p>	<p>2.1.3 K 2.5.3 C</p>	<p>1.2.3 A 1.6.3 A</p> <p>1.5.3 B</p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 3

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 3</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Fractions • Money • Place value • Multiplication • +/- with regrouping • Operation relationships • Estimation • Problem solving/reasoning • Even/odd numbers
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Metric • Customary • Ruler to ½ inch • Area • Problem solving/reasoning • Perimeter • Analog time • Elapsed Time
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Symmetry • Right angles/  • Polygons • 3D figures • Lines • Angles • Reflections • Congruent • Coordinate grid • Problem solving/reasoning • Missing number • Missing symbol
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns • Story problems • Choosing operations • <, >, = • Problem solving
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Graphs • Predictions • Probability • Tally Chart • Problem solving/reasoning • Tables • Ordering of numbers

WEST ALLEGHENY SCHOOL DISTRICT

Subject: **MATHEMATICS**
 GRADE 3



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

- | | |
|-----|------|
| 2.1 | 2.7 |
| 2.2 | 2.8 |
| 2.3 | 2.9 |
| 2.4 | 2.10 |
| 2.5 | 2.11 |
| 2.6 | |

COURSE DESCRIPTION:

The intent of 3rd grade mathematics instruction is for students to value and use mathematics and reasoning skills to investigate and understand the world.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Text
- Rocket math

ASSESSMENT:

- Scantron
- PSSA
- Teacher made tests
- Rocket math

TECHNOLOGY USED:

- District approved web sites
- Calculators
- PSSA materials
- Computers
- Compass

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 3
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. demonstrate an understanding of numbers, ways of representing numbers, relationships among numbers and number systems.</p> <p>2. find the value of pictured or given money.</p>	<p>M3.A.1.2 Use fractions to represent quantities as part of a whole or part of a set.</p> <p>M3.A.1.3 Count, compare and make change using a collection of coins and one-dollar bills.</p>	<p>M3.A.1.2.1 Write a fraction that corresponds to a drawing or part of a set (numerators 1-9, denominators 2-10. No equivalent or improper fractions or mixed numbers).</p> <p>M3.A.1.2.2 Create a drawing or set that represents a given fraction (numerators 1-9, denominators 2-10. No equivalent or improper fractions or mixed numbers).</p> <p>M3.A.1.3.1 Count a collection of bills and coins less than \$5.00 (penny, nickel, dime, quarter, dollar). Money may be represented as 15 cents, 15¢, or \$0.15.</p> <p>M3.A.1.3.2 Compare total values of combinations of coins less than \$5.00 (penny, nickel, dime, quarter, dollar).</p> <p>M3.A.1.3.3 Make change for an amount up to \$5.00 with no more than \$2.00 change given (penny, nickel, dime, quarter, dollar).</p>	<p>2.1.3 B</p> <p>2.1.3 C</p> <p>2.1.3 D</p> <p>2.1.3 E</p>	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 3
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. identify the place value structure using whole numbers to represent quantities to 10,000.</p>	<p>M3.A.1.1 Apply place-value concepts and numeration to counting, ordering, grouping, and equivalency.</p>	<p>M3.A.1.1.1 Match the word name with the appropriate whole number (up through 9,999).</p> <p>M3.A.1.1.2 Differentiate between and/or give examples of even and odd number (limit to 3 digits).</p> <p>M3.A.1.1.3 Compare two whole numbers using greater than (>), less than (<), or equal to (=) (up through 9,999).</p> <p>M3.A.1.1.4 Order a set of whole numbers from least to greatest or greatest to least (up through 9,999; limit sets to no more than four numbers).</p> <p>M3.A.1.1.5 Match a symbolic representation of numbers to appropriate whole numbers (e.g., base ten blocks, 7 hundreds, 4 tens and 8 ones, etc.).</p>	<p>2.1.3 A</p> <p>2.1.3 C</p> <p>2.1.3 I</p>	
<p>4. +, -, x with whole numbers.</p>	<p>M3.A.3.1 Solve problems using addition, subtraction and multiplication (straight computation and word problems).</p>	<p>M3.A.3.1.1 Solve single-and-double-digit addition and subtraction problems with and without regrouping in vertical or horizontal form.</p>	<p>2.1.3 L</p> <p>2.2.3 B</p>	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 3
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Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>(continued)</p> <p>4. +, -, x with whole numbers.</p> <p>5. identify and use relationships between operations (+ / -).</p>	<p>M3.A.3.1 Solve problems using addition, subtraction, and multiplication (straight computation and word problems).</p> <p>M3.A.2.1 Understand various meanings of operations and the relationship between them.</p>	<p>M3.A.3.1.2 Solve problems involving multiplication through the 9's tables through 9x5.</p> <p>M3.A.3.1.3 Solve triple digit addition and subtraction problems without regrouping in vertical or horizontal form.</p> <p>M3.A.2.1.1 Represent multiplications and repeated addition.</p> <p>M3.A.2.1.2 Demonstrate the inverse relationship between addition and subtraction.</p> <p>M3.A.2.1.3 Identify and correct operation(s) to solve a word problem (no more than 2 operations using +, -, and/or x).</p>	<p>2.1.3 L</p> <p>2.2.3 B</p> <p>2.1.3 K</p> <p>2.2.3 C</p> <p>2.5.3 C</p>	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 3
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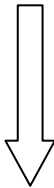
Page 4

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
6. use estimation skills to determine the reasonableness of calculated answers.	M3.A.3.2 Use estimation skills to arrive at conclusions.	M3.A.3.2.1 Estimate sums and differences of quantities; round 2-digit numbers to the nearest 10, and 3 digit numbers to the nearest 100, before computing (limit to two numbers).	2.1.3 J 2.2.3 E 2.2.3 F	
7. solve combination and word problems using +, -, x, (\div).	M3.A.3.1 Solve problems using addition, subtraction, and multiplication (straight computation and word problems).	M3.A.3.1.1 Solve single-and double-digit addition and subtraction problems with and without regrouping in vertical or horizontal form. M3.A.3.1.2 Solve problems involving multiplication through the 9's table's through 9x5. M3.A.3.1.3 Solve triple digit addition and subtraction problems without regrouping in vertical or horizontal form.	2.1.3 L 2.2.3 B 2.2.3 G	
8. apply number patterns (even & odd) and compare values of numbers.			2.1.3 F	
9. use concrete objects to count, order, and group.			2.1.3 G	
10. demonstrate an understanding of one-to-one correspondence.			2.1.3 G	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 3
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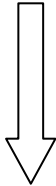
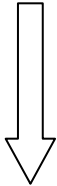
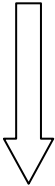
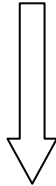
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. estimate, then identify liquid measures and lengths in metric and customary units.	M3.B.2.2 Estimate measurements of familiar objects.	M3.B.2.2.1 Match the object with its appropriate measurement (all measurements given must be of the same system, (e.g., about how tall is a soda pop can? 5 inches, 5 feet, 5 yards, etc.).	2.3.3 G	3.7.4 A,B
2. measure an object using a ruler to the nearest ½.	M3.B.2.1 Determine the measurement of objects with non-standard and standard units.	M3.B.2.1.1 Use a ruler (provided) to measure to the nearest ½ inch.	2.3.3 B 2.3.3 F	
3. use concrete objects to determine area and perimeter.				
4. determine time and/or elapsed time on an analog and digital clock.	M3.B.1.1 Determine and calculate time and elapsed time.	M3.B.1.1.1 Tell/show time (analog) to the minute. M3.B.1.1.2 Find elapsed time to increments of 5 minutes (limited to 2 adjacent hours). M3.B.1.1.3 Identify times of the day and night as AM and PM.	2.3.3 A, 2.3.3 E	
5. determine unit of measure.	M3.B.1.2 Use the attributes of length, area, volume and weight of objects.	M3.B.1.2.1 Select an appropriate unit and/or tool for the attribute being measured. M3.B.1.2.2 Compare and/or order objects according to length, area, or weight.	2.3.3 A	
6. use concrete objects to determine area and perimeter.				

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: MEASUREMENT GRADE: 3

Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>7. make, check and verify predictions about the quantity, size, and shape of objects and groups of objects.</p> <p>8. use measurements in everyday situations (e.g., determine the geography of the school building).</p> <p>9. describe the measurable characteristics and attributes that can be applied to length, area, and weight of objects.</p> <p>10. solve problems using appropriate measurement tools.</p>	<p>M3.B.1.2 Use the attributes of length, area, volume, and weight of objects.</p> <p align="center"></p>	<p>M3.B.1.2.1 Select an appropriate unit and/or tool for the attribute being measured.</p> <p>M3.B.1.2.2 Compare and/or order objects according to length, area, or weight.</p> <p align="center"></p>	<p>2.3.3 A</p> <p align="center"></p>	<p>3.7.4 A,B</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 3
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none">1. recognize lines, line segments, rays, or angles.2. fold paper to demonstrate the reflections about a line.3. show relationships between and among figures using reflections.4. recognize congruent figures.5. solve problems using visualization, spatial reasoning, and geometric modeling to solve problems.6. analyze simple functions and relationships and locate points on a simple grid.			<p>2.10.3 A 2.10.3 B</p> <p>2.9.3 G</p> <p>2.9.3 H</p> <p>2.9.3 C</p> <p>2.9.3 I</p> <p>2.8.3 J</p>	<p>1.1.3 F</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 3
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
7. recognize figures that are symmetrical in geometry and nature.	M3.C.2.1 Apply the concepts of transformations and symmetry.	M3.C.2.1.1 Identify/draw one line of symmetry in a two- dimensional figure. M3.C.2.1.2 Identify symmetrical two-dimensional shapes.	2.9.3 E 2.9.3 F 2.9.3 H	1.1.3 F
8. recognize a right angle 	M3.C.1.2 Identify/draw right angles and right triangles.		2.10.3 A 2.10.3 B	1.1.3 F
9. recognize various polygons and 3-dimensional objects in geometry and nature.	M3.C.1.1 Identify and/or describe two-and-three dimensional objects.	M3.C.1.1.1 Name/identify/describe geometric shapes in two dimensions (circle, square, rectangle, triangle, pentagon, hexagon, octagon). M3.C.1.1.2 Name/identify geometric shapes in three dimensions (sphere, cube, cylinder, cone, pyramid, rectangular prism).	2.9.3 A 2.9.3 D	1.1.3 F 3.1.4 B

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 3
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. finish a pattern.	M3.D.1.1 Recognize, describe, or extend a variety of patterns.	M3.D.1.1.1 Extend or find a missing element in a pattern of numbers or shapes (pattern must show 3 repetitions – if multiples are used, limit to 2, 3, or 5). M3.D.1.1.2 Identify/describe the rule for a pattern shown (pattern must show 3 repetitions – if multiples are used, limit to 2, 3, or 5).	2.8.3 A 2.11.3 D	3.1.4 C
2. use a function table to solve a problem.	M3.D.1.2 Demonstrate simple function rules.		2.8.3 I	3.1.4 C
3. analyze mathematical situations and structures using algebraic functions.	M3.D.2.2 Determine the missing number or symbol in a number sentence.	M3.D.2.2.1 Find a missing number that makes a number sentence true (1-digit or 2-digit numbers up to 18 using +, -, or x through 9x5) M3.D.2.2.2 Identify the missing symbol (+, -, =, <, >) that makes a number sentence true.	2.8.3 B 2.8.3 F 2.8.3 C	3.1.4 C

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT


SUBJECT: MATHEMATICS STRAND: ALGEBRAIC CONCEPTS GRADE: 3

Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>4. represent/analyze mathematical situations using #s, symbols, words, tables, graphs.</p>	<p>M3.D.2.1 Create/model expressions, equations, and inequalities to match a problem situation.</p>	<p>M3.D.2.1.1 Create or match a story to a given combination of symbols (+, -, x, <, >, =) and numbers. M3.D.2.1.2 Choose the number sentence that matches a given story (one operation, + or - only).</p>	<p>2.8.3 D</p>	<p>1.2.3 A</p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 4

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 4</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Fractions • Decimals • Whole numbers • Rounding • Estimating • Mastering basic facts • Dividing • Multiplication with 2 digit factors • Prime and composite numbers • Even and odd numbers
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Time • Money • Metric and customary and metric units of length • Weight • Capacity and volume • Perimeter, area, and volume • Convert length, capacity, volume, and weight • Measure and estimate to nearest $\frac{1}{4}$ inch
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Polygons • Space figures • Congruent and similar figures • Symmetry • Ordered pairs • Simple transformations • Lines • Points • Rays • Angles • Line segments
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Functions • Solve for missing symbols or numbers • Determine rule
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Interpret graphs • Probability • Range • Median, mode, and frequency • Likelihood of events

WEST ALLEGHENY SCHOOL DISTRICT

Subject: **MATHEMATICS**
 GRADE 4



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1	2.6	2.11
2.2	2.7	
2.3	2.8	
2.4	2.9	
2.5	2.10	

COURSE DESCRIPTION:

The 4th grade curriculum is aimed at mastering the basic facts while increasing their knowledge and understanding in the six Mathematic PDE strands.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- 4th grade math text - Scott-Foresman/Addison-Wesley
- Rocket math
- PSSA coach materials

ASSESSMENT:

- Scott-Foresman/Addison-Wesley tests
- Rocket math
- Related writing assignments
- Teacher-made tests
- Math journals
- PSSA
- Homework
- Observations

TECHNOLOGY USED:

- Scantron
- Calculations
- Internet websites

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STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. write equivalent fractions.				1.1.5 F
2. add and subtract like fractions.	M4.A.3.2 Compute using fractions or decimals (written vertically or horizontally-straight computation only).	M4.A.3.2.2 Solve addition or subtraction problems with fractions with like denominators (denominators to 10, no simplifying necessary).		
3. compare and order fractions.	M4.A.1.2 Compare quantities and magnitudes of numbers.	M4.A.1.2.1 Locate/identify fractions or decimals on a number line (decimals and fractions through the tenths – do not mix fractions and decimals).	2.11.5 A	
4. write lowest terms for given fraction.				
5. add and subtract unlike fractions.	M4.A.3.2 Compute using fractions or decimals (written vertically or horizontally-straight computation only).	M4.A.3.2.1 Solve addition or subtraction problems involving decimals through hundredths (decimal numbers must have the same number of places). M4.A.3.2.2 Solve addition or subtraction problems with fractions with like denominators (denominators to 10, no simplifying necessary).	2.5.5 A 2.5.5 E	1.1.5 F 1.1.5 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. write a fraction or decimal corresponding to a drawing or a set.</p>	<p>M4.A.1.1 Use models and/or words to represent quantities as decimals, fractions, or mixed numbers.</p>	<p>M4.A.1.1 Write a fraction or decimal, including mixed numbers that corresponds to a drawing or set – no simplification necessary.</p> <p>M4.A.1.1.2 Create a drawing or set that represents a given fraction or decimal, including mixed numbers (through the tenths).</p> <p>M4.A.1.1.3 Match the standard number form to the word form of decimal numbers (through the tenths place).</p> <p>M4.A.1.1.4 Write whole numbers in expanded, standard and/or word form through 6 digits (example of standard to expanded form: 43,076 – 40,000 + 3000 + 70 – 6).</p>	<p>2.2.5 C</p>	<p>1.2.3 A</p> <p>1.2.3 F</p> <p>1.6.5 F</p>
<p>7. solve problems involving addition or subtraction with decimals through tenths.</p>	<p>M4.A.2.1 Use operations to solve problems (may include word problems).</p>	<p>M4.A.2.1.2 Solve problems involving addition or subtraction with decimals through the tenths or money to the cent and/or explain the solution. Limit two-step problems.</p>	<p>2.2.5 I</p>	<p>1.2.3 F</p> <p>1.6.5 A</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
8. solve 2 step problems involving all operations.	M4.A.2.1 Use operations to solve problems (may include word problems).	M4.A.2.1.1 Solve problems involving all operations with whole numbers, and/or explain the solution (limit to two-step problems; e.g., multiply then add – single digit multipliers and divisors).	2.1.5 C 2.2.5 B	1.2.3 A
9. read and write whole numbers in expanded, standard, and/or word form.	M4.A.1.1 Use models and/or words to represent quantities as decimals, fractions, or mixed numbers.	M4.A.1.1.4 Write whole numbers in expanded, standard and/or word form through 6 digits (example of standard to expanded form: 43,076 – 40,000 + 3000 + 70 – 6).	2.1.5 A 2.1.5 B	1.1.3 F
10. compare and order whole numbers.	M4.A.1.2 Compare quantities and magnitudes of numbers.	M4.A.1.2.1 Locate/identify fractions or decimals on a number line (decimals and fractions through the tenths – do not mix fractions and decimals). M4.A.1.2.2 Compare and/or order whole numbers through 6 digits and amounts of money to \$100 (limit sets for ordering, to no more than 4 numbers).	2.1.5 A 2.1.5 B	1.1.3 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>11. round whole numbers.</p> <p>12. estimate sums, differences, and products.</p> <p>13. master multiplication facts through 12.</p> <p>14. multiply by 1 digit factors.</p>	<p>M4.A.3.1 Apply rounding and/or estimation strategies to solve problems.</p> <p>M4.A.1.3 Develop and/or apply number theory concepts to represent numbers in various ways.</p> <p>M4.A.2.1 Use operations to solve problems (may include word problems).</p>	<p>M4.1A.3.1.1 Round whole numbers to the nearest ten, hundred, thousand, ten-thousand or hundred-thousand.</p> <p>M4.A.3.1.2 Round amounts of money to the nearest dollar.</p> <p>M4.A.3.1.3 Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through 6 digits (for multiplication, no more than 2 digits X 1 digit, excluding powers of 10).</p> <p>M4.A.1.3.1 List/identify all factors through 10 or any given number.</p> <p>M4.A.2.1.1 Solve problems involving all operations with whole numbers, and/or explain the solution (limit to two-step problems: e.g., multiply then add – single digit multipliers and divisors).</p>	<p>2.2.5 D</p> <p>2.2.5 E</p> <p>2.5.5 B</p>	<p>1.1.3 F</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
15. multiply /estimate by 2 digit factors.	M4.A.3.1 Apply rounding and/or estimation strategies to solve problems.	M4.A.3.1.3 Estimate the answer to addition, subtraction and multiplication problems using whole numbers through 6 digits (for multiplication, no more than 2 digits x 1 digit, excluding powers of 10).	2.5.5 H	1.1.5 F
16. divide by a 1 digit divisor with remainders.	M4.A.2.1 Use operations to solve problems (may include word problems).			1.1.5 F
17. master division facts through 9.				
18. round to the nearest million.	M4.A.3.1 Apply rounding and/or estimation strategies to solve problems.	M4.A.3.1.1 Round whole numbers to the nearest ten, hundred, thousand, ten-thousand or hundred-thousand.	2.2.5 A	1.1.5 F
19. apply rounding and estimation strategies to create and solve problems.		M4.A.3.1.2 Round amounts of money to the nearest dollar.		
20. determine prime, composite, even, and odd numbers.			2.1.5 E 2.1.5 F 2.1.5 G	3.7.4 B,A

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBER AND OPERATIONS GRADE: 4

Page 4

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>21. read temperature in Celsius and Fahrenheit including negative numbers.</p> <p>22. add, subtract, and estimate whole numbers up to 6 digits including money amounts to \$100.</p> <p>23. convert fractions to decimals and decimals to fractions through the 10ths.</p> <p>24. locate fractions or decimals on a number line.</p> <p>25. identify all factors of a given whole number.</p>	<p>M4.A.2.1 Use operations to solve problems (may include word problems).</p> <p>M4.A.1.2 Compare quantities and magnitudes of numbers.</p> <p>M4.A.1.3 Develop and/or apply number theory concepts to represent numbers in various ways.</p>	<p>M4.A.2.1.1 Solve problems involving all operations with whole numbers, and/or explain the solution (limit to two-step problems; e.g., multiply then add – single digit multipliers and divisors).</p> <p>M4.A.1.2.1 Locate/identify fractions or decimals on a number line (decimals and fractions through the tenths – do not mix fractions and decimals).</p> <p>M4.A.1.3.1 List/identify all factors through 10 of any given number.</p>	<p>2.2.5 G</p>	<p>1.1.3 F 3.7.4 B,A</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBERS AND OPERATIONS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will: 26. use models and/or manipulatives to represent fractions and/or decimals.	M4.A.1.3 Develop and/or apply number theory concepts to represent numbers in various ways.	M4.A.1.3.2 List/identify multiples of a number, where the multiples do not exceed 100.	2.1.5 D	1.1.5 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 4
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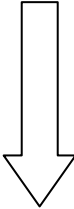
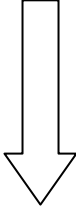
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. determine time and calculate elapsed time to the nearest minute.</p> <p>2. select and/or use appropriate tools and/or attributes for measuring and estimating quantities in metric and customary unit to measure length, weight, or volume of a given object.</p>	<p>M4.B.1.1 Determine time and/or calculate elapsed time.</p> <p>M4.B.2.1 Select and/or use appropriate tools and/or attributes for measuring quantities.</p>	<p>M4.B.1.1.1 Match/construct analog time (a picture of a clock), to the same time written in digital.</p> <p>M4.B.1.1.2 Identify time (analog or digital) as the amount of minutes before and/or after the hour (e.g., 2:50 is the same as 10 minutes before 3:00; quarter past six is the same as 6:15).</p> <p>M4.B.1.1.3 Calculate the elapsed time, to the minute, in a given situation (limited to 2 adjacent hours).</p> <p>M4.B.1.1.4 Determine the beginning or ending time, given the elapsed time (limited to 2 adjacent hours).</p> <p>M4.B.2.1.1 Use or read a ruler (provided) to measure to the nearest $\frac{1}{4}$ inch or centimeter.</p>	<p>2.3.5 A 2.3.5 B 2.3.5 C</p>	<p>1.1.3 F</p> <p>3.7.4 A 3.7.4 B 3.1.4 D</p> <p>3.7.4 A 3.7.4 B</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: MEASUREMENT GRADE: 4

Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. measure and/or estimate length, weight, and capacity to the nearest customary or metric unit.</p> <p>4. measure perimeter of polygon.</p> <p>5. measure area of polygons using square units.</p> <p>6. estimate to the nearest $\frac{1}{2}$, $\frac{1}{4}$, or nearest centimeter.</p> <p>7. carry out simple unit conversions within the same system of measurement.</p>	<p>M4.B.2.2 Estimate measurements of figures.</p> <p>M4.B.2.1 Select and/or use appropriate tools and/or attributes for measuring quantities.</p>  <p>M4.B.1.2 Convert linear measurements within the same system.</p>	<p>M4.B.2.2.1 Make reasonable estimates of weights, lengths and capacities of familiar objects (measurements in the same system).</p> <p>2.1.2 and 2.1.3 are assessed at Grade 5. *Teach after PSSA test.</p> <p>2.1.2 and 2.1.3 are assessed at Grade 5 *Teach after PSSA test.</p> <p>M4.B.2.1.1 Use or read a ruler (provided) to measure to the nearest $\frac{1}{4}$ inch or centimeter.</p> <p>Assessed at Grade 5. *Teach after the PSSA test.</p>	<p>2.3.5 A 2.3.5 B 2.3.5 C</p> <p>2.3.5 E</p>  <p>2.3.5 D</p>	<p>3.7.4 A 3.7.4 B</p> <p>3.1.4 D</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: MEASUREMENT GRADE: 4

Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will: 8. solve problems involving capacity, length and line.			2.3.5 D	1.2.3 A 1.6.5 A 3.7.4 B

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. identify and name the common attributes of polygons and two or three dimensional figures.</p> <p>2. represent and/or use properties or relationships of points, lines, line segments, rays, and angles.</p> <p>3. identify similar congruent and symmetric figures.</p>	<p>M4.C.1.1 Identify/describe the basic properties of geometric figures in two or three dimensions.</p>	<p>M4.C.1.1.1 Identify, classify and/or compare two-dimensional figures (circle, triangle, square, parallelogram, trapezoid, rhombus, rectangle, pentagon, hexagon, octagon). M4.C.1.1.2 Identify or classify three-dimensional figures (cube, sphere, rectangular prism and pyramid). *Assessed at Grade 5</p>	<p>2.9.5 A 2.9.5 F 2.9.5 E 2.9.5 J</p>	<p>1.1.3 F</p>
	<p>M4.C.1.2 Represent and/or use properties or relationships of points, lines, line segments, rays and angles.</p>	<p>M4.C.1.2.1 Identify points, lines, line segments or rays. M4.C.1.2.2 Identify parallel and perpendicular lines. M4.C.1.2.3 Assessed at Grade 5</p>	<p>2.9.5 D</p>	<p>1.1.3 F</p>
			<p>2.9.5 L</p>	<p>1.1.3 F</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 4
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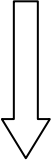
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
4. determine the number of lines of symmetry.	M4.C.2.1 Apply the concepts of reflection and symmetry.	M4.C.2.1.1 Assessed at Grade 5 M4.C.2.1.2 Identify or create figures that have one, two or no lines of symmetry.	2.9.5 L	1.1.3 F
5. use visualization, reasoning, and geometric modeling to solve problems.				1.2.3 A 1.6.5 A
6. locate ordered pairs on a simple grid.	M4.C.3.1 Locate points on a simple grid.	M4.C.3.1.1 Match or plot the ordered pair with the appropriate point (or object) on a simple grid.	2.8.5 H	1.4.5 B
7. analyze simple transformations of geometric figures.			2.9.5 K	1.1.5 F

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. recognize, describe, extend, create, and/or replicate a variety of patterns.</p> <p>2. apply simple function rules to patterns.</p>	<p>M4.D.1.1 Recognize, describe, extend, create, and/or replicate a variety of patterns.</p> <p>M4.D.1.2 Apply simple function rules.</p>	<p>M4.D.1.1.1 Extend or find a missing element in a numerical or geometric pattern (+, -, or x may be used – numerical patterns must be whole numbers).</p> <p>M4.D.1.1.2 Identify/describe the rule for a numerical or geometric pattern shown (+, - or x may be used – numerical patterns must be a whole number).</p> <p>M4.D.1.1.3 Create or replicate a numerical or geometric pattern showing 3 repetitions (+, - or x may be used – numerical patterns must be a whole number or money).</p> <p>M4.D.1.2.1 Determine the missing elements in a function table (functions may use +, -, or x and whole numbers or money).</p> <p>M4.D.1.2.2 Determine the rule for a function given a table (functions may use +, -, or x and whole numbers).</p>	<p>2.8.5 A</p> <p>2.8.5 B</p> <p>2.8.5 C</p>	<p>3.1.4 C</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. use numbers and symbols to model the concepts of expressions and/or equations.</p> <p>4. determine missing number or symbol in a number sentence.</p> <p>5. solve problems using letters/symbols in algebraic equations.</p> <p>6. generate functions from tables of data and relate data to corresponding graphs.</p>	<p>M4.D.2.1 Use numbers of symbols to model the concepts of expressions and/or equations.</p> <p>M4.D.2.2 Determine the missing number of symbol in a number sentence.</p>	<p>M4.D.2.1.1 Correlate story situations with expressions or equations (may use numbers and one operation +, -, or x; no variables).</p> <p>M4.D.2.2.1 Solve for a missing number in an equation (using estimation, guess and check, etc). May use +, -, or single digit x or ÷.</p> <p>M4.D.2.2.2 Identify the missing symbol (+, -, x, ÷, =, <, >) that makes a number sentence true (single digit x or ÷ only).</p>	<p>2.98.5 D 2.8.5 E</p> <p>2.8.5 G</p>	<p>3.1.4 C</p> <p>1.2.3 A 1.6.5 A</p> <p>2.8.5 I</p>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS/PROBABILITY	GRADE: 4
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. interpret graphs and tables.	M4.E.1.2 Organize or display data using tables, bar graphs, line graphs, or pictographs.	M4.E.1.2.1 Graph data or complete a graph given the data (bar graph or pictograph – grid is provided). M4.E.1.2.2 Translate information from one type of display to another (table, chart, bar graph, or pictograph).	2.6.5 A 2.11.5 B 2.11.5 C 2.11.5 D 2.5.5 C	1.4.5 B
2. apply basic concepts of probability to solve problems.	M4.E.1.1 Interpret data shown on tables, charts, line graphs, bar graphs, or pictographs.	M4.E.1.1.1 Describe, interpret and/or answer questions based on data show in tables, charts, bar graphs or pictographs.		1.2.3 A 1.6.5 A
3. predict and/or measure the likelihood of events.	M4.E.3.1 Predict and/or measure the likelihood of events.	M4.E.3.1.1 Make a prediction based on data or chance (data may be shown in tables, charts, line graphs, bar graphs or pictographs).	2.6.5 D	3.2.4 C 3.2.4 D
4. find range, median, mode of a group of numbers.	M4.E.2.1 Describe data sets using mean, median, or mode.	Assessed at grade 5	2.6.5 B	1.1.3 F
5. defend simple conclusions based on data.	M4.E.3.2 Find all possible combinations or arrangements involving two variables.	Assessed at grade 5	2.6.5 B	3.2.4 C 3.2.4 D

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 5

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 5</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Number forms • Whole numbers • Decimals • Fractions • Mixed numbers • Negative numbers • Basic functions • Quantities
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Metric • Customary • Length • Mass • Weight • Time • Temperature • Perimeter • Area • Volume
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Points, lines, segments, rays and planes • Types of lines • Triangles • Quadrilaterals • Other polygons • Three dimensional figures • Comparing figures • Tessellations
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Equations • Inequalities • Patterns • Locating points
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Tables, charts, and graphs • Central tendencies • Probability

WEST ALLEGHENY SCHOOL DISTRICT

Subject: **MATHEMATICS**
 GRADE 5



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1	2.6	2.11
2.2	2.7	
2.3	2.8	
2.4	2.9	
2.5	2.10	

COURSE DESCRIPTION:

The fifth grade math curriculum is aimed at polishing the basic skills while introducing students to higher level problem solving concepts involving algebra, geometry, and mathematical reasoning.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- 5th Grade math text – Scott Foresman – Addison Wesley
- Journey To The Other Side – Creative Publications
- PSSA Mathematics Coach – Educational Design
- Mastering Math Facts

ASSESSMENT:

- Teacher made test
- Scantron
- PSSA
- Mastering math facts (rocket math)
- Company tests
- Projects
- Adaptive tests
- Math notebooks

TECHNOLOGY USED:

- Scantron
- PSSA items
- District approved web sites
- Calculators

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. compare quantities or magnitudes of whole numbers, decimals, and fractions.</p>	M5.A.1.3 Compare quantities or magnitudes of numbers.	<p>M5.A.1.3.1 Compare whole numbers through 9 digits using the words more, less, equal, least, most, greater than, less than or the symbols $<$, $>$, $=$.</p> <p>M5.A.1.3.2 Compare and/or order decimals through the hundredths (Limit sets for ordering to no more than 4 numbers).</p> <p>M5.A.1.3.3 Compare proper fractions through 16th with like and unlike denominations.</p>	2.11.5 A	1.2.5 1.3.5 1.6.5
<p>2. use simple applications of negative numbers to identify numbers and temperatures to -20 C or °F.</p>	M5.A.1.4 Use simple applications of negative numbers (number line, counting, and temperature).	<p>M5.A.1.5.1 Locate/identify integers on a number line (greater than or equal to -20).</p> <p>M5.A.1.4.2 Identify negative temperatures on a thermometer (through 20°C or °F).</p>	2.1.5 F	1.2.5 1.3.5 1.6.5
<p>3. identify prime and composite numbers up to 100.</p>	M5.A.1.6 Apply number theory concepts (i.e., primes, factors, multiples, composites).	M5.A.1.6.2 Define/list/identify prime and composite numbers less than or equal to 100.	2.1.5 E	1.3.5 1.6.5

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 5
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
4. list factors and multiples up to 50.	M5.A.1.6 Apply number theory concepts (i.e., primes, factors, multiples, composites).	M5.A.1.6.2 Define/list/identify factors and/or multiples of a given whole number less than or equal to 50.	2.1.5E	1.3.5 1.4.5 1.6.5
5. solve problems using a variety of numbers and operations.	M5.A.2.1 Solve problems involving decimals, fractions and/or whole numbers (straight computation or word problems).	M5.A.2.1.1 Solve problems involving addition, subtraction, multiplication, and division of whole numbers (multipliers up to 2 digits – divisors one digit) and decimals including money (answer through hundredths – no division with decimals). M5.A.2.1.2 Solve problems involving addition and subtraction of fractions (like and unlike denominators – for unlike denominators, the LCD must be one of the given denominators). M5.A.2.1.3 Choose the correct operation(s) to solve a problem (no more than 2 operations).	2.2.5 A 2.2.5 B 2.2.5 C 2.2.5 I	1.1.5 1.2.5 1.3.5 1.6.5
6. use or develop models of fractions and/or mixed numbers.	M5.A.1.5 Use or develop models to represent fractions and/or mixed numbers.	M5.A.1.5.1 Use or develop regions and/or sets (e.g., circle graphs, base ten blocks) to model fractions and mixed numbers through hundredths (may include reducing the fraction).	2.1.5 D	1.3.5 1.6.5

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>7. use calculators to solve complex problems including fractions.</p>	<p>M5.A.2.1 Solve problems involving decimals, fractions and/or whole numbers (straight computation or word problems).</p>	<p>M5.A.2.1.1 Solve problems involving addition, subtraction, multiplication, and division of whole numbers (multipliers up to 2 digits – divisors one digit) and decimals including money (answer through hundredths – no division with decimals).</p> <p>M5.A.2.1.2 Solve problems involving addition and subtraction of fractions (through 16ths – like and unlike denominators – for unlike denominators, the LCD must be one of the given denominators).</p> <p>M5.A.2.1.3 Choose the correct operation(s) to solve a problem (no more than 2 operations).</p>	<p>2.2.5 F</p> <p>2.1.5 A</p> <p>2.1.3 I</p>	<p>1.1.5</p> <p>1.2.5</p> <p>1.3.5</p> <p>1.6.5</p>
<p>8. identify place value from millions to hundredths.</p>	<p>M5.A.1.1 Express numbers in equivalent forms.</p>	<p>M5.A.1.1.1 Use expanded notation to represent whole numbers or decimals (whole numbers less than 10,000,000 and decimals through hundredths).</p>		
<p>9. identify and compare standard, word, and expanded form of whole numbers and decimals.</p>	<p>M5.A.1.2 Demonstrate understanding of place value of whole numbers and decimals.</p>	<p>M5.A.1.2.1 Content remains the same, clarified below.</p> <p>M5.A.1.2.1 Match the standard form to the word form of decimal numbers through the hundredths.</p> <p>M5.A.1.2.2 Identify the value of a digit (from millions through hundredths).</p>		

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
10. perform basic operations with whole numbers, decimals, fractions, and mixed numbers.	M5.A.3.2 Compute accurately without the use of a calculator (straight computation or 1 operation word problems).	M5.A.3.2.1 Use addition, subtraction, multiplication, and division to compute accurately without a calculator (multipliers up to 2 digits, single-digit divisors or multiples of 10 – whole numbers through thousands and decimals through hundredths – no division with decimals).	2.2.5 A	
11. develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results.	M5.A.3.1 Apply estimation strategies to a variety of problems.	M5.A.3.1.2 Use estimation to solve problems involving whole numbers and/or decimals (up to 2-digit multipliers, single-digit divisors or multiples of 10; whole numbers through thousands).	2.2.5 D 2.2.5 E 2.2.5 G	1.3.5 1.6.5
12. develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience	M5.A.3.1 Apply estimation strategies to a variety of problems.	M5.A.3.1.1 Round whole numbers through millions and decimals through hundredths.	2.2.5 D 2.2.5 E 2.2.5 G	1.1.5 1.2.5 1.3.5 1.6.5

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. identify and measure using appropriate customary and metric units of measurements.</p> <p>2. add and subtract measurements and use simple conversions.</p>	<p>M5.B.1.1 Select appropriate units (customary or metric) to measure specific attributes of objects.</p> <p>M5.B.1.2 Solve problems using simple conversions and/or add and subtract measurements.</p>	<p>M5.B.1.1.1 Select the appropriate unit for measuring weight (mass), capacity, length, perimeter, and area.</p> <p>M5.B.1.2.1 Convert using linear measurements, capacity, and weight (mass) within the same system to the unit immediately above or below the given unit (using only the units below – use a conversion chart or a “hint” with problems e.g., hint: 16 oz – 1 lb).</p> <ul style="list-style-type: none"> • Metric using mm, cm, m and km; mL and L; g and kg • Customary using cup, pint, quart, gallon; in, ft, yd; oz, lb <p>M5.B.1.2.2 Add or subtract linear measurements, (feet and inches) or units of time (hours and minutes), without having to regroup with subtraction (answer should be in simplest form).</p>	<p>2.3.5. A</p> <p>2.3.5 D 2.3.5 E</p>	<p>3.7.5</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 5
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
3. estimate, identify, and compare perimeters and areas.	M5.B.1.3 Estimate and/or compare the perimeters or areas of 2 figures without computation.	M5.B.1.3.1 Estimate which polygon (shown on a grid) has a greater perimeter or area (compare either area to area or perimeter to perimeter). M5.B.1.3.2 Estimate the area of an irregular figure shown on a grid.	2.11.5 E 2.3.5 C	
4. estimate areas and volumes based on tiles and cubes.			2.11.5 2.3.5	
5. use appropriate tools to measure.	M5.B.2.1 Use appropriate tools to determine measurements.	M5.B.2.1.1 Use a ruler to measure to the nearest 1/8 inch or centimeter.	2.3.5 B	3.7.5
6. solve problems relating to measurement.	M5.B.2.2 Solve problems involving length, time, weight (mass), capacity, temperature, perimeter, and/or area.	M5.B.2.2.1 Find the perimeter of a figure drawn and labeled (with the same units throughout). M5.B.2.2.2 Find the area of a square or rectangle. M5.B.2.2.3 Solve problems involving weight, time, temperature, length, and capacity (limited to 3 digits) (With the same units throughout).	2.3.5 A 2.3.5 B	1.1.5 1.2.5 1.3.5 1.6.5

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. identify, compare, analyze, and define attributes of two-and three-dimensional shapes and develop vocabulary to describe the attribute.	M5.C.1.1 Define and/or use basic properties of quadrilaterals (parallelograms, squares, rectangles, trapezoids, rhombi), triangles, circles, pyramids, cubes, and/or prisms.	M5.C.1.1.1 Identify and/or classify rectangular prisms or pyramids using faces, vertices, and edges. M5.C.1.1.2 Identify and/or describe properties of all types of quadrilaterals (parallelogram, rectangle, rhombus, square, trapezoid). Triangles assessed at Grade 6.	2.9.5 B 2.9.5 C 2.9.5 F 2.10.5 A	1.1.5 1.2.5 1.3.5 1.6.5
2. identify, draw, and label parts of a line (ray, segment, and points).	M5.C.1.2 Represent and/or use properties of lines, line segments, rays, points, and planes.	M5.C.1.2.1 Identify, draw and/or label points, lines, line segments, and rays.	2.9.5 I	
3. identify and describe line and rotational symmetry in two-dimensional shapes and designs.	M5.C.2.1 Analyze transformations and/or use symmetry to analyze mathematical situations.	M5.C.2.1.1 Draw or identify a translation (slide), reflection(flip), or rotation(turn) of a 2-dimensional shape. M5.C.2.1.2 Identify the number of lines of symmetry and/or draw all lines of symmetry in a two-dimensional polygon.	2.9.5 K 2.9.5 L	1.1.5 1.2.5 1.3.5 1.4.5 1.6.5
4. solve problems using visualization, spatial reasoning, and geometric modeling.			2.4.5 2.5.5 2.9.5	1.1.5 1.2.5 1.3.5 1.6.5

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. solve linear equations and inequalities.</p> <p>2. describe, extend, analyze, and create a wide variety of patterns and functional relationships.</p>	<p>M5.D.2.1 Select and/or use appropriate strategies, including concrete materials, to solve or represent expressions or number sentences.</p>	<p>M5.D.2.1.1 Solve for a missing number (blank, question mark, variable) in an equation involving a single operation whole numbers only.</p> <p>M5.D.2.1.3 Match a realistic situation to an equation, expression, inequality (<, >, -), table or graph (variable must be isolated, e.g., $17 + 39 = n$).</p>	<p>2.8.5 G</p> <p>2.8.5 F</p>	<p>1.6.5</p>
	<p>M5.D.1.1 Create or extend patterns.</p>	<p>M5.D.1.1.1 Extend or find a missing element in a numerical or simple geometric pattern (+, -, x, or ÷ of whole numbers). Pattern must show 3 repetitions.</p> <p>M5.D.1.1.2 Create or replicate a numerical or geometric pattern showing 3 repetitions of that pattern (+, -, x or ÷ of whole numbers may be used).</p>	<p>2.8.5 A</p>	<p>1.6.5</p>
	<p>M5.D.2.1 Analyze patterns.</p>	<p>M5.D.1.2.1 Form a rule based on a given pattern, or illustrate a pattern based on a given rule (+, -, x or ÷ of whole numbers may be used). Patterns must show 3 repetitions.</p>	<p>2.8.5 C</p>	<p>1.6.5</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 5
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. use tables, charts, and graphs to solve equations and patterns.</p> <p>4. solve problems using algebraic expressions.</p> <p>5. locate and identify points on a coordinate system.</p> <p>6. generate functions from tables of data and relate data to corresponding graphs and functions.</p>	<p>M5.E.1.1 Organize, display, and/or interpret data using pictographs, tallies, tables, charts, line, bar graphs.</p>	<p>M5.E.1.1.1 Display and/or interpret data shown in tallies, tables, charts, pictographs, bar graphs, line graphs and using a title, appropriate scale and labels. A grid will be provided to display data on bar graphs or line graphs.</p>	<p>2.6.5 A</p> <p>2.4.5 2.5.5 2.8.5</p> <p>2.8.5</p> <p>2.8.5</p>	<p>1.6.5 1.1.5 1.2.5 1.3.5</p> <p>1.6.5</p> <p>1.6.5</p> <p>1.6.5</p>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS/PROBABILITY	GRADE: 5
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. read, interpret, and make predictions and calculations using tables and graphs. 2. organize, display, and make inferences. 3. solve problems using tables and graphs. 4. determine the probability of a simple event. 	<p>M5.E.1.1 Organize, display and/or interpret data using pictographs, tallies, tables, charts, line, bar graphs.</p> <p>M5.E.3.1 Predict or determine all possible combinations, outcomes and/or calculate the probability of a simple event.</p>	<p>M5.E.1.1.1 Display and/or interpret data shown in tallies, tables, charts, pictographs, bar graphs, line graphs and using a title, appropriate scale and labels. A grid will be provided to display data on bar graphs or line graphs.</p> <p>M5.E.3.1.1 Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible (information could be represented by pictographs, bar graphs, charts, tables, and/or spinners).</p> <p>M5.E.3.1.2 Determine the probability of an outcome (e.g., a coin toss, a roll of a number cube) and express as a fraction without reduction.</p>	<p>2.6.5A</p> <p>2.7.5 E 2.7.5 H 2.7.5 J</p>	<p>1.1.5 1.2.5 1.3.5 1.4.5 1.6.5</p> <p>1.3.5 1.6.5</p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 6

	MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL
Reporting Category	<u>GRADE 6</u>
Numbers and Operations	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Express numbers in equivalent form: fractions, decimals, percents • Compare and order numbers • Number theory concepts: GCF, LCM, direct rules • Percents in graphs, drawings, sets • Properties: association, communitive, distant, identity • Problem solving
Measurement	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Elapsed time • Read and use protractor, ruler • Perimeter • Angles
Geometry	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Classify polygons • Properties of triangles • Circumference • Degrees of triangle, quadrilateral, circle • Lines and planes • Positive ordered pairs
Algebraic Concepts	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns and functions • Inverse operation • One step equations
Data Analysis	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Interpret data into graph; histogram, bar, circle, line • Central tendency • Basic concept of probability

WEST ALLEGHENY SCHOOL DISTRICT

Subject: MATHEMATICS
GRADE 6



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8	2.8
2.2	2.9
2.3	2.10
2.6	2.11
2.7	(All include 2.4, 2.5)

COURSE DESCRIPTION:

The main focus is operations and concepts of fractions, decimals, percents, and how they relate. Basic geometry concepts included pertain to lines, triangles, circles and polygons. Measurement applications and tools are addressed in time, angles, and perimeter. Pre-algebra concepts are practiced in patterns, functions, and one step equations. Students will also be exposed to data analysis through various graphing techniques, probability and central tendency.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Mathematics Applications and Connections, Course 1
Glencoe Publishing Co., 1995

ASSESSMENT:

- Teacher made tests
- Scantron
- Class participation
- PSSA
- Observation

TECHNOLOGY USED:

- Computers
- Calculators

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

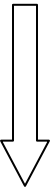
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 6
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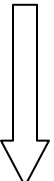
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. work flexibly with fractions, decimals, percents, and power notation and their relationships.</p> <p>2. compare and order fractions, decimals, and percents efficiently and find their appropriate locations on a number line.</p> <p>3. use factors, multiples, prime factorization, order of operations, and relatively prime numbers to solve problems.</p>	<p>M6.A.1.1 Express numbers in equivalent forms.</p> <p>M6.A.1.2 Compare quantities and/or magnitudes of numbers.</p> <p>M6.A.1.3 Apply number theory concepts (i.e., factors, multiples).</p>	<p>M6.A.1.1.1 Represent common percents as fractions and/or decimals (e.g., $25\% = \frac{1}{4} = .25$) – common percents are 1%, 10%, 25%, 50%, 75%, 100%.</p> <p>M6.A.1.1.2 Convert between fractions and decimals and/or differentiate between a terminating decimal and a repeating decimal.</p> <p>M6.A.1.1.3 Represent a number in exponential form (e.g., $10 \times 10 \times 10 \times 10^3$).</p> <p>M6.A.1.1.4 Represent a mixed number as an improper fraction.</p> <p>M6.A.1.2.1 Compare and/or order whole numbers, mixed numbers, fractions and/or decimals (do not mix fractions and decimals – decimals through thousandths).</p> <p>M6.A.1.3.1 Find the Greatest Common Factor (GCF) of two numbers (through 50) and/or use the GCF to simplify fractions.</p>	<p>2.1.6</p> <p>2.5.6</p> <p>2.1.6</p> <p>2.5.6</p> <p>2.1.6</p> <p>2.5.6</p>	<p>1.1.8 F</p> <p>1.2.8 A,B</p> <p>1.5.8 B</p> <p>1.6.8 A,D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 6
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>(continued)</p> <p>3. use factors, multiples, prime factorization, order of operations, and relatively prime numbers to solve problems.</p> <p>4. model percents through 100% using graphs, drawings, and sets.</p> <p>5. use the associative, commutative, and distributive properties to simplify computations with integers, fractions, and decimals.</p> <p>6. use strategies to estimate the results of rational-number computations and judge the reasonableness of the results.</p>	<p>M6.A.1.3 Apply number theory concepts (i.e., factors, multiples).</p> <p>M6.A.1.4 Use or develop models to represent percents.</p> <p>M6.A.2.1 Select and/or use operations to simplify or solve problems.</p> <p>M6.A.3.1 Apply estimation strategies to a variety of problems.</p>	<p>M6.A.1.3.2 Find the Least Common Multiple (LCM) of two numbers (through 50) and/or use the LCM to find the common denominator of two fractions.</p> <p>M6.A.1.3.3 Use divisibility rules for 2, 3, 5, and/or 10 to draw conclusions and/or problems.</p> <p>M6.A.1.4.1 Model percents (through 100%) using drawings, graphs and/or sets (e.g., circle graph, base ten blocks, etc.).</p> <p>M6.A.2.1.1 Complete equations by using the following properties: associative, commutative, and distributive.</p> <p>M6.A.3.1.1 Use estimation to solve problems involving whole numbers and decimals (up to 2-digit divisors and 4 operations).</p>	<p>2.1.6</p> <p>2.5.6</p> <p>2.1.6</p> <p>2.5.6</p> <p>2.6.6</p> <p>2.1.6</p> <p>2.2.6</p> <p>2.1.6</p> <p>2.2.6</p>	<p>1.1.8 F</p> <p>1.2.8 A,B</p> <p>1.5.8 B</p> <p>1.6.8 A,D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBER AND OPERATIONS GRADE: 6

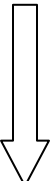
Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>7. select appropriate methods and tools for computing with fractions and decimals from among mental computation, estimation, calculator, computers, and paper and pencil depending on the situation, and apply the selected methods.</p>	<p>M6.A.3.2 Solve problems with and without the use of a calculator.</p>	<p>M6.A.3.2.1 Solve problems involving operations (+, -, x, ÷) with whole numbers, decimals (through thousandths) and fractions (avoid complicated LCDs) – straight computation or word problems.</p>	<p>2.1.6 2.2.6 2.4.6 2.5.6</p>	<p>1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D</p> <div align="center" data-bbox="1837 868 1885 1052"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

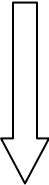
SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 6
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. compare and determine elapsed time.</p> <p>2. select and apply techniques and tools to accurately find length and angle measures to appropriate levels of precision.</p> <p>3. solve problems involving the application of perimeter formula.</p> <p>4. identify and define right, straight, acute, and obtuse angles and properties of triangles.</p>	<p>M6.B.1.1 Compare and/or determine elapsed time.</p> <p>M6.B.2.1 Choose or use appropriate tools and/or units to determine measurements with the same system.</p> <p>M6.B.2.2 Solve problems involving perimeter.</p> <p>M6.B.2.3 Identify, label and/or list properties of angles or triangles.</p>	<p>M6.B.1.1.1 Determine and/or compare elapsed time to the minute (time may cross AM to PM or more than one day).</p> <p>M6.B.2.1.1 Use or read a ruler to measure to the nearest 1/16 inch or millimeter.</p> <p>M6.B.2.1.2 Choose the more precise measurement of a given object (e.g., smaller measurements are more precise).</p> <p>M6.B.2.1.3 Measure angles using a protractor up to 180° - protractor must be drawn – one side of the angle to be measured should line up with the straight edge of the protractor.</p> <p>M6.B.2.2.1 Find the perimeter of any polygon (may include regular polygons where only the measure of one side is given – same units throughout).</p> <p>M6.B.2.3.1 Define, label and/or identify right, straight, acute and obtuse angles.</p>	<p>2.1.6</p> <p>2.3.6</p> <p>2.5.6</p> <p>2.1.6</p> <p>2.3.6</p> <p>2.9.6</p> <p>2.1.6</p> <p>2.9.6</p> <p>2.10.6</p>	<p>1.1.8 F</p> <p>1.2.8 A,B</p> <p>1.5.8 B</p> <p>1.6.8 A,D</p> <p>3.2.7 A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

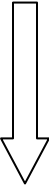
SUBJECT: MATHEMATICS STRAND: ALGEBRAIC CONCEPTS GRADE: 6

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> recognize, describe and extend patterns and missing elements in a pattern. identify functions based on a pattern and/or illustrate. identify the inverse operation. solve one step equations. relate an equation or expression to a verbal math situation. 	<p>M6.D.1.1 Create or extend patterns.</p> <p>M6.D.1.2 Analyze patterns.</p> <p>M6.D.2.1 Select and/or use appropriate strategies to solve number sentences.</p> <p>M6.D.2.2 Create and/or interpret expressions or equations that model problem situations.</p>	<p>M6.D.1.1.1 Create, extend and find a missing element in a pattern displayed in a table, chart or graph (pattern must show at least 3 repetitions – may use up to 2 operations with whole numbers).</p> <p>M6.D.1.2.1 Determine a rule based on a pattern or illustrate a pattern based on a given rule (displayed on a table, chart or graph; pattern must show at least 3 repetitions).</p> <p>M6.D.2.1.1 Identify the inverse operation needed to solve a one-step equation.</p> <p>M6.D.2.1.2 Solve a one-step equation.</p> <p>M6.D.2.2.1 Match an equations or expression involving one variable, to a verbal math situation.</p>	<p>2.1.6</p> <p>2.8.6</p> <p>2.11.6</p> <p>2.8.6</p> <p>2.1.6</p> <p>2.8.6</p> <p>2.8.6</p>	<p>1.1.8 F</p> <p>1.2.8 A,B</p> <p>1.5.8 B</p> <p>1.6.8 A,D</p> <p>3.1.7 C</p> 

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS/PROBABILITY	GRADE: 6
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. discuss and understand the correspondence between data sets and their graphical representations.</p> <p>2. find, use, and interpret measures of central tendency.</p> <p>3. compute probabilities for simple events and/or determine combination outcomes.</p>	<p>M6.E.1.1 Interpret data shown in frequency tables, histograms, circle, bar or double bar graphs, line or double line graphs or line plots.</p> <p>M6.E.2.1 Describe data sets using mean, median, mode and/or range.</p> <p>M6.E.3.1 Determine all possible combinations, outcomes and/or calculate the probability of a simple event.</p>	<p>M6.E.1.1.1 Analyze data and/or answer questions pertaining to data represented in frequency tables, circle graphs, double bar graphs, double line graphs or line plots (for circle graphs, no computation with percents).</p> <p>M6.E.1.1.2 Choose the appropriate representation for a specific set of data (choices should be the same type of graph).</p> <p>M6.E.1.1.3 Display data in frequency tables, circle graphs, double-bar graphs, double line graphs or line plots using a title, appropriate scale, labels and a key when needed. Circle graphs for open-ended items must show a center point and tic marks.</p> <p>M6.E.2.1.1 Determine/calculate the mean, median, mode and/or range of displayed data (data can be displayed on a table or line plot – use whole numbers only up to 2 digits).</p> <p>M6.E.3.1.1 Divide and/or find the probability of a simple event (express as a fraction in lowest terms).</p> <p>M6.E.3.1.2 Determine/show all possible combinations involving no more than 20 total arrangements (e.g., tree diagram, table, grid).</p>		<p>1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 7

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 7</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Convert between fractions, decimals, and percents • Compare and order fractions, decimals, and percents • Order of operations • Ratios and proportions • Estimation and computation of rational numbers
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Add, subtract, or convert customary and metric measurements • Area – quadrilaterals, triangles, and circles • Perimeter – quadrilaterals, triangles, and circles • Circumference • Scale drawings
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Parts of a circle • Parallel, perpendicular, and skew lines • Similar polygons • Congruent polygons • Coordinate plane
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns/sequences • Equations/expressions • Inequalities • Rate of change
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Graphs • Measures of Central Tendency • Simple/compound probability • Make predictions from graphs/probability

WEST ALLEGHENY SCHOOL DISTRICT

Subject: MATHEMATICS
GRADE 7



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1 2.8 (2.4 and 2.5 Embedded in all standards)
2.2 2.9
2.3 2.10
2.6 2.11
2.7

COURSE DESCRIPTION:

Pre-Algebra A is a fundamental course designed to prepare students for Algebra I-A. The course outline offers a basic foundation in numbers and operations, measurement, geometric concepts, algebraic concepts, and data analysis. Additionally algebraic concepts such as writing, solving, and graphing equations are introduced.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Glencoe – Pre Algebra 7th grade

ASSESSMENT:

- Teacher made tests
- Scantron
- PSSA tests
- Observation
- Classroom participation

TECHNOLOGY USED:

- Calculators
- Computers

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: NUMBER AND OPERATIONS GRADE: 7

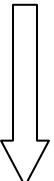
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> work flexibly with fractions, decimals, and percents to solve problems. compare and order fractions, decimals, integers, and percents efficiently and find their approximate locations on a number line. simplify numerical expressions using order of operations. 	<p>M7.A.1.1 Express numbers in equivalent forms.</p> <p>M7.A.1.2 Compare quantities and/or magnitudes of numbers.</p> <p>M7.A.2.1 Complete calculations by applying the order of operations.</p>	<p>M7.A.1.1.1 Convert between fractions, decimals and/or percents (e.g., 20% = 0.2 = 1/5) (terminating decimals only).</p> <p>M7.A.1.2.1 Compare and/or order whole numbers, mixed numbers, fractions and decimals (fractions and decimals may be mixed – no more than 5 numbers in a set to be ordered).</p> <p>M7.A.1.2.2 Compare and/or order integers (no more than five numbers in a set to be ordered).</p> <p>M7.A.1.2.3 Locate/identify decimals, fractions, mixed numbers and/or integers on a number line (a mix of these number forms may be on the same number line).</p> <p>M7.A.2.1.1 Use the order of operations to simplify numerical expressions (may use parentheses, brackets +, -, x- ÷, squares up to 10² and cubes up to 4³, whole numbers only).</p>	<p>2.1.8</p> <p>2.5.8</p> <p>2.1.8</p> <p>2.11.8</p> <p>2.1.8</p> <p>2.2.8</p>	<p>1.1.8 F</p> <p>1.2.8 A,B</p> <p>1.5.8 B</p> <p>1.6.8 A,D</p> <div align="center" data-bbox="1837 844 1885 1031"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 7
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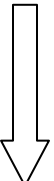
Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. solve problems involving operations of whole numbers, integers, and rational numbers.</p>	<p>M7.A.3.2 Compute accurately with and without use of a calculator.</p>	<p>M7.A.3.2.1 Solve problems involving operations (+, -, x, ÷) of whole numbers, decimals, fractions, or mixed numbers (straight computation or word problems).</p>	<p>2.1.8 2.2.8 2.5.8</p>	<p>1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D</p> <div align="center" style="margin-top: 200px;">  </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 7
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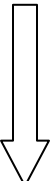
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. add, subtract, or convert measurements using the customary and metric units of measurement.</p>	M7.B.1.1 Add, subtract, or convert measurements.	<p>M7.B.1.1.1 Add, subtract, or convert measurements, using only the units below, with and without regrouping (e.g., 4ft – 2ft 5in – 1ft 7in). Answer should be converted to the largest whole unit (e.g., 37 oz – 2 Lb 5oz or 39 in – 1 yd 3in. Conversion chart provided on the reference sheet.</p> <ul style="list-style-type: none"> • In, ft, yd • Fl oz, cup, pint, quart, gallon • Oz, Lb • Sec, min, hours, days • Metric units including milli, centi and kilo (m, g or L) 	2.1.8 2.2.8 2.3.8	1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D
<p>2. select and apply techniques and tools to accurately find length, area, perimeter, and circumference of compound figures (quadrilaterals, triangles, and circles).</p>	M7.B.2.1 Develop, use and/or describe strategies to find the measure of length, perimeter, circumference, area or volume.	<p>M7.B.2.1.1 Develop and/or use strategies to find the perimeter and/or area of compound figures (compound figures should only include quadrilaterals and triangles). Area formulas provided on the reference sheet.</p> <p>M7.B.2.1.2 Find the circumference and/or area of circles (formulas provided on the reference sheet).</p> <p>M7.B.2.1.3 Find the area of triangles and/or all types of parallelograms (formulas provided on the reference sheet).</p>	2.1.8 2.2.8 2.3.8 2.5.8	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 7
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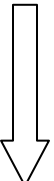
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. solve problems involving scale factors, using ratios and proportion.</p>	<p>M7.B.2.3 Construct, interpret and/or use scale drawings to solve real-world problems.</p>	<p>M7.B.2.3.2 Determine and/or apply an appropriate scale for reduction or enlargement.</p>	<p>2.1.8 2.2.8 2.3.8 2.5.8</p>	<p>1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D</p> <p>3.1.7 D</p> <div style="text-align: center; margin-top: 20px;">  </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

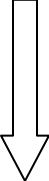
SUBJECT: MATHEMATICS	STRAND: GEOMETRY	GRADE: 7
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
1. identify, describe, define, and solve problems involving circles and their parts.	M7.C.1.1 Define and/or apply basic properties of two-and three-dimensional geometric shapes.	M7.C.1.1.1 Identify, describe and/or define diameter, radius, chord and/or circumferences in circles. Moved from 6.C.1.1.1 M7.C.1.1.2 Solve problems involving the relationship between the radius and diameter of the same circle. Moved from 6.C.1.1.2	2.9.8	1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D
2. identify parallel, perpendicular and/or skew line segments within three-dimensional figures.	M7.C.1.1 Define and/or apply basic properties of two-and three-dimensional geometric shapes.	M7.C.1.1.3 Identify parallel, perpendicular and/or skew line segments within three-dimensional figures.	2.9.8	
3. identify and/or use similar and/or congruent polygons and their parts.	M7.C.1.2 Identify congruence and/or similarity in polygons.	M7.C.1.2.1 Identify and/or use polygons that are similar and/or congruent, given either measurement or tick and angle marks. M7.C.1.2.2 Identify corresponding sides and/or angles of congruent or similar polygons.	2.9.8	
4. plot and/or identify ordered pairs on a coordinate plane, as well as identify all parts of a coordinate plane.	M7.C.3.1 Locate, plot and/or describe points on a coordinate plane.	M7.C.3.1.1 Plot and/or identify ordered pairs on a coordinate plane (all four quadrants). M7.C.3.1.2 Identify Quadrants I, II, III, IV, the x-&y-axes and the origin on a coordinate plane.	2.9.8	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: ALGEBRAIC CONCEPTS GRADE: 7

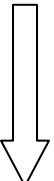
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. recognize, reproduce, extend and/or describe patterns involving fractions, decimals and/or whole numbers.</p> <p>2. solve and/or simplify algebraic equations or expressions using appropriate strategies.</p> <p>3. identify expressions, equations or inequalities that model mathematical situations.</p>	<p>M7.D.1.1 Recognize, reproduce, extend and/or describe patterns.</p> <p>M7.D.2.1 Select and/or use appropriate strategies to solve or represent equations or expressions.</p> <p>M7.D.2.2 Create and/or interpret expressions, equations or inequalities that model problem situations.</p>	<p>M7.D.1.1.1 Describe, extend or find a missing element of a pattern (show 3 repetitions of the pattern). (Fractions or decimals – may use only one operation from +, -, or x). (Whole numbers – may use only one operation from +, -, x, ÷ or squares).</p> <p>M7.D.2.1.1 Select and/or use appropriate strategies to solve one-step equations (no negative numbers).</p> <p>M7.D.2.1.2 Use substitution of one and/or two variables to simplify expressions (whole numbers only – use order of operations).</p> <p>M7.D.2.2.1 Identify expressions, equations or inequalities that model mathematical situations (using whole numbers or decimals, no more than two operations and one variable).</p>	<p>2.11.8</p> <p>2.1.8 2.2.8 2.8.8</p> <p>2.8.8 2.11.8</p>	<p>1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 7
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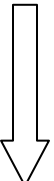
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>4. solve problems involving a constant rate of change displayed on graphs and tables.</p>	<p>M7.D.3.1 Describe the relationship between two variables (e.g., time, temperature).</p>	<p>M7.D.3.1.1 Solve problems involving a constant rate of change (e.g., word problems, graphs or data tables).</p> <p>M7.D.3.1.2 Describe and/or use the relationship of data displayed on a rate of change graph (e.g., how does the x-axis data relate to the y-axis data).</p>	<p>2.5.8 2.8.8</p>	<p>1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D</p> <div style="text-align: center; margin-top: 100px;">  </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

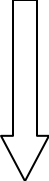
SUBJECT: MATHEMATICS	STRAND: DATA ANALYSIS/PROBABILITY	GRADE: 7
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. analyze data and/or answer questions involving histograms, double bar graphs, line graphs or stem-and-leaf plots.</p> <p>2. identify, calculate, and select the most appropriate measure of central tendency.</p> <p>3. calculate theoretical and experimental probability of simple and/or compound events.</p>	<p>M7.E.1.1 Interpret data shown in complex data displays.</p> <p>M7.E.2.2 Describe, compare and/or contrast data using measures of mean, median, mode or range.</p> <p>M7.E.3.1 Determine theoretical or experimental probability.</p>	<p>M7.E.1.1.1 Analyze data and/or answer questions pertaining to data represented in histograms, double bar graphs, multiple line graphs or stem-and-leaf plots.</p> <p>M7.E.2.2.1 Identify/calculate the mean (average), median, mode or range of a set of data.</p> <p>M7.E.2.2.2 Describe/choose which measure of central tendency (mean, median, mode or range) would be most appropriate for a given situation.</p> <p>M7.E.3.1.1 Find the theoretical probability of a simple and/or compound event (answer written as a fraction in lowest terms – any compound events should be independent).</p> <p>M7.E.3.1.2 Find the theoretical probability of an event not occurring (e.g., what is the probability of not rolling a 1 on a number cube).</p> <p>M7.E.3.1.3 Use data displayed in charts, graphs or tallies to find experimental probability.</p>	<p>2.2.8</p> <p>2.5.8</p> <p>2.6.8</p> <p>2.2.8</p> <p>2.6.8</p> <p>2.6.8</p> <p>2.7.8</p>	<p>1.1.8 F</p> <p>1.2.8 A,B</p> <p>1.5.8 B</p> <p>1.6.8 A,D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: DATA ANALYSIS/PROBABILITY GRADE: 7

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will: 4. formulate predictions and/or draw conclusions based on data displays or probability.	M7.E.4.1 Draw conclusions and/or make predictions based on data displays.	M7.E.4.1.1 Formulate predictions and/or draw conclusions based on data displays (bar graphs, circle graphs or line graphs) or probability.	2.6.8 2.7.8	1.1.8 F 1.2.8 A,B 1.5.8 B 1.6.8 A,D 1.6.8 F 

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

GRADE 8

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GRADE 8</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Add/subtract/multiply/divide rational numbers • Percents • Rates using formulas • Order of operations • Scientific notation • Estimation • Perfect squares and perfect cubes
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Conversions <ul style="list-style-type: none"> ○ Within metric ○ Within customary ○ Within time ○ Fahrenheit to Celsius with given formula • Interior angles of polygons • Determine number of sides of polygons based on degrees • Surface area of prisms/cubes • Volume of prisms/cubes • Determine appropriate type of measurement
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Match 3- D figures to nets • Types of angles (complementary, supplementary, adjacent, vertical) • Types of angles (parallel lines cut by transversal) • Pythagorean Theorem • Plot ordered pairs
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns • Functions • 2 and 2 step equations (1 variable) and check step • Match and write equations, expressions and inequalities • Match slope-intercept equations to graphs
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Box – and – whisker plots • Line graphs • Circle graphs • Histograms/bar graphs • Probability of mutually exclusive and independent events • Permutations and combinations

WEST ALLEGHENY SCHOOL DISTRICT

Subject: **MATHEMATICS**
 GRADE 8



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.4 2.8 (2.4 and 2.5 Embedded in all standards)
2.5 2.9
2.6 2.10
2.8 2.11
2.9

COURSE DESCRIPTION:

Pre-Algebra is a course designed to prepare students for Algebra 1. Material taught includes solving 1 and 2 step equations, an introduction to graphing equations, as well as a review of order of operations, integers, rational numbers, fractions and proportional reasoning. Additional concepts such as basic geometry, measurement and data analysis are also taught.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Glencoe Pre-Algebra or Algebra I

ASSESSMENT:

- Teacher-made tests
- Classroom observation/participation
- PSSA
- Scantron

TECHNOLOGY USED:

- Calculators
- Computers

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

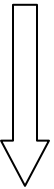
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 8
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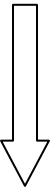
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> develop an understanding of large numbers and recognize appropriate usage of exponential, scientific, and calculator notation. identify the square roots and cube roots. simplify expressions using order of operations involving integers, fractions and decimals. use percents to solve problems. use formulas to solve various rate problems. 	<p>M8.A.1.1 Represent numbers in equivalent forms.</p> <p>M8.A.2.1 Complete calculations by applying the order of operations.</p> <p>M8.A.2.2 Represent or solve problems using rates, ratios, proportions and/or percents.</p>	<p>Mi.A.1.1.1 Represent numbers using scientific notation and/or exponential forms.</p> <p>M8.A.1.1.2 Find the square or cube of a whole number (single digit) and/or the square root of a perfect square (without a calculator).</p> <p>M8.A.2.1.1 Simplify numeric expressions involving integers, using the order of operations. (May include all types of grouping symbols. No combining negatives with exponents or compound exponents).</p> <p>M8.A.2.2.1 Solve problems involving percents (e.g., tax, discounts, etc.) Do not include percent increase or decrease.</p> <p>M8.A.2.2.2 Represent or solve rate problems (e.g., unit rates, simple interest, distance, etc.) Students may be asked to solve for any term (formulas provided on the reference sheet for distance and interest).</p>	<p>2.1.8A 2.1.8 B</p> <p>2.2.8 A</p> <p>2.1.8D 2.3.8 B 2.5.8</p>	<p>1.2.8 A,B 1.6.8 A,D 1.1.8 F 3.1.7 B</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: NUMBER AND OPERATIONS	GRADE: 8
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Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will:				
6. develop and use strategies to estimate the true results of rational number computations and judge the reasonableness of the results.	M8.A.3.1 Determine the appropriateness of overestimating, underestimating or calculating an exact answer in problem solving situations.	M8.A.3.1.1 Identify, use and/or explain when it is appropriate to round up or round down. M8.A.3.1.2 Identify, apply and/or explain when an exact answer is needed or when estimation is appropriate.	2.2.8 F 2.5.8	1.2.8 A,B 1.6.8 A,D 1.1.8 F 3.1.7 B
7. estimate answers to percent problems.	M8.A.3.2 Use estimation strategies in problem-solving situations.	M8.A.3.2.1 Estimate answers to problems involving percents (percents will be limited to:1%, 10%, 15%, 20%, 25%, 50%, 75%).	2.2.8 D 2.1.8 2.2.8 2.5.8	
8. select appropriate methods and tools for computing, with fractions and decimals, from among mental computation, estimation, calculators, pencil/paper, depending on the situation and apply selected methods.	M8.A.3.3 Compute and/or explain operations with integers, fractions and/or decimals.	M8.A.3.3.1 Add, subtract, multiply and/or divide integers, fractions and/or decimals with and without a calculator (straight computation or word problems).	2.2.8 B 2.2.1 2.2.2	

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: MEASUREMENT	GRADE: 8
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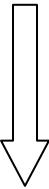
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>4. determine the volume and surface area of various polyhedra.</p>	<p>M8.B.2.3 Use, describe and/or develop procedures to determine measures of perimeter, circumference, area, surface area and/or volume.</p>	<p>M8.B.2.3.1 Calculate the surface area of cubes and rectangular prisms (formula provided on the reference sheet).</p> <p>M8.B.2.3.2 Calculate the volume of cubes and rectangular prisms, (formulas provided on the reference sheet).</p> <p>M8.B.2.3.3 Determine the appropriate type of measurement (circumference, perimeter, area, surface area, volume) for a given situation (e.g., which measurement is needed to determine the amount of carpeting for a room).</p>	<p>2.3.8 A 2.3.8 D 2.3.8 2.9.8</p>	<p>1.2.8 A,B 1.6.8 A,D 1.1.8 F 3.1.7 B</p> <div align="center" data-bbox="1837 844 1885 1031"> </div>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS	STRAND: ALGEBRAIC CONCEPTS	GRADE: 8
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. write and solve equations for a given problem situation up to 2 variables in equations and inequalities.</p> <p>7. match a written expression to an algebraic expression.</p> <p>8. graph a linear function from a table.</p> <p>9. match linear functions to their graphs.</p>	<p>M8.D.2.2 Create and/or interpret expressions, equations or inequalities that model problem situations.</p> <p>M8.D.4.1 Represent relationships with tables or graphs on the coordinate plane.</p>	<p>M8.D.2.2.1 Match a written situation to its numeric and/or algebraic expression, equation or inequality (up to two variables in equations or expressions).</p> <p>M8.D.2.2.2 Write and/or solve an equations for a given problem situation (one variable only).</p> <p>M8.D.4.1.1 Graph a linear function based on an x/y table (integers only).</p> <p>M8.D.4.1.2 Match the graph of a linear function to its x/y table (integers only).</p> <p>M8.D.4.1.4 Match the linear equation ($y = mx \div b$ form) to the x/y table (integers only in the table).</p>	<p>2.5.8</p> <p>2.8.8 C</p> <p>2.6.8</p> <p>2.8.8 C</p> <p>2.8.8 H</p>	<p>1.2.8 A,B</p> <p>1.6.8 A,D</p> <p>1.1.8 F</p> <p>3.1.7 C</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

**ALGEBRA I
ALGEBRA I CT
ALGEBRA I HONORS**

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>ALGEBRA I, ALGEBRA I CT, ALGEBRA I HONORS</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • LCM and GCF • Ratios and proportions • Exponents • Roots • Absolute values • Orders of operation • Estimation
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Perimeter • Circumference • Area • Surface area • Volume
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Pythagorean Theorem • Distance between 2 points • Parallelism and perpendicularity
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns • Relations • Solve and graph linear equations and inequalities • Factor polynomials • Rate of change • Slope
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>

WEST ALLEGHENY SCHOOL DISTRICT

Subject: ALGEBRA I, ALGEBRA I CT
 ALGEBRA I HONORS



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8E	2.3.8A	2.8.8F	2.8.11S
2.2.11A	2.3.8D	2.8.11D	2.8.8J
2.8.11P	2.10.11B	2.8.11H	2.11.8B
2.1.11A	2.9.11G	2.8.11J	2.8.11J
2.2.8A	2.8.11Q	2.8.11N	2.8.11L
2.2.11B	2.8.11A	2.8.11L	2.8.11K
2.2.11D	2.8.11O	2.8.11K	2.8.11Q

COURSE DESCRIPTION:

Algebra, Algebra I CT, and Honors Algebra I represent the beginning of academic mathematics and offer the student a contemporary study of algebra. Included are basic operations with signed numbers, solutions of equations and inequalities, graphing equations and inequalities, operation with polynomials, special products and factoring, fractional equations, systems of linear equations and radical expressions.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Health Algebra I - An Integrated Approach, Publisher: McDougal Littell
Cognitive Tutor Algebra I, Publisher: Carnegie Learning

ASSESSMENT:

- Teacher prepared tests
- Scantron
- PSSA
- Cognitive tutor

TECHNOLOGY USED:

- Scientific and graphing
- Calculators
- Cognitive tutor computer program
- Computers

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

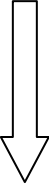
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: NUMBER AND OPERATIONS

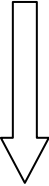
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> find the greatest common factor (GCF) and least common multiple (LCM) for sets of monomials. define ratio and rates. solve proportions and percent problems. simplify and evaluate expressions with exponents, roots, and absolute values. 	<p>M11.A.1.2 Apply number theory concepts to show relationships between real numbers in problem solving settings.</p> <p>M11.A.2.1 Apply ratio and/or proportion in problem solving situations.</p> <p>M11.A.2.2 Use exponents, roots and/or absolute value to solve problems.</p>	<p>M11.A.1.2.1 Find the Greatest common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.</p> <p>M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).</p> <p>M11.A.2.1.3 Identify and/or use proportional relationships in problem solving settings.</p> <p>M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers – exponents should not exceed power of 10).</p> <p>M11.A.2.2.2 Simplify/evaluate expressions involving multiplying with exponents (e.g., $x^6 * x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7 = x^{42}$) and powers of products $(2x^2)^3 = 8x^6$ (positive exponents only).</p>	<p>2.1.8E</p> <p>2.2.11A 2.8.11P</p> <p>2.1.11A</p>	<p>1.2.11A, B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: NUMBER AND OPERATIONS

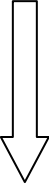
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>5. simplify expressions using order of operations.</p> <p>6. use estimation to solve problems.</p>	<p>M11.1A.3.1 Apply the order of operations in computation and in problem-solving situations.</p> <p>M11.1A.3.2 Use estimation strategies in problem solving situations.</p>	<p>M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).</p> <p>M11.A.3.2.1 Use estimation to solve problems.</p>	<p>2.2.8A</p> <p>2.2.11B 2.2.11D</p>	<p>1.2.11A, B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

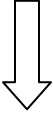
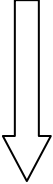
SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: MEASUREMENT

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. calculate perimeter, area, surface, and volume of various geometric figures.</p>	<p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system).</p>	<p>M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.3 Estimate and/or determine area, perimeter or circumference of an irregular figure.</p> <p>M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.</p>	<p>2.3.8A 2.3.8D 2.9.11E</p>	<p>1.2.11A, B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

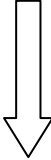
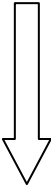
SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: GEOMETRY

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. apply the Pythagorean Theorem to find an unknown side of a triangle. 2. calculate distance on coordinate plane. 3. calculate the midpoint of 2 given points. 4. determine if a set of lines is parallel or perpendicular. 	<p>M11.IC.1.4 Solve problems involving right triangles using the Pythagorean Theorem.</p> <p>M11.C.3.1 Solve problems using analytic geometry.</p> <p align="center"></p>	<p>M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).</p> <p>M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane.</p> <p>M11.C.3.1.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided on the reference sheet).</p>	<p>2.10.11B</p> <p>2.9.11G</p>	<p>1.2.11A, B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: ALGEBRAIC CONCEPTS


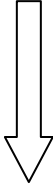
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> determine the domain and range of a function. determine if a relation is a function. solve equations. solve inequalities and/or compound inequalities. graph inequalities. graph linear equations. solve a system of equations by various methods. 	<p>M11.D.1.1 Analyze and/or use patterns or relations.</p> <p>M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.</p> <p align="center"></p>	<p>M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.</p> <p>M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).</p> <p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation(including problem situations).</p> <p>M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination.</p> <p>M11.D.2.1.5 Solve quadratic equations using factoring (integers only – not including completing the square or the Quadratic Formula).</p>	<p>2.8.11Q</p> <p>2.8.11A</p> <p>2.8.11O</p> <p>2.8.8F</p> <p>2.8.11D</p> <p>2.8.11H</p> <p>2.8.11J</p> <p>2.8.11N</p> <p>2.8.11L</p> <p>2.8.11K</p>	<p>1.2.11A, B</p> <p>1.4.11B,D</p> <p>1.5.11C</p> <p>1.6.11A,D,E,F</p> <p>3.1.10C</p> <p>3.2.10D</p> <p>3.7.10C</p> <p>3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: ALGEBRAIC CONCEPTS

Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>8. simplify polynomial expressions.</p> <p>9. factor polynomials.</p> <p>10. determine the rate of change.</p> <p>11. determine the slope of a line.</p> <p>12. identify the slope and y-intercept of a linear equation in any form.</p>	<p>M11.D.2.2 Simplify expressions involving polynomials.</p> <p>M11.D.3.1 Describe and/or determine change.</p> <p>M11.D.3.2 Compute and/or use the slope of a line.</p> <p align="center"></p>	<p>M11.D.2.2.1 Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).</p> <p>M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).</p> <p>M11.ID.2.2.3 Simplify algebraic fractions.</p> <p>M11.D.3.1.1 Identify, describe and/or use constant or varying rates of change.</p> <p>M11.D.3.2.1 Apply the formula for the slope of a line to solve problems.</p> <p>M11.D.3.2.2 Given the graph of a line, 2 points on the line or the slope of a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.</p> <p>M11.D.3.2.3 Compute the slope and/or 6-intercept represented by a linear equation or graph.</p>	<p>2.8.11S</p> <p>2.8.8J</p> <p>2.11.8B</p> <p>2.8.11J</p> <p>2.8.11L</p>	<p>1.2.11A, B</p> <p>1.4.11B,D</p> <p>1.5.11C</p> <p>1.6.11A,D,E,F</p> <p>3.1.10C</p> <p>3.2.10D</p> <p>3.7.10C</p> <p>3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT


SUBJECT: MATHEMATICS Algebra I/Algebra I Honors/Algebra I CT STRAND: ALGEBRAIC CONCEPTS

Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>13. identify the equations of the given function.</p>	<p>M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables.</p>	<p>M11.D.4.1.1 Match the graph of a given function to its table or equation.</p>	<p>2.8.11K 2.8.11Q</p>	<p>1.2.11A, B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center">↓</p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

ALGEBRA I -A

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>ALGEBRA I - A</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • LCM • GCF • Exponents • Roots • Absolute values • Order of operations
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Solve equations • Solve inequalities • Polynomials
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>

WEST ALLEGHENY SCHOOL DISTRICT

Subject: ALGEBRA I-A



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8E	2.8.11J
2.1.11A	2.8.11N
2.2.8A	2.8.11L
2.8.8F	2.8.11K
2.8.11D	2.8.11S
2.8.11H	

COURSE DESCRIPTION:

Algebra I-A is the first of two courses designed to fulfill the Algebra I requirement. The course is designed for those students who would normally have difficulty with Algebra I. Included are basic operations with signed numbers, solutions of equations, solutions of word problems, simplifying algebraic expressions, operations with polynomials, factoring, operating on algebraic fractions, and integers and coordinate points.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Algebra Structure and Method Book 1
Publisher: Houghton & Mifflin

ASSESSMENT:

- Teacher prepared tests
- Scantron
- PSSA

TECHNOLOGY USED:

- Scientific calculators

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra I-A STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. solve equations. 2. solve inequalities. 3. simplify polynomial expressions. 4. factor polynomials. 	<p>M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.</p> <p>M11.D.2.2 Simplify expressions involving polynomials.</p>	<p>M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).</p> <p>M11.D.2.2.1 Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).</p> <p>M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).</p>	<p>2.8.8F 2.8.11D 2.8.11H 2.8.11J 2.8.11N 2.8.11L 2.8.11K</p> <p>2.8.11S</p>	<p>1.2.11A,B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <div align="center" data-bbox="1837 1023 1890 1209"> </div>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

ALGEBRA I – B

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>ALGEBRA I - B</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • CGF • LCM • Ratio/proportion • Exponents • Roots • Absolute value • Order of operations • estimation
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Perimeter • Circumference • Area • Surface area • Volume
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Pythagorean Theorem
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns • Relations • Solve and graph linear equations • Solve and graph inequalities • Polynomials (factoring) • Rate of change • Slope
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>

WEST ALLEGHENY SCHOOL DISTRICT

Subject: ALGEBRA I-B



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8E	2.3.8A	2.8.8F	2.8.11S
2.2.11A	2.3.8D	2.8.11D	2.8.8J
2.8.11P	2.10.11B	2.8.11H	2.11.8B
2.1.11A	2.8.11Q	2.8.11J	2.8.11J
2.2.8A	2.8.11A	2.8.11N	2.8.11L
2.2.11B	2.8.11O	2.8.11L	2.8.11K
2.2.11D	2.8.11F	2.8.11K	2.8.11Q

COURSE DESCRIPTION:

Algebra I-B is the second of two courses designed to fulfill the Algebra I requirement. Included are fractional equations, graphing equations, and inequalities, systems of linear equations, and radical expressions.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Algebra Structure and Method Book I
Publisher: Houghton & Mifflin

ASSESSMENT:

- Teacher prepared tests
- Scantron
- PSSA

TECHNOLOGY USED:

- Scientific calculators

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

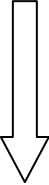
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

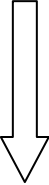
SUBJECT: MATHEMATICS Algebra I-B **STRAND: MEASUREMENT**

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. calculate perimeter, area, surface area, and volume of various geometric figures.</p>	<p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system).</p>	<p>M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.3 Estimate and/or determine area, perimeter or circumference of an irregular figure.</p> <p>M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.</p>	<p>2.3.8A 2.3.8D</p>	<p>1.2.11A,B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra I-B **STRAND: GEOMETRY**

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. apply the Pythagorean Theorem to find an unknown side of a right triangle.</p>	<p>M11.C.1.4 Solve problems involving right triangles using the Pythagorean Theorem.</p>	<p>M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).</p>	<p>2.10.11B</p>	<p>1.2.11A,B 1.4.11B,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3..7.10C 3.7.10D</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

**ALGEBRA II
ALGEBRA II HONORS
ALGEBRA II CT**

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>ALGEBRA II, ALGEBRA II HONORS, ALGEBRA II CT</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Square roots • GCF & LCM • Rational and irrational numbers • Mixture, motion, work, etc., word problems • Simplify exponents, roots, absolute value • Order of operations • Estimation
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Use dimensions of geometric figures in problem solving
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Pythagorean Theorem • Midpoint • Distance formula • Slope • Parallel and perpendicular lines
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Relations and functions • Compound inequalities • Linear equations and inequalities • Systems of equations and inequalities • Polynomials • Factoring • Algebraic fractions
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Scatter plots and lines of best fit • Use graphs to make predictions • Measures of central tendency • Range and quartiles • Box and whisker/stem and leaf plots • Permutations and combinations • Probability and odds

WEST ALLEGHENY SCHOOL DISTRICT

Subject: **ALGEBRA II**
 ALGEBRA II HONORS
 ALGEBRA II CT



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8A	2.2.11B	2.8.8F	2.8.11B	2.3.8D
2.1.8B	2.2.11D	2.8.11D	2.8.8J	
2.1.11A	2.3.8A	2.8.11H	2.11.8B	
2.1.8E	2.10.11B	2.8.11J	2.6.11A	
2.2.8C	2.9.11G	2.8.11N	2.6.8E	
2.2.11A	2.8.11Q	2.8.11L	2.7.8E	
2.8.11P	2.8.11A	2.8.11K	2.6.11D	
2.2.8A	2.8.110	2.8.11S	2.6.11C	

COURSE DESCRIPTION:

Solving equations and inequalities involving one or more unknowns. Verbal applications of rules; logarithms, complex numbers, graphing; equations of lines.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Algebra and Trigonometry Book 2, Publisher: Houghton Mifflin
Cognitive Tutor Algebra II, Publisher: Carnegie Learning

ASSESSMENT:

- Tests
- Quizzes
- Cognitive tutor
- PSSA

TECHNOLOGY USED:

- Calculator
- Cognitive tutor computer program
- Computers

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: NUMBER AND OPERATIONS

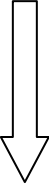
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> simplify expressions involving square roots. simplify expressions involving scientific notation. find the GCF and LCM of sets of monomials. identify and approximate the value of rational and irrational numbers. 	<p>M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation).</p> <p>M11.A.1.2 Apply number theory concepts to show relationships between real numbers in problem solving settings.</p> <p>M11.A.1.3 Estimate the value of an irrational number.</p>	<p>M11.A.1.1.1 Find the square root of an integer to the nearest tenth using either a calculator or estimation (integer may or not may be a perfect square).</p> <p>M11.A.1.1.2 Express numbers and/or simplify expressions using scientific notation (including numbers less than 1).</p> <p>M11.A.1.1.3 Simplify square roots (e.g., $\sqrt{24} = 2\sqrt{6}$).</p> <p>M11.A.1.2.1 Find the Greatest common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomial and/or factor polynomial expressions using the greatest common monomial.</p> <p>M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.</p> <p>M11.A.1.3.2 Compare and/or order any real numbers (rational and irrational may be mixed).</p>	<p>2.1.8A 2.1.8B 2.1.11A</p> <p>2.3.8E</p> <p>2.2.8C</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <div align="center" data-bbox="1837 1015 1885 1193"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: NUMBER AND OPERATIONS

Page 2

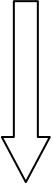
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>5. solve mixture, motion, work, etc., problems.</p> <p>6. solve for values using direct and inverse variation.</p> <p>7. simplify expressions involving exponents, roots and absolute value.</p>	<p>M11.A.2.1 Apply ratio and/or proportion in problem solving situations.</p> <p>M11.A.2.2 Use exponents, roots and/or absolute value to solve problems.</p>	<p>M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).</p> <p>M11.A.2.1.2 Solve problems using direct and inverse proportions.</p> <p>M11.A.2.1.3 Identify and/or use proportional relationships in problem solving settings.</p> <p>M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers – exponents should not exceed power of 10).</p> <p>M11.A.2.2.2 Simplify/evaluate expressions involving multiplying with exponents (e.g., $x^6 * x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7 = x^{42}$) and powers of products $(2x^2)^3 = 8x^6$ (positive exponents only).</p>	<p>2.2.11A 2.8.11P</p> <p>2.1.11A</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: NUMBER AND OPERATIONS

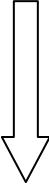
Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>8. simplify expressions using order of operations.</p> <p>9. use estimation to solve/check the reasonableness of a solution.</p>	<p>M11.A.3.1 Apply the order of operations in computation and in problem-solving situations.</p> <p>M11.A.3.2 Use estimation strategies in problem-solving situations.</p>	<p>M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).</p> <p>M11.A.3.2.1 Use estimation to solve problems.</p>	<p>2.2.8A</p> <p>2.2.11B 2.2.11D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

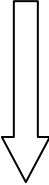
SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: MEASUREMENT

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. find missing dimensions of geometric figures during problem solving.</p>	<p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system).</p>	<p>M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.</p>	<p>2.3.8A 2.3.8D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

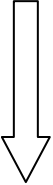
SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: GEOMETRY

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. solve problems using the Pythagorean Theorem. 2. find the midpoint and distance between 2 points. 3. identify the relationship between slope and parallel/perpendicular lines. 	<p>M11.IC.1.4 Solve problems involving right triangles using the Pythagorean Theorem.</p> <p>M11.C.3.1 Solve problems using analytic geometry.</p>	<p>M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).</p> <p>M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane.</p> <p>M11.C.3.1.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided on the reference sheet).</p>	<p>2.10.11B</p> <p>2.9.11G</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> identify relations as functions and find the domain, range, and inverse. solve and graph compound inequalities. solve and graph linear equations and inequalities and their systems. solve quadratic equations by factoring. 	<p>M11.D.1.1 Analyze and/or use patterns or relations</p> <p>M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.</p>	<p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p> <p>M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.</p> <p>M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).</p> <p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation(including problem situations).</p> <p>M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).</p> <p>M11.D.2.1.5 Solve quadratic equations using factoring (integers only – not including completing the square or the Quadratic Formula).</p>	<p>2.8.11Q 2.8.11A 2.8.11O</p> <p>2.8.8F 2.8.11D 2.8.11H 2.8.11J 2.8.11N 2.8.11L 2.8.11K</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> 

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: ALGEBRAIC CONCEPTS

Page 2

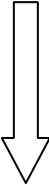
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>5. perform the various operations on polynomials.</p> <p>6. factor algebraic expressions.</p> <p>7. simplify algebraic fractions.</p> <p>8. determine rates of change and its effect on variables.</p> <p>9. find slope and y-intercept and write the equations of lines in slope-intercept and standard form.</p>	<p>M11.D.2.2 Simplify expressions involving polynomials.</p> <p>M11.D.3.1 Describe and/or determine change.</p> <p>M11.D.3.2 Compute and/or use the slope of a line.</p>	<p>M11.D.2.2.1 Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).</p> <p>M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is not equal to 0).</p> <p>M11.D.2.2.3 Simplify algebraic fractions.</p> <p>M11.D.3.1.1 Identify, describe and/or use constant or varying rates of change.</p> <p>M11.D.3.1.2 Determine how a change in one variable relates to a change in a second variable (e.g., $y=4/x$, if x doubles, what happens to y?).</p> <p>M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).</p> <p>M11.D.3.2.2 Given the graph of a line, 2 points on the line or the slope of a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.</p> <p>M11.D.3.2.3 Compute the slope and/or y-intercept represented by a linear equation or graph.</p>	<p>2.8.11S</p> <p>2.8.8J</p> <p>2.11.8B</p> <p>2.8.11J</p> <p>2.8.11L</p>	<p>1.1.11C,F</p> <p>1.2.11A</p> <p>1.4.11B</p> <p>1.6.11A,D,E</p> <p>1.8.11B</p> <p>3.1.10C</p> <p>3.2.10B</p> <p>3.7.10A</p> <div align="center" data-bbox="1806 958 1869 1153"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: ALGEBRAIC CONCEPT

Page 3

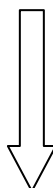
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>10. match a function or equation to its graph.</p>	<p>M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables.</p>	<p>M11.D.4.1.1 Match the graph of a given function to its table or equation.</p>	<p>2.8.11K 2.8.11Q</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: DATA ANALYSIS/PROBABILITY

Page 3

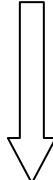
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. construct and interpret scatter plots.</p> <p>2. find and use measures of central tendency, range, and quartiles.</p>	<p>M11.E.1.1 Appropriately display and/or use data in problem-solving settings.</p> <p>M11.E.2.1 Use measures of central tendency to describe a set of data.</p>	<p>M11.E.1.1.1 Create and/or use appropriate graphical representations of data including box-and-whisker plots, stem-and-leaf plots or scatter plots.</p> <p>M11.E.1.1.2 Analyze data and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots or scatter plots, line and double line graphs, bar and double bar graphs and circle graphs).</p> <p>M11.E.2.1.1 Calculate or select the appropriate measure of central tendency (mean, mode or median) of a set of data given or represented on a table, line plot or stem-and-leaf plot.</p> <p>M11.E.2.1.2 Calculate and/or interpret the range, quartiles and inter-quartile range.</p> <p>M11.E.2.1.3 Describe how outliers affect measures of central tendency.</p>	<p>2.6.11A 2.6.8 E</p> <p>2.6.8A 2.6.11A</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT


SUBJECT: MATHEMATICS Algebra II/Algebra II Honors/Algebra II CT STRAND: DATA ANALYSIS/PROBABILITY

Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. find the probability of odds of simple events.</p> <p>4. find permutations and combinations.</p> <p>5. make predictions based on graphic representations of data.</p> <p>6. use a scatter plot and line of best fit to write equations and make predictions.</p>	<p>M11.E.3.1 Apply probability and/or odds to practical situations.</p> <p>M11.E.3.2 Apply counting techniques in problem-solving settings.</p> <p>M11.E.4.1 Make predictions using data displays and probability.</p> <p>M11.E.4.2 Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions.</p>	<p>M11.E.3.1.2 Find, convert and/or compare the probability and/or odds of a simple event.</p> <p>M11.E.3.2.1 Determine the number of permutations and/or combinations or apply the fundamental counting principle. (Formula provided on the reference sheet).</p> <p>M11.E.4.1.1 Estimate or calculate to make predictions based on a circle, line, bar graph or given situation.</p> <p>M11.E.4.2.1 Draw, find and/or write an equation for a line of best fit for a scatter plot.</p> <p>M11.E.4.2.2 Make predictions using the equations or graphs of best-fit lines of scatter plots.</p>	<p>2.7.11A 2.7.11E</p> <p>2.7.8A</p> <p>2.7.8E 2.6.11D</p> <p>2.6.11C 2.6.11D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

**GEOMETRY
HONORS GEOMETRY
GEOMETRY CT**

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>GEOMETRY, HONORS GEOMETRY, GEOMETRY CT</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Square root • Irrational numbers • Direct proportions
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Measurement of angle • Surface area and volume • Perimeter and circumference
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Radius, diameter, tangent • Arc • Semi-circles • Mean, median, altitudes • Angle bisectors • Properties of quadrilaterals • Properties of isosceles and equilateral triangles • Similar and congruent polygons • Pythagorean Theorem • Distance and midpoint • Perpendicularity • Parallelism
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Linear equations and equalities • Systems of equations • Slope • Writing equation
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>

WEST ALLEGHENY SCHOOL DISTRICT

Subject: GEOMETRY
 HONORS GEOMETRY
 GEOMETRY CT



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8A	2.3.8D	2.8.8F	2.8.11L
2.1.11A	2.3.8E	2.8.11D	2.1.8B
2.2.8C	2.9.11F	2.8.11H	
2.2.11A	2.9.8D	2.8.11J	
2.8.11P	2.9.11C	2.8.11N	
2.3.11A	2.9.11B	2.8.11L	
2.3.11B	2.10.11B	2.8.11K	
2.3.8A	2.9.11G	2.8.11J	

COURSE DESCRIPTION:

Geometry emphasizes the concepts of plane and solid geometric figures from the standpoint of relationships among angles and the properties of triangles, other polygons, ration and proportions as they apply to triangles and circles. Some emphasis is placed on using deductive reasoning with formal proofs.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Cognitive Tutor Geometry, Publisher: Carnegie Learning

ASSESSMENT:

- Teacher prepared tests
- PSSA
- Cognitive tutor
- Scantron

TECHNOLOGY USED:

- Scientific calculators
- Cognitive tutor computer program
- Computers

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

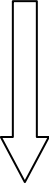
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

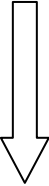
SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: NUMBER AND OPERATIONS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> simplify square roots and use a calculator to write the value to the nearest tenth or nearest hundredth. write the value of any irrational number by estimating. graph irrational numbers and rational numbers on the same number line. use proportions to make scale drawings. 	<p>M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation).</p> <p>M11.A.1.3 Estimate the value of an irrational number.</p> <p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations.</p>	<p>M11.A.1.1.1 Find the square root of an integer to the nearest tenth using either a calculator or estimation.</p> <p>M11.A.1.1.3 Simplify square roots (e.g., $\sqrt{24} = 2\sqrt{6}$).</p> <p>M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.</p> <p>M11.A.1.3.2 Compare and/or order any real numbers (rational and irrational may be mixed).</p> <p>M11.A.2.1.2 Solve problems using direct and inverse proportions.</p> <p>M11.A.2.1.3 Identify and/or use proportional relationships in problem solving settings.</p>	<p>2.1.8A 2.1.8B 2.1.11A</p> <p>2.2.11A 2.8.11P</p> <p>2.2.11A 2.8.11P</p>	<p>1.1.11C,E,F 1.4.11C,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: MEASUREMENT

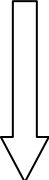
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> measure angles using a protractor and also by estimating measures of angles by comparing angles that are either acute, right or obtuse. determine the perimeter and area of certain geometric figures using specific formulas. 	<p>M11.B.2.1 Use and/or compare measurements of angles.</p> <p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume (may require conversion within the same system)</p>	<p>M11.B.2.1.1 Measure and/or compare angles in degrees (up to 360°) (protractor must be provided or drawn).</p> <p>M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.4 Find the measurement of a missing length given the perimeter circumference, area or volume.</p>	<p>2.3.11A 2.3.11B</p> <p>2.3.8A 2.3.8D</p>	<p>1.1.11C,E,F 1.4.11C,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: MEASUREMENT

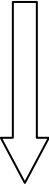
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. use formulas for perimeter, circumference, area to determine an unknown length given the perimeter or area and the other lengths.</p>	<p>M11.B.2.3 Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure.</p>	<p>M11.B.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume.</p> <ul style="list-style-type: none"> • How does changing the length of the radius of a circle affect the circumference of the circle? • How does changing the length of the edge of a cube affect the volume of the cube? • How does changing the length of the base of a triangle affect the area of the triangle? 	<p>2.3.8E</p>	<p>1.1.11C,E,F 1.4.11C,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <div align="center" data-bbox="1837 966 1885 1144">  </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: GEOMETRY

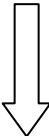
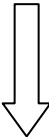
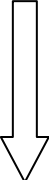
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. use the definitions of circle, radius, diameter, chord, tangent, and the other vocabulary of circles to identify the names parts on diagrams of circles.</p> <p>2. use the properties of triangles, quadrilaterals, and other polygons to solve problems involving these polygons.</p>	<p>M11.C.1.1 Identify and/or use parts of circles and segments associated with circles.</p> <p>M11.C.1.2 Recognize and/or apply properties of angles, triangles and quadrilaterals.</p>	<p>M11.C.1.1.1 Identify and/or use the properties of a radius, diameter and/or tangent of a circle (given numbers should be whole).</p> <p>M11.C.1.1.2 Identify and/or use the properties of arcs, semicircles, inscribed angles and/or central angles.</p> <p>M11.C.1.2.1 Identify and/or use properties of triangles (e.g., medians, altitudes, angle bisectors, side/angle relationships, Triangle Inequality Theorem).</p> <p>M11.C.1.2.2 Identify and/or use properties of quadrilaterals (e.g., parallel sides, diagonals, bisectors, congruent sides/angles and supplementary angles).</p> <p>M11.C.1.2.3 Identify and/or use properties of isosceles and equilateral triangles.</p>	<p>2.9.11F</p> <p>2.9.8D</p> <p>2.9.11C</p>	<p>1.1.11C,E,F</p> <p>1.4.11C,D</p> <p>1.5.11C</p> <p>1.6.11A,D,E,F</p> <p>3.1.10C</p> <p>3.2.10D</p> <p>3.7.10C</p> <p>3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: GEOMETRY

Page 2

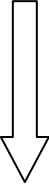
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. solve problems involving congruent polygons and similar polygons.</p> <p>4. prove that 2 triangles are congruent or that 2 triangles are similar.</p> <p>5. solve problems involving right triangles using the Pythagorean Theorem using Pythagorean triples or a calculator.</p> <p>6. use the midpoint and distance formulas to determine the coordinates of the midpoint and the distance between 2 points in the coordinate plane.</p>	<p>M11.C.1.3 Use properties of congruence, correspondence and similarity in problem-solving settings involving two-and three- dimensional figures.</p> <p>M11.C.1.4 Solve problems involving right triangles using the Pythagorean Theorem.</p> <p>M11.C.3.1 Solve problems using analytic geometry.</p> <p align="center"></p>	<p>M11.C.1.3.1 Identify and/or use properties of congruent and similar polygons or solids.</p> <p>M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).</p> <p>M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).</p> <p align="center"></p>	<p>2.9.11B</p> <p>2.10.11B</p> <p>2.9.11G</p>	<p>1.1.11C,E,F 1.4.11C,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: GEOMETRY

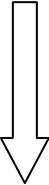
Page 3

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>7. determine if lines are perpendicular or parallel the slopes of those lines.</p>	<p>M11.C.3.1 Solve problems using analytic geometry.</p>	<p>M11.C.3.1.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided on the reference sheet).</p>	<p>2.9.11G</p>	<p>1.1.11C,E,F 1.4.11C,D 1.5.11C 1.6.11A,D,E,F</p> <p>3.1.10C 3.2.10D 3.7.10C 3.7.10D</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Geometry/Honors Geometry/Geometry CT STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. solve problems involving linear equations or inequalities by using the substitution method or by linear combinations.</p> <p>2. use the slope formula and the graph of a line to write the equations of lines in an appropriate form.</p>	<p>M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.</p> <p>M11.D.3.2 Compute and/or use the slope of a line.</p>	<p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).</p> <p>M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).</p> <p>M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).</p> <p>M11.D.3.2.2 Given the graph of the line, 2 points on the line, or the slope and a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.</p> <p>M11.D.3.2.3 Compute the slope and or y-intercept represented by a linear equation or graph.</p>	<p>2.8.8F</p> <p>2.8.11D</p> <p>2.8.11H</p> <p>2.8.11J</p> <p>2.8.11N</p> <p>2.8.11L</p> <p>2.8.11K</p> <p>2.8.11J</p> <p>2.8.11L</p>	<p>1.1.11C,E,F</p> <p>1.4.11C,D</p> <p>1.5.11C</p> <p>1.6.11A,D,E,F</p> <p>3.1.10C</p> <p>3.2.10D</p> <p>3.7.10C</p> <p>3.7.10D</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

STATISTICS

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>STATISTICS</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="padding-left: 40px;">Simplify and evaluate expressions using the order of operations to solve problems</p>
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Create and/or use appropriate graphical representations of data • Analyze data and/or answer questions based on displayed data • Calculate mean, median, mode, range • Find probabilities for independent, dependent, compound events • Draw, find and/or write an equation for a line of best fit • Make predictions using equations or graphs of best fit lines of scatter plots

WEST ALLEGHENY SCHOOL DISTRICT

Subject: STATISTICS



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.2.8A	2.7.11E	2.5.11D	2.6.11E
2.8.11Q	2.6.11C	2.7.11F	2.6.11G
2.8.11A	2.6.11D	2.2.11F	2.8.11B
2.8.11O	2.5.11B	2.6.11B	2.8.11C
2.6.11A	2.4.11E	2.6.11F	2.8.11M
2.6.8E	2.5.11A	2.6.11C	
1.7.11A	2.5.11C	2.6.11H	

COURSE DESCRIPTION:

A college level introduction to statistics and probability. The course teaches methods of descriptive and inferential statistics. Topics include data collection and description, hypothesis testing, correlation and regression, analysis of variance and contingency tables. Students will learn how to use the TI-83 graphic calculator and Mini-Tab, a statistical analysis package. **Students may take this course for a college credit through the University of Pittsburgh.**

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Statistics a first course Fifth edition
Donald H. Sanders McGraw-Hill, Inc.

ASSESSMENT:

- Teacher created tests/quizzes
- AP exam
- PSSA

TECHNOLOGY USED:

- TI-83
- MINITAB – computer software

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

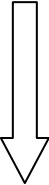
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

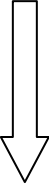
SUBJECT: MATHEMATICS Statistics STRAND: NUMBER AND OPERATIONS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will: 1. use operations to simplify formulas.	M11.A.3.1 Apply the order of operations in computation and in problem-solving.	M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational number may be used).	2.2.8	1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B 3.1.10C 3.2.10B 3.7.10A 

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

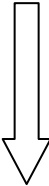
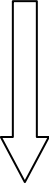
SUBJECT: MATHEMATICS Statistics STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> use linear regression models to make predictions and analyze relationships between two sets of data. demonstrate understanding of the regression and correlation analysis. determine if a relationship exists between two variables. interpret the amount of error in the regression equation. 	<p>M11.D.1.1 Analyze and/or use patterns or relations.</p>	<p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p>	<p>2.8.11Q 2.8.11A 2.8.11O</p> <p>2.5.11A,B,C,D 2.6.11C 2.8.11A,B,C,M</p> <p>2.5.11A,B,C,D 2.6.11C 2.8.11A,B,C,M</p> <p>2.5.11A,B,C,D 2.6.11C 2.8.11A,B,C,M</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

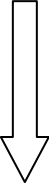
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> describe and apply the types of tables and charts used to honestly analyze and present numerical facts. find the arithmetic mean using paper/pencil, calculator and/or computer. find the median using paper/pencil, calculator and/or computer. find the mode using paper/pencil and computer. find the range using paper/pencil, calculator and/or computer. 	<p>M11.E.1.1 Appropriately display and/or use data in problem-solving settings.</p> <p>M11.E.2.1 Use measures of central tendency to describe a set of data.</p> <p align="center"></p>	<p>M11.E.1.1.1 Create and/or use appropriate graphical representations of data including box-and-whisker plots, stem-and-leaf plots or scatter plots, line, double line, bar, double bar and circle graphs.</p> <p>M11.E.1.1.2 Analyze data and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots or scatter plots, line and double line graphs, bar and double bar graphs and circle graphs).</p> <p>M11.E.2.1.1 Calculate or select the appropriate measure of central tendency (mean, mode or median) of a set of data given or represented on a table, line plot or stem-and-leaf plot.</p> <p>M11.E.2.1.2 Calculate and/or interpret the range, qualities and inter-quartile range of measures of central tendency of sets of data.</p>	<p>2.6.11A 2.6.8E</p> <p>2.6.8A 2.6.11A</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

Page 2

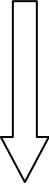
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. comprehend the probabilities of compound events.</p> <p>7. use linear regression models to make predictions and analyze relationships between two sets of data.</p> <p>8. comprehend the vocabulary of the study of probability.</p> <p>9. apply the concept of a probability distribution.</p> <p>10. comprehend a binomial distribution.</p>	<p>M11.E.3.1 Apply probability and/or odds to practical situations.</p> <p>M11.E.4.2 Analyze and/or interpret data on a scatter plot and/or use a scatter plot to make predictions.</p>	<p>M11.E.3.1.1 Find probabilities for independent, dependent or compound events and represent as a fraction, decimal or percent.</p> <p>M11.E.4.2.1 Draw, find and/or write an equation for a line of best fit for a scatter plot.</p> <p>M11.E.4.2.2 Make predictions using the equations or graphs of best-fit lines of scatter plots.</p>	<p>2.7.11A 2.7.11E</p> <p>2.6.11C 2.6.11D</p> <p>2.5.11B</p> <p>2.4.11E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D 2.6.11D,F</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

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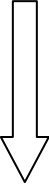
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>11. determine binomial probabilities using paper/pencil, calculator and/or computer.</p> <p>12. find the mean absolute deviation using pencil/paper, calculators and/or computer.</p> <p>13. find the standard deviation using paper/pencil, calculator and/or computer.</p> <p>14. comprehend a normal distribution.</p> <p>15. comprehend and poisson distribution.</p>			<p>2.2.11F 2.4.11E 2.5.11A,B,C,D 2.6.11D,F</p> <p>2.2.11F 2.5.11A,B,C,D 1.6.11B</p> <p>2.2.11F 2.5.11A,B,C,D 2.6.11B</p> <p>2.4.11E 2.5.11A,B,C,D 1.6.11I</p> <p>2.4.11E 2.5.11A,B,C,D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

Page 4

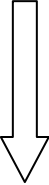
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>16. demonstrate understanding of poisson distribution.</p> <p>17. demonstrate ability to produce estimates with a sample.</p> <p>18. demonstrate ability to use the central limit theorem.</p> <p>19. demonstrate ability to produce a sampling distribution of sample percentages.</p> <p>20. formulate a hypothesis for the population of students at school.</p>			<p>2.4.11E 2.5.11A,B,C,D</p> <p>2.5.11A,B,C,D 2.6.11A,B,C,D 2.6.11H</p> <p>2.5.11A,B,C,D 2.6.11A,B,C,D 2.6.11H</p> <p>2.5.11A,B,C,D 2.6.11A,D,E,G 2.6.11H</p> <p>2.5.11A,B,C,D 2.6.11A,D,E,G 2.6.11H</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

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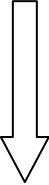
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>21. identify various methods of obtaining samples.</p> <p>22. utilize a frequency distribution.</p> <p>23. utilize the one-sample hypothesis test of means when the standard deviation is known.</p> <p>24. utilize the one-sample hypothesis test of means when the standard deviation is unknown.</p> <p>25. utilize one-sample hypothesis test of percentage for both one- and two-tailed testing solutions.</p>			<p>2.5.11A,B,C,D 2.6.11A,D,E,G 2.6.11H</p> <p>2.5.11A,B,C,D 2.6.11A,D,E,G 2.6.11H</p> <p>2.5.11A,B,C,D 2.6.11A,D,F</p> <p>2.5.11A,B,C,D 2.6.11A,D,F</p> <p>2.5.11A,B,C,D 2.6.11A,D,F</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

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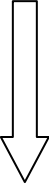
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>26. utilize one-sample hypothesis test of variance for both one-and two-tailed solutions.</p> <p>27. demonstrate understanding of two sample hypothesis test of variance.</p> <p>28. demonstrate understanding of two-sample hypothesis test of two means.</p> <p>29. demonstrate understanding of two-sample hypothesis of percentage.</p> <p>30. formulate a hypothesis test of percentages, means and variances.</p>			<p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p> <p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p> <p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p> <p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.111A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT


SUBJECT: MATHEMATICS Statistics STRAND: DATA ANALYSIS/PROBABILITY

Page 11

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>49. understand when and how to use the appropriate probability distributions needed to estimate.</p> <p>50. explain the basic concepts of population estimates.</p> <p>51. utilize the expected value of a discrete random variable.</p> <p>52. determine binomial probabilities using pencil/paper, calculator and/or computer.</p>			<p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p> <p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p> <p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p> <p>2.5.11A,B,C,D 2.6.11A,B,D,E 2.6.11F,G,H</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

CONSUMER MATH

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>CONSUMER MATH</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Perform calculations using integers, fractions, decimals, and percents • Solve problems using ratios and proportions • Solve problems involving exponents • Use order of operations in problem solving • Use estimation strategies to solve problems
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Measure angles using a protractor • Calculate area and perimeter of triangles, circles, squares, etc. • Find volume of cube, cylinder, etc. • Find surface area of cube, cylinder, etc. • Identify prisms and pyramids
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Identify and use parts of a circle • Recognize and apply properties of angles, triangles, quadrilaterals
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Identify and analyze a pattern
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Create and/or use appropriate graphical representations of data • Analyze data and/or answer questions based on displayed data • Calculate mean, median, mode, and range

WEST ALLEGHENY SCHOOL DISTRICT

Subject: CONSUMER MATH



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8A	2.1.8B	2.1.11A	2.3.11B
2.2.11A	2.8.11P	2.3.11A	2.3.8D
2.2.8A	2.9.11E	2.3.8A	2.3.8E
2.2.11B	2.9.11F	2.9.8D	2.9.11C
2.2.11D	2.8.11Q	2.8.11A	2.8.11O
2.6.11A	2.6.8E		

COURSE DESCRIPTION:

The primary goal of this course is to prepare students to be competent consumers in tomorrow's market place. Students participate directly and actively in the decision-making in applying for a job, maintaining a car, buying a home, completing tax returns and investing.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

- Mathematics Connections integrated and applied (Glencoe)

ASSESSMENT:

- Tests
- Projects
- Quizzes

TECHNOLOGY USED:

- Computer lab
- Interactive whiteboard
- Multimedia projector
- Calculators

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

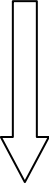
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Consumer Math STRAND: NUMBER AND OPERATIONS

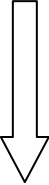
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> perform calculation and conversions using integers, fractions, decimals, and percents. use formulas to perform calculations involving percents, distance, etc. perform conversions of domestic and metric units. solve problems involving exponents. 	<p>M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation).</p> <p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations.</p> <p>M11.A.2.2 Use exponents, roots and/or absolute value to solve problems.</p>	<p>M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).</p> <p>M11.A.2.1.2 Solve problems using direct and inverse proportions.</p> <p>A11.A.2.1.3 Identify and/or use proportional relationships in problem solving settings.</p> <p>M11.A.2.2.2 Simplify/evaluate expressions involving multiplying with exponents (e.g., $x^6 * x^7 = x^{13}$).</p>	<p>2.1.8A 2.1.8B 2.1.11A</p> <p>2.2.11A 2.8.11P</p> <p>2.1.11A</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D</p> <p>3.7.10A 3.1.10E 3.2.10C</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Consumer Math STRAND: NUMBER AND OPERATIONS

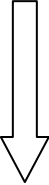
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>5. solve problems involving the correct order of operations.</p> <p>6. estimate sums, differences, products, and quotients.</p>	<p>M11.A.3.1 Apply the order of operations in computation and in problem-solving situations.</p> <p>M11.A.3.2 Use estimation strategies in problem-solving situations.</p>	<p>M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).</p> <p>M11.A.3.2.1 Use estimation to solve problems.</p>	<p>2.2.8A</p> <p>2.2.11B 2.2.11D</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D</p> <p>3.7.10A 3.1.10E 3.2.10C</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Consumer Math STRAND: MEASUREMENT

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> measure and identify angles. calculate volume and surface area of cylinders. identify prisms and pyramids. solve problems involving change in dimension of one aspect of the figure. 	<p>M11.B.2.1 Use and/or compare measurements of angles.</p> <p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system).</p> <p>M11.B.2.3 Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure.</p>	<p>M11.B.2.1.1 Measure and/or compare angles in degrees (up to 360°) (protractor must be provided or drawn).</p> <p>M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.3 Estimate area, perimeter or circumference of an irregular figure.</p> <p>M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.</p> <p>M11.B.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume.</p>	<p>2.3.11A 2.3.11B</p> <p>2.3.8A 2.3.8D</p> <p>2.3.8E</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D</p> <p>3.7.10A 3.1.10E 3.2.10C</p> <div align="center" data-bbox="1837 966 1885 1149">  </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS STRAND: MEASUREMENT

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>(continued)</p> <p>4. solve problems involving change in dimension of one aspect of the figure.</p>	<p>M11.B.2.3 Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure.</p>	<p>M11.B.2.3.1 (continued)</p> <ul style="list-style-type: none"> • How does changing the length of the radius of a circle affect the circumference of the circle? • How does changing the length of the edge of a cube affect the volume of the cube? • How does changing the length of the base of a triangle affect the area of the triangle? 	<p>2.3.8E</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D 3.7.10A 3.1.10E 3.2.10C</p> <p align="center">↓</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

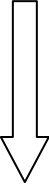
SUBJECT: MATHEMATICS Consumer Math STRAND: GEOMETRY

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> identify properties of a circle. identify and use properties of triangles and quadrilaterals. 	<p>M11.C.1.1 Identify and/or use parts of circles and segments associated with circles.</p> <p>M11.C.1.2 Recognize and/or apply properties of angles, triangles and quadrilaterals.</p>	<p>M11.C.1.1.1 Identify and/or use the properties of a radius, diameter.</p> <p>M11.C.1.2.1 Identify and/or use properties of triangles.</p> <p>M11.C.1.2.2 Identify and/or use properties of quadrilaterals.</p> <p>M11.C.1.2.3 Identify and/or use properties of isosceles and equilateral triangles.</p>	<p>2.9.11F</p> <p>2.9.8D 2.9.11C</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D</p> <p>3.7.10A 3.1.10E 3.2.10C</p> <p align="center">↓</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

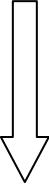
SUBJECT: MATHEMATICS Consumer Math STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. analyze data to find a pattern.</p>	<p>M11.D.1.1 Analyze and/or use patterns or relations.</p>	<p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p>	<p>2.8.11Q 2.8.11A 2.8.11O</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D</p> <p>3.7.10A 3.1.10E 3.2.10C</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Consumer Math STRAND: DATA ANALYSIS/PROBABILITY

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. create graphs that represent a collection of data.</p>	<p>M11.E.1.1 Appropriately display and/or use data in problem-solving settings.</p>	<p>M11.E.1.1.1 Create and/or use appropriate graphical representations of data or scatter plots.</p> <p>M11.E.1.1.2 Analyze data and/or answer questions based on displayed data.</p>	<p>2.6.11A 2.6.8E</p>	<p>1.1.1A,C,F 1.2.11A,B 1.4.11C 1.5.11B 1.6.11A,D,E,F 1.8.11A,D</p> <p>3.7.10A 3.1.10E 3.2.10C</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

**TRIGONOMETRY
PRE-CALCULUS**

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>TRIGONOMETRY/PRE-CALCULUS</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Square roots • LCM and GCF • Irrational and rational • Rates/percents • Proportions • Simplify expressions • Estimation
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Measurement of angles • Surface area, volume, area • Perimeter circumference
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Parts and segments of circles • Properties of numbers • Properties of quadrilaterals • Isosceles and equilateral numbers • Congruent and similar figures • Pythagorean Theorem • Distance and midpoint formula
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Patterns • Functions, domain and range • Solve compound inequalities and graph • Linear equations, (write, solve, graph) • Quadratic equations • Polynomials • Factoring • Slope and y-intercept • Match graphs with equations
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>

WEST ALLEGHENY SCHOOL DISTRICT

Subject: TRIGONOMETRY
PRE-CALCULUS



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8A	2.2.11B	2.9.11C	2.8.11H	2.8.11L
2.1.8B	2.2.11D	2.9.11B	2.8.11J	
2.1.11A	2.3.11A	2.10.11B	2.8.11N	
2.1.8E	2.3.11B	2.9.11G	2.8.11L	
2.2.8C	2.3.8A	2.8.11Q	2.8.11K	
2.2.11A	2.3.8D	2.8.11A	2.8.11S	
2.8.11P	2.3.8E	2.8.11O	2.8.8J	
2.1.11A	2.9.11F	2.8.8F	2.11.8B	
2.2.11B	2.9.8D	2.8.11D	2.8.11J	

COURSE DESCRIPTION:

Continue developing algebraic skills including equations, functions and logarithms, and trigonometric functions including sine, cosine, tangent, secant, cosecant, and cotangent.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Advanced Mathematics, Pre-calculus with Discrete Mathematics and Data Analysis
Publisher: Houghton Mifflin

ASSESSMENT:

- Teacher made test/quizzes
- PSSA

TECHNOLOGY USED:

- TI-81 Graphing calculator

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

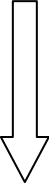
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

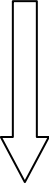
SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: NUMBER AND OPERATIONS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> evaluate expressions/equations involving square roots, fractions, decimals, percents, exponents, and scientific notation. apply GCF and LCM to factor monomials and simplify complex fractions. evaluate expressions involving irrational numbers (π, e) 	<p>M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents, and scientific notation).</p> <p>M11.A.1.2 Apply number theory concepts to show relationships between real numbers in problem solving settings.</p> <p>M11.A.1.3 Estimate the value of an irrational number.</p>	<p>M11.A.1.1.1 Find the square root of an integer to the nearest tenth using either a calculator or estimation.</p> <p>M11.A.1.1.2 Express numbers and/or simplify expressions using scientific notation.</p> <p>M11.A.2.1.2 Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.</p> <p>M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.</p> <p>M11.A.1.3.2 Compare and/or order any real numbers (rational and irrational may be mixed).</p>	<p>2.1.8A 2.1.8B 2.1.11A</p> <p>2.1.8E</p> <p>2.2.8C</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

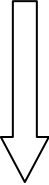
SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: MEASUREMENT

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>4. solve word problems using proportional reasoning.</p> <p>5. evaluate expressions/equations involving exponents, roots, and absolute value.</p>	<p>M11.A.2.1 Apply ratio and/or proportion in problem-solving situations.</p> <p>M11.A.2.2 Use exponents, roots and/or absolute value to solve problems.</p>	<p>M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).</p> <p>M11.A.2.1.2 Solve problems using direct and inverse proportions.</p> <p>M11.A.2.1.3 Identify and/or use proportional relationships in problem solving settings.</p> <p>M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value (may contain all types of real numbers – exponents should not exceed power of 10).</p> <p>M11.A.2.2.2 Simplify/evaluate expression involving multiplying with exponents (e.g. $x^6 * x^7 = x^{13}$), powers of powers (e.g., $(x^6)^7 = x^{42}$) and powers of products $(2x^2)^3 = 8x^6$ (positive exponents only).</p>	<p>2.1.11A</p> <p>2.1.11A</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B 3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: NUMBER AND OPERATIONS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. evaluate expressions/equations involving order of operations.</p> <p>7. apply estimation techniques to solve various word problems.</p>	<p>M11.A.3.1 Apply the order of operations in computation and in problem-solving situations.</p> <p>M11.A.3.2 Use estimation strategies in problem-solving situations.</p>	<p>M11.A.3.1.1 Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).</p> <p>M11.A.3.2.1 Use estimation to solve problems.</p>	<p>2.2.8 A</p> <p>2.2.11B 2.2.11D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: MEASUREMENT

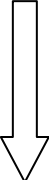
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. evaluate expressions of sin, cos, tan, sec, cot, and csc of angles measured in degrees.</p> <p>2. apply surface area, volume, area, perimeter, and area formulas to functions.</p>	<p>M11.B.2.1 Use and/or compare measurements of angles.</p> <p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversions within the same system.</p>	<p>M11.B.2.1.1 Measure and/or compare angles in degrees (up to 360°) (protractor must be provided or drawn).</p> <p>M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet.</p> <p>M11.B.2.2.3 Estimate/and/ determine area, perimeter or circumference of simple figures or an irregular figure.</p> <p>M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.</p>	<p>2.3.11A 2.3.11B</p> <p>2.3.8 A 2.3.8D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <div align="center" data-bbox="1837 966 1885 1149"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: NUMBER AND OPERATIONS

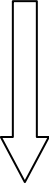
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. observe the changes of one dimension and the effects it has on the outcome written as a function.</p>	<p>M11.B.2.3 Describe how a change in one dimension of a figure (2 or 3 dimensional) affects other measurements of that figure.</p>	<p>M11.B.2.3.1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, area or volume.</p> <ul style="list-style-type: none"> • How does changing the length of the radius of a circle affect the circumference of the circle? • How does changing the length of the edge of a cube affect the volume of the cube? • How does changing the length of the base of a triangle affect the area of the triangle? 	<p>2.3.8E</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B 3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: GEOMETRY

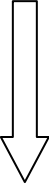
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. calculate arc length and area of a sector using properties of circles.</p> <p>2. apply properties of angles, triangles, and quadrilaterals to solve problems.</p> <p>3. apply similar triangles to right triangles and the triangle ratios.</p>	<p>M11.C.1.1 Identify and/or use parts of circles and segments associated with circles.</p> <p>M11.C.1.2 Recognize and/or apply properties of angles, triangles, and quadrilaterals.</p> <p>M11.C.1.3 Use properties of congruence, correspondence and similarity in problem-solving settings involving two-and three-dimensional figures.</p>	<p>M11.C.1.1.1 Identify and/or use the properties of a radius, diameter chord, and/or tangent secant of a circle (given numbers should be whole).</p> <p>M11.C.1.1.2 Identify and/or use the properties of arcs, semicircles, inscribed angles and/or central angles.</p> <p>M11.C.1.2.1 Identify and/or use properties of triangles (e.g., medians, altitudes, angle bisectors, side/angle relationships, Triangle Inequality Theorem).</p> <p>M11.C.1.2.2 Identify and/or use properties of quadrilaterals (e.g., parallel sides, diagonals, bisectors, congruent sides/angles and supplementary angles).</p> <p>M11.C.1.2.3 Identify and/or use properties of isosceles and equilateral triangles.</p> <p>M11.C.1.3.1 Identify and/or use properties of congruent and similar polygons or solids.</p>	<p>2.9.11F</p> <p>2.9.8D 2.9.11C</p> <p>2.9.11B</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: GEOMETRY

Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>4. apply the Pythagorean Theorem to find the missing side of a right triangle to write the triangle ratios.</p> <p>5. calculate the midpoint and slope and write equations of lines parallel and perpendicular.</p>	<p>M11.C.1.4 Solve problems involving right triangles using the Pythagorean Theorem.</p> <p>M11.C.3.1 Solve problems using analytic geometry.</p>	<p>M11.C.1.4.1 Find the measure of a side of a right triangle using the Pythagorean Theorem (Pythagorean Theorem included on the reference sheet).</p> <p>M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).</p> <p>M11.C.3.1.2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic expressions; slope formula provided).</p>	<p>2.10.11B</p> <p>2.9.11G</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. apply vertical line linear test to see if you have a function, find domain, range, and inverse of a function.</p> <p>2. solve and graph linear inequalities and quadratic equations.</p>	<p>M11.D.1.1 Analyze and/or use patterns or relations.</p> <p>M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.</p>	<p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p> <p>M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.</p> <p>M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).</p> <p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).</p> <p>M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).</p> <p>M11.D.2.1.5 Solve quadratic equations using factoring (integers only – not including completing the square or the Quadratic Formula).</p>	<p>2.8.11Q 2.8.11A 2.8.11O</p> <p>2.8.8F 2.8.11D 2.8.11H 2.8.11J 2.8.11N 2.8.11L 2.8.11K</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <div align="center" data-bbox="1837 966 1885 1149"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: ALGEBRAIC CONCEPTS

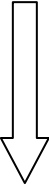
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Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>3. evaluate expressional equations involving simplifying polynomials.</p> <p>4. calculate exponential growth and decay.</p> <p>5. calculate slope of a line and find the inclination based on slope.</p>	<p>M11.D.2.2 Simplify expressions involving polynomials.</p> <p>M11.D.3.1 Describe and/or determine change.</p> <p>M11.D.3.2 Compute and/or use the slope of a line.</p>	<p>M11.D.2.2.1 Add, subtract and/or multiply polynomial expressions (express answers in simple form – nothing larger than a binomial multiplied by a trinomial).</p> <p>M11.D.2.2.2 Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form $ax^2 + bx + c$ where a is not equal to 0).</p> <p>M11.D.2.2.3 Simplify algebraic fractions.</p> <p>M11.D.3.1.1 Identify, describe and/or use constant or varying rates of change.</p> <p>M11.D.3.1.2 Determine how a change in one variable relates to a change in a second variable (e.g., $y=4/x$, if x doubles, what happens to y?).</p> <p>M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).</p> <p>M11.D.3.2.2 Given the graph of the line, 2 points on the line, or the slope of a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.</p>	<p>2.8.11S</p> <p>2.8.8J 2.11.8B</p> <p>2.8.11J 2.8.11L</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <div align="center" data-bbox="1837 966 1885 1149"> </div>

WEST ALLEGHENY SCHOOL DISTRICT


STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Trigonometry/Pre-Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>(continued)</p> <p>5. calculate slope of a line and find the inclination based on slope.</p> <p>6. manipulate the graph of a function based on the rules.</p>	<p>M11.D.3.2 Compute and/or use the slope of a line.</p> <p>M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables.</p>	<p>M11.D.3.2.3 Compute the slope and/or y-intercept represented by a linear equation or graph.</p> <p>M11.D.4.1.1 Match the graph of a given function to its table or equation.</p>	<p>2.8.11J 2.8.11L</p> <p>1.8.11K 2.8.11Q</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

**WEST ALLEGHENY SCHOOL DISTRICT
MATHEMATICS CURRICULUM**

CALCULUS

	<p style="text-align: center;">MAJOR MATH CONCEPTS ADDRESSED AT GRADE LEVEL</p>
<p>Reporting Category</p>	<p style="text-align: center;"><u>CALCULUS</u></p>
<p>Numbers and Operations</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Square roots • Decimals • Fractions (All – use and apply) • Exponents • Irrational numbers
<p>Measurement</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Calculate surface area, volume, area perimeter, circumference
<p>Geometry</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Calculate the distance and midpoint between two points in a coordinate plane
<p>Algebraic Concepts</p>	<p>The following concepts will be covered throughout the school year:</p> <ul style="list-style-type: none"> • Analyze data for pattern • Determine if a relation is a function given a set of points or a graph • Identify the domain, range, or inverse of a function • Solve compound inequalities and graph solution • Identify or graph functions • Write equations given characteristics of the line • Match a graph to its table/equation • Write, solve, apply linear equations • Write/solve systems of equations • Identify/describe/use constant or varying rates of range • Determine how the change in one variable relates to a change in a second variable • Find slope of a line • Compute slope/y-intercept of a linear equation
<p>Data Analysis</p>	<p>The following concepts will be covered throughout the school year:</p> <p style="text-align: center;">N/A</p>

WEST ALLEGHENY SCHOOL DISTRICT

Subject: **CALCULUS**



ACADEMIC STANDARDS FOR MATHEMATICS

ACADEMIC STANDARDS

2.1.8A	2.8.11A	2.8.11J	2.5.11B
2.1.8B	2.8.11O	2.8.11L	2.5.11C
2.1.11A	2.8.11H	2.8.11K	2.5.11D
2.2.8C	2.8.11J	2.8.11Q	2.8.11D
2.3.8A	2.8.11N	2.4.11B	2.8.11S
2.3.8D	2.8.11L	2.4.11C	2.11.11A
2.9.11G	2.8.11K	2.4.11E	2.11.11B
2.8.11Q	2.8.8J	2.5.11A	2.11.11E
	2.11.8B		

COURSE DESCRIPTION:

A college level course on Calculus I. The following topics are covered: Functions (including algebraic, trigonometric, exponential, logarithmic, transcendental); Differentiation, integration; Vectors in a plane (including parametric curves).

Students may take this course for a college credit through the University of Pittsburgh.

BASIC TEXT/PUBLISHER AND INSTRUCTIONAL RESOURCES:

Calculus by Johnson and Mathews
Addison Wesley

ASSESSMENT:

- Tests/quizzes (teacher created)
- AP exam
- PSSA

TECHNOLOGY USED:

- TI-83

MATH COURSE SEQUENCE

MIDDLE SCHOOL/HIGH SCHOOL

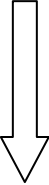
6 th Grade	7 th Grade	8 th Grade	9 th Grade	10 th Grade	11 th Grade	12 th Grade
Pre-algebra	Algebra	Geometry/ Honors Algebra	Algebra II Honors Algebra II/ Honors Geometry/ Geometry	Trig./Stats (Pre- Calculus)	Calculus/ Trig./Pre- Calculus	Calculus II – Algebra III/Trig – Stats. (New Class)
6 th grade math	Pre-algebra	Algebra	Geometry	Algebra II – Honors Algebra II	Stats – Trig.	Stats – Trig.
6 th grade math	Pre-algebra	Algebra I A	Algebra I B- Algebra I, Algebra I CT	Geometry	Algebra II – Consumer Math	Algebra II – Consumer Math
6 th grade enrichment	7 th grade enrichment	Pre-algebra enrichment	Algebra I A- Algebra, Algebra I CT	Algebra I B- Geometry, Algebra I CT	Geometry- Algebra II- Consumer Math	Geometry- Algebra II- Consumer Math

**Additional 12th grade classes will need to be developed to meet the needs of accelerated students.*

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Calculus STRAND: NUMBER AND OPERATIONS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>1. determine $f(c)$ where c is in the decimal form and $f(x)$ is given.</p> <p>2. work problems involving e^x.</p>	<p>M11.A.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, exponents and scientific notation).</p> <p>M11.A.1.3 Estimate the value of an irrational number.</p>	<p>M11.A.1.1.1 Find the square root of an integer to the nearest tenth using either a calculator or estimation.</p> <p>M11.A.1.3.1 Locate/identify irrational numbers at the approximate location on a number line.</p>	<p>2.1.8A 2.1.8B 2.1.11A</p> <p>2.2.8C</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Calculus STRAND: MEASUREMENT

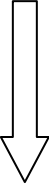
Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. solve applied problems involving finding the volume of a solid of revolution. 2. find the length of a given arc. 3. find area under a curve or area bounded by curves. 4. find the volume of a given solid of revolution . 5. determine the area of a surface of revolution. 6. solve applied problems to determine the area of a surface of revolution. 	<p>M11.B.2.2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, area, surface area and/or volume. (May require conversion within the same system).</p>	<p>M11.B.2.2.1 Calculate the surface area of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet. M11.B.2.2.2 Calculate the volume of prisms, cylinders, cones, pyramids and/or spheres. Formulas are provided on the reference sheet. M11.B.2.2.3 Estimate area, perimeter or circumference of an irregular figure. M11.B.2.2.4 Find the measurement of a missing length given the perimeter, circumference, area or volume.</p>	<p>2.3.8 A 2.3.8 D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B 3.1.10C 3.2.10B 3.7.10A</p> <div align="center" data-bbox="1837 966 1885 1149"> </div>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Calculus STRAND: GEOMETRY


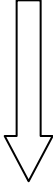
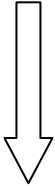
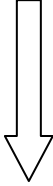
Page 2

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
The student will: 1. find distance or directed distance.	M11.C.3.1 Solve problems using analytic geometry.	M11.C.3.1.1 Calculate the distance and/or midpoint between 2 points on a number line or on a coordinate plane (formula provided on the reference sheet).	2.9.11G	1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B 3.1.10C 3.2.10B 3.7.10A 

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

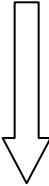
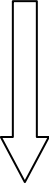
SUBJECT: MATHEMATICS Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> determine if a given function is continuous or discontinuous at points in its domain. determine the inverse of a given function. determine properties of given functions. determine an equation, in given form, for given functions. solve inequalities, determine the intersection of given lines, determine an equation in given form for given functions. 	<p>M11.D.1.1 Analyze and/or use patterns or relations.</p> <p align="center"></p> <p>M11.D.2.1 Write, solve and/or graph linear equations and inequalities using various methods.</p>	<p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p> <p>M11.D.1.1.2 Determine if a relation is a function given a set of points or a graph.</p> <p>M11.D.1.1.3 Identify the domain, range or inverse of a relation (may be presented as ordered pairs or a table).</p> <p align="center"></p> <p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p>M11.D.2.1.3 Write, solve and/or apply a linear equation (including problem situations).</p> <p>M11.D.2.1.4 Write and/or solve systems of equations using graphing, substitution and/or elimination (limit systems to 2 equations).</p>	<p>2.8.11Q 2.8.11A 2.8.11O</p> <p align="center"></p> <p>2.8.8F 2.8.11D 2.8.11H 2.8.11J 2.8.11N 2.8.11L 2.8.11K</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

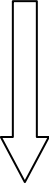
SUBJECT: MATHEMATICS Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>6. determine average rate of change, instantaneous rate of change and solve problems involving exponential growth or decay.</p> <p>7. determine an equation of line tangent to all given curves.</p> <p>8. determine equations of lines when given the characteristics of the lines.</p> <p>9. determine the slope of a line tangent to a given curve.</p> <p>10. determine properties of given functions.</p>	<p>M11.D.3.1 Describe and/or determine change.</p> <p>M11.D.3.2 Compute and/or use the slope of a line.</p> <p align="center"></p> <p>M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs or tables.</p>	<p>M11.D.3.1.1 Identify, describe and/or use constant or varying rates of change.</p> <p>M11.D.3.1.2 Determine how a change in one variable relates to a change in a second variable. (e.g., $y = 4/x$, if x doubles, what happens to y?).</p> <p>M11.D.3.2.1 Apply the formula for the slope of a line to solve problems (formula given on reference sheet).</p> <p>M11.D.3.2.2 Given the graph of line, 2 points on a line, or the slope of a point on a line, write or identify the linear equation in point-slope, standard and/or slope-intercept form.</p> <p>M11.D.3.2.3 Compute the slope and/or y-intercept represented by a linear equation or graph.</p> <p>M11.D.4.1.1 Match the graph of a given function to its table or equation.</p>	<p>2.8.8J 2.11.8B</p> <p>2.8.11J 2.8.11L</p> <p>1.8.11K 2.8.11Q 2.11.11A</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>11. solve related rate problems.</p> <p>12. determine a maximum or minimum value of a given applied maximum/minimum problem.</p> <p>13. solve work problems and hydrostatic force problems.</p> <p>14. establish and verify that a limit is correct or that the limit doesn't exist.</p> <p>15. evaluate given limits.</p> <p>16. determine the first derivative of a given function.</p>			<p>2.5.11A,B,C</p> <p>2.5.11A,B,C 2.11.11A,B</p> <p>2.5.11A,B,C</p> <p>2.4.11B,C,E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D 2.8.11D</p> <p>2.4.11E 2.5.11A,B,C,D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

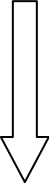
SUBJECT: MATHEMATICS Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>17. determine higher order derivatives of given functions.</p> <p>18. describe the position of a body on a line at time t.</p> <p>19. describe the motion of a point if given the parametric equations of the point.</p> <p>20. determine the critical values of a given function and use to determine intervals of increase/decrease, maximum/minimum values.</p> <p>21. use Newton’s method to estimate a solution of a given equation.</p>			<p>2.4.11E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D</p> <p>2.11.11A,B 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center">↓</p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

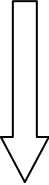
SUBJECT: MATHEMATICS Calculus STRAND: ALGEBRAIC CONCEPTS

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <p>22. evaluate given definite integrals.</p> <p>23. solve differential equations.</p> <p>24. complete a given indefinite integration problem.</p> <p>25. determine the derivative of an inverse function.</p> <p>26. solve problems involving line x.</p> <p>27. solve problems involving functions with other bases.</p>			<p>2.4.11E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D 2.8.11D,S</p> <p>2.4.11E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D</p> <p>2.4.11E 2.5.11A,B,C,D 2.8.11D,S</p> <p>2.4.11E 2.5.11A,B,C,D 2.8.11S</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>

WEST ALLEGHENY SCHOOL DISTRICT

STUDENT OUTCOME STATEMENTS – INDICATOR OF ACHIEVEMENT

SUBJECT: MATHEMATICS Calculus STRAND: DATA ANALYSIS/PROBABILITY

Student Learning Outcomes	Assessment Anchors	Eligible Content	Standards	Related Standards
<p>The student will:</p> <ol style="list-style-type: none"> 1. analyze derivative problems to determine which method or rule to use. 2. analyze related rate problems. 3. analyze applied maximum/minimum problems. 4. analyze area and volume of solid of revolution or area of surface of revolution. 			<p>2.5.11A,B,C</p> <p>2.5.11A,B,C</p> <p>2.11.11A 2.11.11B</p> <p>2.5.11A,B,C</p>	<p>1.1.11C,F 1.2.11A 1.4.11B 1.6.11A,D,E 1.8.11B</p> <p>3.1.10C 3.2.10B 3.7.10A</p> <p align="center"></p>