

Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Fundamentals of Algebra

Time Allotment: 26 days

Unit Sequence: 1

Major Concepts to be learned:

- To evaluate numerical and algebraic expressions. (1-1)
- To write algebraic expressions. (1-2)
- To solve one-step equations and inequalities using addition, subtraction, division, and multiplication. (1-3, 1-4, 1-5)
- To simplify algebraic expressions by combining like terms. (1-6)
- To write solutions of equations in two variables as ordered pairs. (1-7)

Expected Skills to be demonstrated:

- Students will use the order of operations to evaluate both algebraic and numerical expressions.
- Substitutions of values for variables will be used.
- To show the steps necessary to solve one-step equations by using inverse operations and properties of equality.
- To simplify algebraic expressions that contain like terms by applying rules for adding and subtracting like terms.
- Graph ordered pairs and linear equations on the coordinate plane.

PA Standards/Anchors:

Eligible Content:

CC.2.2.7.B.1
CC.2.2.7.B.3
M07.B-E.1
M07.B-E.2

M07.B-E.1.1.1
M07.B-E.2.1.1
M07.B-E.2.2.2
M07.B-E.2.3.1

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Performance task
Hands-on activity	Note Taking
Math Binders	Graphic Calculators

- Math binder
- Test and quizzes
- Open-ended question

Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Integers

Time Allotment: 25 days

Unit Sequence: 2

Major Concepts to be learned:

- Perform the major operations on integers. (2-1, 2-2, 2-3)
- Solve equations and inequalities containing integers. (2-4, 2-5) To graph points and lines on a coordinate plane. (1-8)

Expected Skills to be demonstrated:

- Students will be able to evaluate numerical expressions with integers for addition, subtraction, division, and multiplication.
- Students will solve equations and inequalities involving integers by applying the properties of equality.

PA Standards/Anchors:

Eligible Content:

CC.2.1.7.E.1
M07.A-N.1

M07.A-N.1.1.1
M07.A-N.1.1.2
M07.A-N.1.1.3

Instructional Strategies:

Assessments:

Problem solving activities
Group discussion
Hands-on activity
Summarizing

Lecture
Calculators
Note Taking
Math Binders

- Math binder
- Test and quizzes
- Open-ended question

Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Real Number Systems

Time Allotment: 18 days

Unit Sequence: 3

Major Concepts to be learned:

- To write rational numbers in equivalent forms. (3-1)
- Perform the basic operations on real numbers. (3-2, 3-3, 3-4, 3-5)

Expected Skills to be demonstrated:

- Students will perform the operations of addition, subtraction, division, and multiplication, with decimals and fractions (both like/unlike denominators and mixed numbers).
- Students will use the properties of equality to solve equations and inequalities containing rational numbers.

PA Standards/Anchors:

Eligible Content:

CC.2.1.7.E.1
M07.A-N.1

M07.A-N.1.1.1
M07.A-N.1.1.2
M07.A-N.1.1.3

Instructional Strategies:

Assessments:

Problem solving activities
Group discussion
Note Taking
Evaluating
Graphic Calculators

Lecture
Hands-on activity
Graphic organizers
Math Binders

- Math binder
- Test and quizzes
- Open-ended question

Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Statistics & Data Analysis

Time Allotment: 11 days

Unit Sequence: 4

Major Concepts to be learned:

- Collect and analyze data. (4-1, 4-2)
- Determine the measures of central tendency. (4-3)
- Determine the measures of variance. (4-4)
- Display data in various graphical forms. (4-5)
- Examine misleading statistics. (4-6)

Expected Skills to be demonstrated:

- Collect data and determine/construct an appropriate graphical display.
- Determine mean, median, and mode for a given set of data and determine which is most reflective for the dataset.
- Calculate quartiles and the range for a given data set.
- Be able to explain how a graphical display is misleading.
- Determine from a given set of data, what type of relationship exists, if any, and use that data to make predictions.

PA Standards/Anchors:

Eligible Content:

CC.2.4.7.B.1 CC.2.4.7.B.2 M07.D-S.1 M07.D-S.2	M07.D-S.1.1.1 M07.D-S.1.1.2 M07.D-S.2.1.1
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Instructional Strategies:

Assessments:

Cooperative groups Lecture Performance task Hands-on activity Charting Evaluating Graphic Calculators	Problem solving activities Group discussion Written work Note Taking Summarizing Math Binders	<ul style="list-style-type: none">• Math binders• Test, quizzes, and project (using a given data set)• Open-ended questions
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Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Basic Geometry

Time Allotment: 13 days

Unit Sequence: 5

Major Concepts to be learned:

- Basic identification and notation for points, lines, planes, and angles. (5-1)
- Identification and application of angle relationships that arise from lines that are parallel or perpendicular. (5-2)
- Identification of polygons and examination of similarities and differences among triangles and quadrilaterals. (5-3, 5-4)

Expected Skills to be demonstrated:

- Measure angles using a protractor and classify what type of angle it is.
- Given two parallel lines, a transversal, and an angle, determine the measurements for all other angles.
- Classify triangles according to sides and angles.

PA Standards/Anchors:

Eligible Content:

CC.2.3.7.A.2
M07.C-G.1

M07.C-G.1.1.1
M07.C-G.1.1.2
M07.C-G.1.1.3
M07.C-G.1.1.4

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Performance task
Written work	Hands-on activity
Note Taking	Math Binders

- Multiple projects
- Math binders
- Test and quizzes
- Lesson activities that allow for student exploration

Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Perimeter/Area/Volume

Time Allotment: 12 days

Unit Sequence: 6

Major Concepts to be learned:

- Use and apply perimeter/area formulas for triangles and quadrilaterals. (6-1, 6-2)
- Find area and circumference of circles. (6-4)
- Find volume and surface area of solids. (6-6, 6-7, 6-8, 6-9, 6-10)

Expected Skills to be demonstrated:

- To find the area for triangles, trapezoids, rectangles, and parallelograms.
- To find the perimeter for triangles, trapezoids, rectangles, and parallelograms.
- To determine the effect on perimeter and area when making changes to the original dimensions.
- To calculate the circumference and area for circles.
- To determine the effect on circumference and area of a circle when making changes to the radius or diameter.
- To calculate volume and surface area for three-dimensional solids.
- To examine the effects of changing a given measurement on the new volume/surface area when compared to the original.

PA Standards/Anchors:

Eligible Content:

CC.2.3.7.A.1	M07.C-G.1.1.1	M07.C-G.2.2.1
CC.2.3.7.A.2	M07.C-G.1.1.2	M07.C-G.2.2.2
M07.C-G.1	M07.C-G.1.1.3	M07.C-G.2.1.1
M07.C-G.2	M07.C-G.1.1.4	M07.C-G.2.1.2

Instructional Strategies:

Assessments:

Problem solving activities Group discussion Hands-on activity Evaluating Graphic Calculators	Lecture Performance task Note Taking Math Binders	<ul style="list-style-type: none">• Multiple projects• Math Binders• Tests and quizzes• Student lesson exploration activities
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Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Ratios/Rates/Proportions

Time Allotment: 11 days

Unit Sequence: 7

Major Concepts to be learned:

- To understand and use the concepts of ratio and proportion. (7-1, 7-2)
- To use ratios to convert from one unit to another. (7-3)
- To setup and solve proportions. (7-4)
- To apply ratio and proportion to similar figures, dilations, and scale models. (7-5, 7-6, 7-7, 7-8)

Expected Skills to be demonstrated:

- To determine if ratios are equivalent.
- To express ratios as rates and units.
- To use proportions to solve for unknown values.
- To use the concept of proportionality to find dilations.
- Use similar figures to determine the unknown values.
- To convert from scale to actual and actual to scale.

PA Standards/Anchors:

Eligible Content:

CC.2.1.7.D.1 M07.A-R.1	M07.A-R.1.1.1 M07.A-R.1.1.2 M07.A-R.1.1.3	M07.A-R.1.1.4 M07.A-R.1.1.5 M07.A-R.1.1.6
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Instructional Strategies:

Assessments:

Cooperative groups Lecture Performance task Oral presentation Math Binders	Problem solving activities Group discussion Hands-on activity Note Taking Graphic Calculators	<ul style="list-style-type: none">• Tests and quizzes• Math binders• Scale model project in 2 and 3 dimensions
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Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Percent

Time Allotment: 24 days

Unit Sequence: 8

Major Concepts to be learned:

- To convert among fractions, decimals, and percent. (8-1)
- To find the rate, base, or percentage based on given information. (8-2, 8-3, 8-4)
- To estimate with percent. (8-5)
- To apply applications of percent of change to solve a variety of percentage situations. (8-6, 8-7)

Expected Skills to be demonstrated:

- To solve problems involving tax, discount, tips, and commission.
- To find a percent one number is of another number.
- To find a number when a percent is known.

PA Standards/Anchors:

Eligible Content:

CC.2.1.7.D.1 M07.A-R.1	M07.A-R.1.1.1 M07.A-R.1.1.2 M07.A-R.1.1.3	M07.A-R.1.1.4 M07.A-R.1.1.5 M07.A-R.1.1.6
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Instructional Strategies:

Assessments:

Cooperative groups Lecture Hands-on activity Math Binders	Problem solving activities Group discussion Note Taking Graphic Calculators	<ul style="list-style-type: none">• Tests and quizzes• Math binders
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Grade level: 7th

Course Title: Pre-Algebra A

Topic/Concept: Probability

Time Allotment: 10 days

Unit Sequence: 9

Major Concepts to be learned:

- Find the probability of an event by using the definition of probability. (9-1)
- Define, determine, and differentiate between experimental and theoretical probability. (9-2, 9-3, 9-4)
- Find the number of possible outcomes in an experiment. (9-5)
- Find permutations and combinations. (9-6)
- Define and determine probabilities for independent and dependent events. (9-7)
- Convert between probabilities and odds. (9-8)

Expected Skills to be demonstrated:

- Find the experimental and theoretical probabilities for particular events.
- Determine the number of arrangements of objects by determining if the situation is a combination or permutation.
- Use the Fundamental Counting Principle to determine how many possibilities there are.
- Determine the probability for independent and dependent events.
- Convert from odds to probability and probability to odds.

PA Standards/Anchors:

Eligible Content:

CC.2.4.7.B.3 M07.D-S.3	M07.D-S.3.1.1 M07.D-S.3.2.1 M07.D-S.3.2.2 M07.D-S.3.2.3
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Instructional Strategies:

Assessments:

Cooperative groups Lecture Tests & quizzes Math Binders	Problem solving activities Hands-on activity Note Taking Graphic Calculators	<ul style="list-style-type: none">• Math Binders• Tests & Quizzes• Probability Project
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