

Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Integers

Time Allotment: 26 days

Unit Sequence: 1

Major Concepts to be learned:

- Evaluate expressions involving exponents. (2-6, 2-7, 2-8)
- Express numbers in scientific and standard form. (2-9)

Expected Skills to be demonstrated:

- Students will evaluate problems with negative and positive bases and exponents.

PA Standards/Anchors:

Eligible Content:

CC.2.2.8.B.1
M08.B-E.1

M08.B-E.1.1.1
M08.B-E.1.1.2
M08.B-E.1.1.3
M08.B-E.1.1.4

Instructional Strategies:

Assessments:

Problem solving activities	Lecture
Group discussion	Calculators
Hands-on activity	Note Taking
Summarizing	Math Binders

- Math binders
- Test and quizzes
- Open-ended questions

Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Real Number Systems

Time Allotment: 24 days

Unit Sequence: 2

Major Concepts to be learned:

- Solve equations and inequalities containing real numbers. (3-6, 3-7)
- Evaluate expressions containing squares and square roots. (3-8, 3-9)
- Determine if a number is rational or irrational. (3-10)

Expected Skills to be demonstrated:

- Students will use the properties of equality to solve equations and inequalities containing rational numbers.
- Students will be able to identify perfect squares and calculate the square root.
- Students will be able to locate on a number line an approximated value for an irrational number.
- Students will approximate the square root of a non-perfect square to the nearest tenth.

PA Standards/Anchors:

Eligible Content:

CC.2.1.8.E.1
CC.2.1.8.E.4
M08.A-N.1

M08.A-N.1.1.1
M08.A-N.1.1.2
M08.A-N.1.1.3
M08.A-N.1.1.4
M08.A-N.1.1.5

Instructional Strategies:

Assessments:

Problem solving activities	Lecture
Group discussion	Hands-on activity
Note Taking	Graphic organizers
Evaluating	Math Binders
Graphic Calculators	

- Math binders
- Test and quizzes
- Open-ended questions

Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Statistics & Data Analysis

Time Allotment: 16 days

Unit Sequence: 3

Major Concepts to be learned:

- Collect and analyze data. (4-1, 4-2)
- Display data in various graphical forms. (4-5)
- Analyze and interpret bivariate data displayed in multiple representations. (Ext.)
- Understand that patterns of association can be seen in bivariate data by displaying frequencies and relative frequencies in a two-way table. (Ext.)
- To determine a line of best fit given data and from a scatter plot. (4-7 and 11-7)

Expected Skills to be demonstrated:

- Collect data and determine/construct an appropriate graphical display.
- 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.
- Construct and interpret scatterplots for bivariate measurement data to investigate patterns of association between two quantities
- Identify a line of best fit when appropriate.
- Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.
- Apply the concept of slope to direct variation. Representation of linear functions in various forms.

PA Standards/Anchors:

Eligible Content:

CC.2.4.8.B.1
CC.2.4.8.B.2
M08.D-S.1

M08.D-S.1.1.1
M08.D-S.1.1.2
M08.D-S.1.1.3
M08.D-S.1.2.1

Instructional Strategies:

Assessments:

Cooperative groups	Problem solving activities
Lecture	Group discussion
Performance task	Written work
Hands-on activity	Note Taking
Charting	Summarizing
Evaluating	Math Binders
Graphic Calculators	

- Math binders
- Test, quizzes, and project (using a given data set)
- Open-ended questions

Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Basic Geometry

Time Allotment: 8 days

Unit Sequence: 4

Major Concepts to be learned:

- Determine congruence relationships between two figures. (5-6)
- Apply transformations to geometric figures. (5-7)
- Recognize, use, and apply types of symmetry. (5-8)

Expected Skills to be demonstrated:

- Determine if two figures are congruent or similar based on given information and definition of congruence.
- Discuss the relationship among quadrilaterals and describe what makes them different.
- Use rotational and line symmetry.
- Use symmetry to perform transformations of polygons.

PA Standards/Anchors:

Eligible Content:

CC.2.3.8.A.2
M08.C-G.1

M08.C-G.1.1.1
M08.C-G.1.1.2
M08.C-G.1.1.3
M08.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: 8th

Course Title: Pre-Algebra B

Topic/Concept: Perimeter/Area/Volume

Time Allotment: 8 days

Unit Sequence: 5

Major Concepts to be learned:

- Use the Pythagorean Theorem to solve for unknown values of a right triangle. (6-3)
- Find volume and surface area of solids. (6-6, 6-7, 6-8, 6-9, 6-10)

Expected Skills to be demonstrated:

- Use the Pythagorean Theorem to find an unknown measure when given the other two.
- Apply the Pythagorean Theorem in problem solving applications.
- 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.2.3.8.A.1
CC.2.3.8.A.3
M08.C-G.2
M08.C-G.3

M08.C-G.2.1.1
M08.C-G.2.1.2
M08.C-G.2.1.3
M08.C-G.3.1.1

Instructional Strategies:

Assessments:

Problem solving activities	Lecture
Group discussion	Performance task
Hands-on activity	Note Taking
Evaluating	Math Binders
Graphic Calculators	

- Multiple projects
- Math Binders
- Tests and quizzes
- Student lesson exploration activities

Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Equations

Time Allotment: 31 days

Unit Sequence: 6

Major Concepts to be learned:

- Solve two-step equations. (10-1)
- Solve multi-step equations. (10-2)
- Solve equations with variables on both sides of the equals sign. (10-3)
- Solve two-step inequalities and graph the solutions of an inequality on the number line. (10-4)
- Solve an equation for a variable. (10-5)

Expected Skills to be demonstrated:

- Write or state a rule of a function.
- Match a written situation to its numeric/algebraic expression.
- Apply the concept of slope to direct variation. Representation of linear functions in various forms.
- To graph linear functions using tables, slope, & y-intercept, and x- and y-intercepts.
- Use linear functions to solve real life applications.
- Make observations/predictions based on given data and determine any relationship between two sets of data.

PA Standards/Anchors:

Eligible Content:

CC.2.2.8.B.3 M08.B-E.3	M08.B-E.3.1.1 M08.B-E.3.1.2 M08.B-E.3.1.3 M08.B-E.3.1.4 M08.B-E.3.1.5
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Instructional Strategies:

Assessments:

Cooperative groups Lecture Student Journals Note Taking Evaluating Graphic Calculators	Problem solving activities Performance task Hands-on activity Summarizing Math Binders	<ul style="list-style-type: none">• Quizzes and tests• Math binders• Open-ended question• Linear graphing activities with & without a graphing calculator
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Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Graphing Linear Equations

Time Allotment: 32 days

Unit Sequence: 7

Major Concepts to be learned:

- Identify and graph linear functions using various methods (tables, graphs, intercepts, and relations). (11-1)
- Find rates of change and slope and discuss their relationships. (11-2)
- To write linear equations in 2 forms: slope-intercept and standard form. (11-3, 11-4)
- Apply transformations to linear equations and discuss the effects of changing the slope and y-intercepts. (11-3)
- Recognize direct variation by graphing tables of data and checking for constant ratios.

Expected Skills to be demonstrated:

- Write or state a rule of a function.
- Match a written situation to its numeric/algebraic expression.
- To graph linear functions using tables, slope, & y-intercept, and x- and y-intercepts.
- Use linear functions to solve real life applications.
- Make observations/predictions based on given data and determine any relationship between two sets of data.
- Apply the concept of slope to direct variation. Representation of linear functions in various forms.

PA Standards/Anchors:

Eligible Content:

CC.2.2.8.B.2
CC.2.2.8.C.2
M08.B-E.2
M08.B-F.2

M08.B-E.2.1.1
M08.B-E.2.1.2
M08.B-E.2.1.3
M08.B-F.2.1.1
M08.B-F.2.1.2

Instructional Strategies:

Assessments:

Cooperative groups Lecture Student Journals Note Taking Evaluating Graphic Calculators	Problem solving activities Performance task Hands-on activity Summarizing Math Binders
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- Quizzes and tests
- Math binders
- Open-ended question
- Linear graphing activities with & without a graphing calculator

Grade level: 8th

Course Title: Pre-Algebra B

Topic/Concept: Sequences & Functions

Time Allotment: 8 days

Unit Sequence: 8

Major Concepts to be learned:

- Examine patterns of numbers to determine what, if any, pattern exists. (12-1, 12-2, 12-3)
- To discuss/define function and look at different types of functions. (12-4, 12-5, 12-6, 12-7, 12-8)
- To apply specific functions in their appropriate context. (12-4, 12-5, 12-6, 12-7, 12-8) Solve systems of equations. (10-6)

Expected Skills to be demonstrated:

- To determine whether a pattern of numbers is an arithmetic, geometric, or some other type of sequence.
- To complete an x/y table of values for various functions: linear, quadratic, and exponential.
- To graph functions by completing a table. Using a graph, determine what general type of function is displayed.

PA Standards/Anchors:

Eligible Content:

CC.2.2.8.C.1
M08.B-F.1

M08.B-F.1.1.1
M08.B-F.1.1.2
M08.B-F.1.1.3

Instructional Strategies:

Assessments:

Cooperative groups
Lecture
Hands-on activity
Evaluating
Graphic Calculators

Problem solving activities
Group discussion
Note Taking
Math Binders

- Tests and quizzes
- Math binders
- Graphing activities using the graphing calculator