Pequea Valley School District
Math

Course: 7th Grade Pre-Algebra **Grade**: 7th

Unit: Ratios and Proportional Relationships

Unit Essential Question: How can you use mathematics to describe change and model real-world situations?

CONCEPT	CONCEPT	CONCEPT	CONCEPT
Unit Rates	**Proportional / Nonproportional Relationships**	**Constant Rate of Change / Slope**	**Percents**
VOCABULARY	**VOCABULARY**	**VOCABULARY**	**VOCABULARY**
complex fraction (Lesson 2) dimensional analysis (Lesson 3) rate (Lesson 1) unit rate (Lesson 1) unit ratio (Lesson 3)	coordinate plane (Lesson 5) cross products (Lesson 6) equivalent ratios (Lesson 4) nonproportional (Lesson 4) proportion (Lesson 6) proportional (Lesson 4) ordered pair (Lesson 5) origin (Lesson 5) quadrants (Lesson 5) *x*-axis (Lesson 5) *x*-coordinate (Lesson 5) *y*-axis (Lesson 5) *y*-coordinate (Lesson 5)	proportionality (Lesson 9) constant rate of change (Lesson 7) constant of variation (Lesson 9) direct variation (Lesson 9) rate of change (Lesson 7) slope (Lesson 8)	discount (Lesson 7) gratuity (Lesson 6) markdown (Lesson 7) markup (Lesson 6) percent equation (Lesson 4) percent error (Lesson 5) percent of change (Lesson 5) percent of decrease (Lesson 5) percent of increase (Lesson 5) percent proportion (Lesson 3) principal (Lesson 8) sales tax (Lesson 6) selling price (Lesson 6) simple interest (Lesson 8) tip (Lesson 6)

KNOW	KNOW	KNOW	KNOW
• Unit Rates • Complex Fractions • Convert Unit Rates • Dimensional Analysis	• Proportional and Nonproportional relationships • Proportional relationships on graphs.	• Identify constant rates of change. • Slope • Direct variations	• Percent of a Number • Percent Proportions • Percent Equation • Percent increase and decrease • Sales, tax, tips, and markups • Discounts • Simple Interest
UNDERSTAND	**UNDERSTAND**	**UNDERSTAND**	**UNDERSTAND**
• The process of how to find unit rates. • How to simplify complex fractions. • Convert rates using unit rates and dimensional analysis.	• How to identify proportional and nonproportional relationships. • Identify proportional relationships by graphing on a coordinate plane. • How to use proportions to solve problems.	• Represent and identify constant rates of change. • Identify slope using tables and graphs. • Use direct variation to solve problems.	• Find the percent of a number. • Estimate the percent of a number. • Solve problems involving percents by using the percent proportion. • Solve problems involving percent increase and percent decrease. • Solve problems involving financial literacy. • Solve problems involving discount. • Solve problems involving simple interest..
LEARNING OUTCOME	**LEARNING OUTCOME**	**LEARNING OUTCOME**	**LEARNING OUTCOME**
• Learners will be able to find unit rates in real-world situations. • Learners will be able to simplify complex fractions and find unit rates. • Learners will be able to use dimensional analysis to convert units of measure.	• Learners will be able to simplify and compare ratios and rates to identify proportional and nonproportional relationships. • Learners will be able to graph ratios and rates to identify proportional and nonproportional relationships. • Learners will be able to use ratios and rates to write and solve proportions.	• Learners will be able to use tables and graphs to find constant rates of change. • Learners will be able to use tables and graphs to find the slope of a line. • Learners will be able to use tables, graphs, and equations to determine if a situation represents a direct variation.	• Learners will be able to solve problems involving percent of a number. • Learners will be able to estimate the percent of a number using fractions and decimals. • Learners will be able to use the percent proportion to solve problems involving percents. • Learners will be able to solve problems involving percent of change and percent error. • Learners will be able to solve problems involving sales tax, tips,

			and markup. ● The learners will be able to solve problems involving percent of discount. ● The learners will be able to solve problems involving simple interest..

Pa Core Standards:

CC.2.1.7.D.1- Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

Assessments: Unit Assessment

Pacing: 34 days (including assessment)

Resources: Schoology, McGraw-Hill/Glencoe Math, ALEKS, Get More Math

Pequea Valley School District
Math

Course: 7th Grade Pre-Algebra **Grade**: 7th

Unit 2: Number System

Unit Essential Question: How can mathematical ideas be represented?

CONCEPT
Integers
VOCABULARY
absolute value (Lesson 1) additive inverse (Lesson 2) graph (Lesson 1) integer (Lesson 1) negative integer (Lesson 1) opposites (Lesson 2) positive integer (Lesson 1) zero pair (Inquiry Lab before Lesson 2)
KNOW
• Integers • Absolute Value • Operations with Integers(+,-,x,÷)

CONCEPT
Rational Numbers
VOCABULARY
bar notation (Lesson 1) common denominator (Lesson 2) least common denominator (Lesson 2) rational number (Lesson 2) repeating decimal (Lesson 1) terminating decimal (Lesson 1)
KNOW
• Terminating and Repeating Decimals • Compare and Order Rational Numbers

CONCEPT
Fractions
VOCABULARY
like fractions (Lesson 3) unlike fractions (Lesson 4)
KNOW
• Add/Subtract Like and Unlike Fractions • Add and Subtract Mixed Numbers • Multiply/Divide Fractions • Converting Between Systems

UNDERSTAND	UNDERSTAND	UNDERSTAND
• How to read and write integers, and find the absolute value of an integer. • How to perform operations with integers. (Add, Subtract, Multiply, Divide)	• How to write fractions as terminating or repeating decimals. • How to write decimals as fractions. • How to compare and order rational numbers.	• How to add and subtract rational numbers, expressed as like fractions. • How to add and subtract fractions with unlike denominators. • How to add and subtract mixed numbers. • How to multiply fractions and mixed numbers. • How to convert units of measure between the customary and metric systems. • How to divide fractions and mixed numebrs.
LEARNING OUTCOME	**LEARNING OUTCOME**	**LEARNING OUTCOME**
• Learners will be able to evaluate expressions involving absolute values. • Learners will be able to add integers with the same sign and with different signs. • Learners will be able to subtract integers with the same sign and different signs. • Learners will be able to multiply integers with the same sign and different signs. • Learners will be able to divide integers with the same and different signs.	• Learners will write rational numbers as decimals and fractions. • Learners will compare and order rational numbers by writing them in the same form.	• Learners will be able to add and subtract fractions with like denominators. • Learners will be able to add and subtract fractions with unlike denominators. • Learners will be able to add and subtract mixed numbers. • Learners will multiply fractions and mixed numbers. • Learners will be able to convert between measurement systems. • Learners will be able to divide fractions and mixed numbers.

Pa Core Standards:

CC.2.1.7.E.1-Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Assessments: Unit Assessment

Pacing: 31 days (including assessment)

Resources: Schoology, McGraw-Hill/Glencoe Math, ALEKS, Get More Math

Pequea Valley School District
Math

Course: 7th Grade Pre-Algebra **Grade**: 7th

Unit: Expressions and Equations

Unit Essential Question: How can you communicate mathematical ideas effectively?

CONCEPT
Algebraic Expressions
VOCABULARY
algebra (Lesson 1) algebraic expression (Lesson 1) coefficient (Lesson 1) constant (Lesson 5) define a variable (Lesson 1) factor (Lesson 8) factored form (Lesson 8) like terms (Lesson 5) linear expression (Lesson 6) monomial (Lesson 8) simplest form (Lesson 5) term (Lesson 5) variable (Lesson 1)

CONCEPT
Properties of Operations
VOCABULARY
Additive Identity Property (Lesson 3) arithmetic sequence (Lesson 2) Associative Property (Lesson 3) Commutative Property (Lesson 3) counterexample (Lesson 3) Distributive Property (Lesson 4) equivalent expressions (Lesson 4) Multiplicative Identity Property (Lesson 3) Multiplicative Property of Zero (Lesson 3) property (Lesson 3) sequence (Lesson 2)

CONCEPT
Equations
VOCABULARY
Addition Property of Equality (Lesson 1) coefficient (Lesson 2) Division Property of Equality (Lesson 2) equation (Lesson 1) equivalent equation (Lesson 1) Multiplication Property of Equality (Lesson 2) Multiplication Property of solution (Lesson 1) Subtraction Property of Equality (Lesson 1) Subtraction Property of two-step equation (Lesson 4)

CONCEPT
Inequalities
VOCABULARY
Addition Property of Inequality (Lesson 6) Division Property of Inequality (Lesson 7) inequality (Lesson 6) Inequality (Lesson 7) Inequality (Lesson 6) two-step inequality (Lesson 8)

KNOW	KNOW	KNOW	KNOW
• Algebraic Expressions • Linear Expressions • Factor Linear Expressions	• Sequences • Properties of Operations • Distributive Property	• One-Step Equations • Solve Equations with Rational Coefficients • Two-Step Equations	• Solve Inequalities • Solve Two-Step Inequalities
UNDERSTAND	**UNDERSTAND**	**UNDERSTAND**	**UNDERSTAND**
• Evaluate simple algebraic expressions. • Simplify algebraic expressions. • Learners will be able to simplify algebraic expressions with more than two terms by combining like terms. • Add and subtract linear expressions. • Read and write integers, and find the absolute value of an integer.	• Describe the relationships and extend terms in arithmetic sequences. • Identify and use mathematical properties to simplify algebraic expressions. • Apply the Distributive Property to rewrite algebraic expressions.	• Solve addition and subtraction equations. • Solve one-step multiplication and division equations. • Solve one-step equations with rational coefficients. • Solve two-step equations.	• Solve inequalities by using Addition, Subtraction, Multiplication, and Division Properties of Inequality. • Model and solve two-step inequalities and represent the solution on the number line.
LEARNING OUTCOME	**LEARNING OUTCOME**	**LEARNING OUTCOME**	**LEARNING OUTCOME**
• Learners will be able to evaluate algebraic expressions given values for the variables. • Learners will be able to simplify algebraic expressions with more than two terms by combining like terms. • Learners will be able to add and subtract linear expressions with more than two terms by combining like terms. • Learners will be able to use the distributive property to factor the GCF out of a sum or difference.	• Learners will be able to evaluate expressions involving absolute values. • Learners will be able to use mathematical properties to simplify algebraic expressions. • Learners will be able to use the Distributive Property to simplify algebraic expressions.	• Learners will be able to write and solve one-step linear equations. • Learners will be able to solve equations with rational coefficients. • Learners will be able to solve two-step equations.	• Learners will be able to solve one-step addition, subtraction, multiplication, and division inequalities. • Learners will be able to model and solve two-step inequalities.

Pa Core Standards:

CC.2.2.7.B.1

Apply properties of operations to generate equivalent expressions.

CC.2.2.7.B.3

Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

Assessments: Unit Assessment

Pacing: 37 days (including assessment)

Resources: Schoology, McGraw-Hill/Glencoe Math, ALEKS, Get More Math

Pequea Valley School District
Math

Course: 7th Grade Pre-Algebra **Grade**: 7th

Unit: Geometry

Unit Essential Question: How can you use different measurements to solve real-life problems?

CONCEPT
Geometric Figures
VOCABULARY
acute angle (Lesson 1) acute triangle (Lesson 3) adjacent angles (Lesson 1) base (Lesson 6) complementary angles (Lesson 2) cone (Lesson 6) congruent (Lesson 1) congruent segments (Lesson 3) coplanar (Lesson 6) cross section (Lesson 6) cylinder (Lesson 6) diagonal (Lesson 6) edge (Lesson 6) equilateral triangle (Lesson 3) face (Lesson 6) isosceles triangle (Lesson 3) obtuse angle (Lesson 1) obtuse triangle (Lesson 3)

CONCEPT
Measure Figures
VOCABULARY
center (Lesson 1) circle (Lesson 1) circumference (Lesson 1) composite figure (Lesson 3) diameter (Lesson 1) lateral face (Lesson 5) lateral surface area (Lesson 7) pi (Lesson 1) radius (Lesson 1) regular pyramid (Lesson 7) semicircle (Lesson 2) slant height (Lesson 7) surface area (Lesson 6) volume (Lesson 4)

plane (Lesson 6)
polyhedron (Lesson 6)
prism (Lesson 6)
pyramid (Lesson 6)
right angle (Lesson 1)
right triangle (Lesson 3)
scale (Lesson 4)
scale drawing (Lesson 4)
scale factor (Lesson 4)
scale model (Lesson 4)
scalene triangle (Lesson 3)
skew line (lesson 6)
straight angle (Lesson 1)
supplementary angles (Lesson 2)
triangle (Lesson 3)
vertex (Lessons 1 and 6)
vertical angles (Lesson 1)

KNOW

- Classifying Angles
- Complementary and Supplementary Angles
- Triangle Properties
- Scale Drawings
- Drawing 3D Figures
- Cross Sections
- Triangle Inequality Theorem

UNDERSTAND

- How to classify angles and identify vertical and adjacent angles.
- How to identify pairs of complementary and supplementary angles.
- How to identify and classify triangles and find missing angle measures.
- How to solve problems involving scale drawings.
- How to draw three-dimensional figures

KNOW

- Circumference
- Area of Circles
- Area of Composite Figures
- Volume of Prisms
- Surface Area of Prisms

UNDERSTAND

- How to find the circumference of circles.
- How to find the area of circles.
- How to find the area of composite figures.
- How to find the volume of prisms.
- How to find the surface area of prisms.

given the top, side, and front views. • How to identify and draw three-dimensional figures. • How to use the Triangle Inequality Theorem to determine if given measures make a triangle.	
LEARNING OUTCOME	**LEARNING OUTCOME**
• Learners will identify and classify different types of angles. • Learners will be able to identify complementary and supplementary angles and find missing angle measures. • Learners will be able to classify different types of triangles and find missing angle measures in triangles. • Learners will be able to solve real-world problems involving scale drawings. • Learners will be able to draw different views of 3-D figures. • Learners will be able to name parts of three-dimensional figures and identify the shape of a cross section of the figure. • Learners will be able to use the Triangle Inequality Theorem to determine if given measures make a triangle.	• Learners will find the circumference of circles given the radius or diameter. • Learners will find the area of circles given the radius or diameter. • Learners will find the area of composite figures. • Learners will find the volume of prisms. • Learners will find the lateral area and total surface area of prisms.

Pa Core Standards:

CC.2.3.7.A.2

Visualize and represent geometric figures and describe the relationships between them.

CC.2.3.7.A.1

Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Assessments: Unit Assessment

Pacing: 36 days (including assessment)

Resources: Schoology, McGraw-Hill/Glencoe Math, ALEKS, Get More Math

Pequea Valley School District
Math

Course: 7th Grade Pre-Algebra **Grade**: 7th

Unit: Statistics and Probability

Unit Essential Question: **Why is learning mathematics important?**

CONCEPT
Probability
VOCABULARY
complementary events (Lesson 1)
compound event (Lesson 3)
dependent events (Lesson 7)
experimental probability (Lesson 2)
fair (Inquiry Lab before Lesson 3)
Fundamental Counting Principle (Lesson 5)
independent events (Lesson 7)
outcome (Lesson 1)
permutation (Lesson 6)
probability (Lesson 1)
random (Lesson 1)
relative frequency (Inquiry Lab before Lesson 2)
sample space (Lesson 3)
simple event (Lesson 1)
simulation (Lesson 4)
theoretical probability (Lesson 2)
tree diagram (Lesson 3)
uniform probability model (Lesson 2)
unfair (Inquiry Lab before Lesson 3)

CONCEPT
Statistics
VOCABULARY
biased sample (Lesson 2)
convenience sample (Lesson 2)
double box plot (Lesson 4)
double dot plot (Lesson 4)
population (Lesson 1)
sample (Lesson 1)
simple random sample (Lesson 2)
statistics (Lesson 1)
survey (Lesson 1)
systematic random sample (Lesson 2)
unbiased sample (Lesson 2)
voluntary response sample (Lesson 2)

KNOW

- Probability of Simple Events
- Theoretical and Experimental Probability
- Probability of Compound Events
- Simulations
- Fundamental Counting Principle
- Permutations
- Independent and Dependent Events

UNDERSTAND

- Find the probability of a simple events and its complement.
- Find and compare experimental and theoretical probabilities.
- Find the probabilities of compound events.
- Perform probability simulations to model real-world situations involving uncertainty.
- Use multiplication to count the number of outcomes and find probabilities.
- Find the number of permutations of set of objects and find probabilities.
- Find the probability of independent and dependent events.

LEARNING OUTCOME

- Learners will be able to find the probability of simple events and compound event.
- Learners will be able to find experimental and theoretical probabilities related to simple and compound events.
- Learners will be able to find theoretical probabilities related to compound events using sample spaces.
- Learners will be able to select and use different simulations to represent simple events.
- Learners will be able to find number of outcomes of compound events by using the Fundamental Counting Principle.
- Learners will be able to use the Fundamental Counting Principle to find the number of permutations.
- Learners will be able to determine solutions for theoretical probability for compound events.

KNOW

- Make Predictions
- Unbiased and Biased Samples
- Misleading Graphs and Statistics
- Comparing Populations
- Select an Appropriate Display

UNDERSTAND

- Predict actions of a larger group by using a sample.
- Determine whether sampling methods are valid.
- Identify misleading graphs and statistics.
- Compare two populations.
- Select, organize and construct appropriate data displays.

LEARNING OUTCOME

- Learners will be able to use data to make predictions about a population.
- Learners will be able to use data from a random sample to make inferences about a population.
- Learners will be able to identify whether or not a graph is misleading and solve problems using data represented in graphs.
- Learners will be able to compare two sets of data using dot plots or box plots by comparing their shapes, centers, and spreads.
- Learners will be able to select an appropriate display to represent different types of data.

Pa Core Standards:

CC.2.4.7.B.1

Draw inferences about populations based on random sampling concepts.

CC.2.4.7.B.2

Draw informal comparative inferences about two populations.

CC.2.4.7.B.3

Investigate chance processes and develop, use, and evaluate probability models.

Assessments: Unit Assessment

Pacing: 30 days (including assessment)

Resources: Schoology, McGraw-Hill/Glencoe Math, ALEKS, Get More Math