EAST PENN SCHOOL DISTRICT

Course Name Math Course 2

Approved: August 26, 2024

Unit Title Unit 1 Proportional Relationships: Ratios, Rates, and Circles

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.1: Numbers and Operations

CC.2.1.7.D.1

Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

CC.2.3: Geometry

CC.2.3.7.A.1

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

CC.2.3.7.A.2

Visualize and represent geometric figures and describe the relationships

Transfer

Students will be able to independently use their learning to...

- ❏ Analyze proportional relationships in real-world situations such as price analysis.

Meaning

UNDERSTANDINGS

Students will understand that...

- ❏ You can use what you know about unit rates and dividing fractions to explore ratios that compare fractions.
- ❏ A proportional relationship is a relationship in which one quantity is a constant multiple of another. Knowing about ratios will help you explore proportional relationships.
- ❏ For any circle, the distance around the

ESSENTIAL QUESTIONS

Students will keep considering...

- ❏ How do proportional relationships compare quantities?

between them.	circle divided by the distance across the circle through its center is always the same, a number called pi.	
	Acquisition	
	Students will know... ❑ the use of scale factors ❑ ratios as related to proportions ❑ unit rate/constant of proportionality ❑ parts of a circle	*Students will be skilled at...* ❑ I can analyze proportional relationships and use them to model and solve real-world and mathematical problems. ❑ I can solve real-world and mathematical problems involving area and circumference. ❑ I can visualize and represent geometric figures.

EAST PENN SCHOOL DISTRICT

Course Name Math Course 2

Unit Title Unit 2 Numbers and Operations: Add and Subtract Rational Numbers

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.1: Numbers and Operations

CC.2.1.7.E.1

Apply and extend previous understandings of operations with fractions to operations with rational numbers.

CC.2.2: Algebraic Concepts

CC.2.2.7.B.3

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

Transfer

Students will be able to independently use their learning to...

- ❏ use integers in their daily lives such as balancing bank accounts, temperature changes, etc.

Meaning

UNDERSTANDINGS

Students will understand that...

- ❏ You can use what you know about positive and negative numbers and about addition on the number line to help you add with positive and negative numbers.
- ❏ Knowing how addition and subtraction are related will help you subtract with positive

ESSENTIAL QUESTIONS

Students will keep considering...

- ❏ How do negative integers impact change?

	and negative numbers.	
	Acquisition	
	Students will know... ❑ how to identify zero pairs ❑ what a negative number represents ❑ the meaning of opposite integers ❑ the meaning of absolute value	*Students will be skilled at...* ❑ I can compare and order integers. ❑ I can model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. ❑ I can rewrite subtraction problems as addition of the opposite. ❑ I can solve real-world and mathematical problems involving the four operations with rational numbers. ❑ I can solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities. ❑ I can solve multi-step real-world and mathematical problems posed with positive and negative rational numbers.

EAST PENN SCHOOL DISTRICT

Course Name Math Course 2

Unit Title Unit 3 Numbers and Operations: Multiply and Divide Rational Numbers

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.1: Numbers and Operations

CC.2.1.7.E.1

Apply and extend previous understandings of operations with fractions to operations with rational numbers.

CC.2.2: Algebraic Concepts

CC.2.2.7.B.3

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

Transfer

Students will be able to independently use their learning to...

- ❑ use integers in their daily lives for repeating circumstances such as average changes, rates of descent, etc.

Meaning

UNDERSTANDINGS

Students will understand that...

- ❑ Extending the properties of operations to include operations with negative numbers can help you understand how to multiply and divide with signed numbers.
- ❑ You can divide an integer by any integer except 0, and the quotient is a rational

ESSENTIAL QUESTIONS

Students will keep considering...

- ❑ How do negative integers impact products and quotients?

	number. Rational numbers have decimal forms that either terminate or repeat. ❑ You can write any division problem as a fraction, including problems with negative numbers.	
	Acquisition	
	Students will know... ❑ the meaning of an undefined quantity	*Students will be skilled at...* ❑ I can model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. ❑ I can solve real-world and mathematical problems involving the four operations with rational numbers. ❑ I can solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities. ❑ I can solve multi-step real-world and

		mathematical problems posed with positive and negative rational numbers. ❑ I can re-write fractions as decimals ❑ I can classify decimals as terminating or repeating

EAST PENN SCHOOL DISTRICT

Course Name Math Course 2

Unit Title Unit 4 Algebraic Thinking: Expressions, Equations, and Inequalities

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.2: Algebraic Concepts

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.

Transfer

Students will be able to independently use their learning to...

- ❑ create and solve equations when there are unknowns in a real-world scenario

Meaning

UNDERSTANDINGS
Students will understand that...

- ❑ You can apply properties of operations to generate equivalent expressions that reveal different aspects of a problem.
- ❑ You can use what you know about solving one-step equations to solve multi-step equations and inequalities.

ESSENTIAL QUESTIONS
Students will keep considering...

- ❑ How can an equation be used to represent relationships?
- ❑ How can an equation be used to solve a real-world scenario?

	❑ Reasoning about the effect of multiplying by a negative number can help you make sense of why the inequality symbol sometimes changes when you solve an inequality.	
	Acquisition	
	Students will know... ❑ the meaning of the terms: variable, constant, coefficient ❑ the properties of equality ❑ the differ ❑ ence between equations and expressions ❑ the meaning of inequality symbols >, <, ≤, ≥ ❑ when to change inequality symbols while solving an equation	*Students will be skilled at...* ❑ I can apply properties of operations to generate equivalent expressions. ❑ I can model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations. ❑ I can use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems. ❑ I can solve real-world and mathematical problems using

		numerical and algebraic expressions, equations, and inequalities.

EAST PENN SCHOOL DISTRICT

Course Name Math Course 2

Unit Title Unit 5 Proportional Reasoning: Percents and Statistical Samples

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.1: Numbers and Operations

CC.2.1.7.D.1

Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

CC.2.4: Measurement, Data and Probability

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.

Transfer

Students will be able to independently use their learning to...

- ❑ apply percentages to solve real-world problems involving interest rates, markup, discounts, coupons, commissions, tax, tip/gratuity

Meaning

UNDERSTANDINGS

Students will understand that...

- ❑ Knowing how to reason proportionally can help you understand applications of percents, such as simple interest, percent change, and percent error.
- ❑ You can use proportional reasoning skills to draw conclusions about populations based on random samples.
- ❑ You can use what you know about data

ESSENTIAL QUESTIONS

Students will keep considering...

- ❑ How does a percent represent a significant change?
- ❑ How do you use a random sample to make an inference about a population?

	distributions and measures of center and variability to compare two populations.	
	Acquisition	
	Students will know... ❑ that percentage is part of a whole ❑ that a percentage can be written as a decimal ❑ that samples represent part of the population ❑ the meaning of a random sample ❑ the significance of a random sample for representing a population ❑ know what a box and whisker plot represents ❑ the terms for measures of central tendency: mean, median, mode, range, quartile, inter-quartile range	*Students will be skilled at...* ❑ I can analyze proportional relationships and use them to model and solve real-world and mathematical problems. ❑ I can draw inferences about populations based on random sampling concepts. ❑ I can draw informal comparative inferences about two populations. ❑ I can use random sampling to draw inferences about a population. ❑ I can use statistical measures to compare two numerical data distributions.

EAST PENN SCHOOL DISTRICT

Course Name Math Course 2

Unit Title Unit 6 Geometry: Solids, Triangles, and Angles

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.3: Geometry

CC.2.3.7.A.1
Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

CC.2.3.7.A.2
Visualize and represent geometric figures and describe the relationships between them.

Transfer

Students will be able to independently use their learning to...

- ❑ apply area of figures, as well as surface area and volume of prisms into real world scenarios such as painting, wrapping presents, and filling a pool with water
- ❑ decompose composite shapes to more easily calculate area, surface area, and volume
- ❑ visualize the slicing of a 3-D figure

Meaning

UNDERSTANDINGS

Students will understand that...

- ❑ You can use what you know about writing and solving equations to solve problems involving area, surface area, volume, and angle relationships.
- ❑ Knowing about surface area and volume of rectangular prisms can help you find the surface area and

ESSENTIAL QUESTIONS

Students will keep considering...

- ❑ How do you apply formulas to determine area, surface area, and volume of geometric figures?
- ❑ How do you slice 3-D shapes to produce 2-D shapes?

	volume of any type of prism and any figure composed of prisms. ❑ Knowing about two-dimensional figures can help you identify the shape formed when a plane slices a three-dimensional figure. ❑ You can use what you know about angles, triangles, and quadrilaterals to draw shapes with a given set of characteristics. ❑ Knowing that special angles are formed when parallel lines are cut by a transversal	
	Acquisition	
	Students will know... ❑ Types of angles, 2-D shapes, 3-D shapes ❑ Types of triangles ❑ Triangle Inequality Theorem ❑ Sum of the angles in a triangle is 180 degrees ❑ Types of Special Angles formed by parallel lines cut by a transversal	*Students will be skilled at...* ❑ I can solve real-world and mathematical problems involving angle measure, area, surface area, and volume. ❑ I can visualize and represent geometric figures and describe the relationships between them.

		❑ I can identify and use properties of angles and their measures. ❑ I can determine, area, surface area, and volume ❑ I can apply properties of geometric figures.

EAST PENN SCHOOL DISTRICT

Course Name	Math Course 2
Unit Title	Unit 7 Probability: Theoretical Probability, Experimental Probability, and Compound Events

STAGE 1 | DESIRED RESULTS

Context and relevance for student learning

Standards

CC.2.4: Measurement, Data and Probability

CC.2.4.7.B.3

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

Transfer

Students will be able to independently use their learning to...

- ❑ determine the likelihood of a given event such as rolling a number cube or choosing a card

Meaning

UNDERSTANDINGS

Students will understand that...

- ❑ The probability of a chance event is a number between 0 and 1 that tells how likely the event is to occur. You can use proportional reasoning to understand probabilities and to make predictions about future events.
- ❑ You can use what you know about collecting

ESSENTIAL QUESTIONS

Students will keep considering...

- ❑ How can we base decisions on chance?
- ❑ How can probability be used to simulate events and to predict future happenings.

	and analyzing data to help you estimate the probability of a chance event. ❑ Analyzing possible outcomes and using what you know about fractions, decimals, and percents can also help you determine probability.	
	Acquisition	
	Students will know... ❑ the difference between theoretical vs. experimental probability ❑ what tree diagrams and lists represent ❑ the meaning of likelihood, probability	*Students will be skilled at...* ❑ I can calculate experimental and theoretical probabilities. ❑ I can investigate chance processes and develop, use, and evaluate probability models. ❑ I can apply probability to practical situations. ❑ I can predict or determine the likelihood of outcomes. ❑ I can use probability to predict outcomes. ❑ I can list outcomes and identify the probability of a compound event.