EAST PENN SCHOOL DISTRICT

Course Name	Math Course 3	Approved: August 26, 2024
Unit Title	Unit 1 Geometric Figures: Rigid Transformations and Congruence	

STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.3: Geometry CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools.	*Students will be able to independently use their learning to…* ❏ see congruence, similarity, and transformations in real world tools such as maps and applying the properties of angles to find things like the most effective route from point a to point b.

Meaning	
UNDERSTANDINGS *Students will understand that…* ❏ Rigid transformations are slides, flips or turns that change the location or orientation of a figure but not its size or shape. You can use the coordinate plane to explore how transformations affect the coordinates of a figure's vertices. ❏ You can use rigid transformations to make sense of	ESSENTIAL QUESTIONS *Students will keep considering…* ❏ how transformations impact ordered pairs. ❏ how angles changes based on the number of sides a figure has.

	congruence and understand why corresponding sides and angles of congruent figures have the same measure.	

Acquisition		

Students will know…	*Students will be skilled at…*
❏ the meaning of congruence, similarity, and geometric transformations. ❏ the properties of angles, polygons and polyhedra. ❏ the difference between translations, reflections, and rotations. ❏ that rigid transformations do not change the size and shape of a figure.	❏ applying congruence, similarity, and geometric transformations using various tools. ❏ applying properties of angles, polygons and polyhedra. ❏ using and/or comparing measurements of angles. ❏ applying properties of geometric transformations to verify congruence or similarity. ❏ identifying the properties of angles, polygons and polyhedra. ❏ describing the effects of rigid transformations on a figure ❏ describing how rigid transformations that map a figure onto an image

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Course Name	Math Course 3
Unit Title	Unit 2 Geometric Figures: Transformations, Similarity, and Angle Relationships

STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.3: Geometry CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools.	*Students will be able to independently use their learning to...* ❏ recognize congruence, similarity, and transformations in the world both figuratively (metaphors, etc.) and literally (copies, scaling, etc.) in order to produce congruent, similar, and transformed versions of originals.

	Meaning	
	UNDERSTANDINGS *Students will understand that...* ❏ A dilation is a transformation that can enlarge or reduce a figure. You can use what you know about scale drawings to understand dilations and similar figures. ❏ You can use what you know about transformations to discover relationships between angles formed by a pair of parallel lines	ESSENTIAL QUESTIONS *Students will keep considering...* ❏ how properties of congruence, similarity, and transformations can impact beauty. ❏ how angle measures can impact success in such things as throwing/launching an object or playing pool.

	and a line that intersects them. ❏ Knowing about types of angle pairs will help explore relationships in triangles. You can use what you know about angle measures to show that two triangles are similar.	
	Acquisition	
	Students will know… ❏ the meaning of congruence, similarity, and geometric transformations. ❏ how dilation is different from rigid transformations ❏ the meaning of the phrase "parallel lines cut by a transversal" ❏ angle terminology of triangles (interior, exterior, corresponding angles)	*Students will be skilled at…* ❏ applying congruence, similarity, and geometric transformations using various tools. ❏ applying properties of angles, polygons and polyhedra. ❏ finding unknown angle measures of a triangle. ❏ finding unknown angles and pairs of angles when parallel lines are cut by a transversal ❏ recognizing properties of angles, polygons and polyhedra. ❏ performing a sequence of geometric transformations.

Course Name	Math Course 3
Unit Title	Unit 3 Linear Relationship: Slope, Linear Equations, and Systems

STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.2: Algebraic Concepts CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	*Students will be able to independently use their learning to…* ❑ analyze and apply their understanding of rates of change in their daily lives, other subjects, and in upcoming statistical concepts.

Meaning	
UNDERSTANDINGS *Students will understand that…* ❑ A linear equation in two variables is a graph that is a straight line. Knowing about proportional relationships can help you make sense of the slope and y-intercept of a line. ❑ Linear equations in one variable can have one solution, no solution, or infinitely many solutions.	ESSENTIAL QUESTIONS *Students will keep considering…* ❑ How can I find slope between two points, from an equation, table, or graph? ❑ What does the solution and number of solutions of linear systems represent? ❑ How can I solve linear equations, systems of linear equations, and inequalities using a variety of techniques?

	❏ A system of linear equations is a group of related linear equations where a solution makes all the equations true at the same time. You can use what you know about solving equations to solve systems of equations.	
Acquisition		
	Students will know... ❏ the meaning of proportional relationships, lines, and linear equations. ❏ the meaning of linear equations, linear systems, and inequalities. ❏ what slope represents through constant of proportionality, unit rate, and rise over run.	*Students will be skilled at...* ❏ analyzing and solving linear equations and systems of linear equations. ❏ analyzing and describing linear relationships between two variables using slope. ❏ writing, solving and/or graphing linear equations and inequalities using various methods. ❏ writing, solving, graphing, and interpreting linear equations in one or two variables, using various methods.

Course Name Math Course 3

Unit Title Unit 4 Functions: Linear and Nonlinear Relationships

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STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.2: Algebraic Concepts CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.C.1 Define, evaluate, and compare functions. CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities.	*Students will be able to independently use their learning to…* ❏ interpret and evaluate rates of change such as unit cost in their daily lives to make decisions.

	Meaning	
	UNDERSTANDINGS *Students will understand that…* ❏ A function is a rule that assigns exactly one output to each input. You can use what you know about relationships between two variables to help you understand functions. ❏ You can use tables, graphs, equations, and verbal descriptions to model, evaluate, and compare characteristics of linear functions.	ESSENTIAL QUESTIONS *Students will keep considering…* ❏ How do I represent relationships as functions? ❏ What are the benefits of the different representations of functions (algebraically, graphically, or numerically in tables or by verbal descriptions)?

	❏ You can describe a function qualitatively based on its graph, even when no scale values are shown.	
	Acquisition	
	Students will know… ❏ what a function represents ❏ how proportional relationships, lines, and linear equations are connected ❏ differences between linear and non-linear functions ❏ that a function can be represented using descriptions, ordered pairs, tables, graphs, or equations ❏ what domain and range represent	*Students will be skilled at…* ❏ finding the rate of change (slope) of a line. ❏ defining functions displayed algebraically, graphically, or numerically in tables or by verbal descriptions. ❏ evaluating, comparing, and representing functions displayed algebraically, graphically, or numerically in tables or by verbal descriptions. ❏ using functions to model relationships between quantities.

Course Name Math Course 3

Unit Title Unit 5 Integer Exponents: Properties and Scientific Notation

STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.2: Algebraic Concepts CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions.	*Students will be able to independently use their learning to...* ❑ represent quantities in a variety of ways using different syntax such as scientific notation.

	Meaning	
	UNDERSTANDINGS *Students will understand that...* ❑ You can explore operations with powers and discover patterns that help you understand and apply properties of exponents. ❑ A very large or very small quantity can be expressed as the product of a number and a power of 10. You can use what you know about properties of exponents to operate with numbers in this form.	ESSENTIAL QUESTIONS *Students will keep considering...* ❑ How can I simplify radicals and expressions using exponent properties to be more manageable? ❑ How can I represent large/small quantities using scientific notation to be more manageable?

	Acquisition	
	Students will know...	*Students will be skilled at...*
	❑ know the meaning of radicals, integer exponents, and scientific notation. ❑ how radicals and integer exponents relate to one another ❑ how radicals and integer exponents impact expressions and equations.	❑ applying concepts of radicals and integer exponents to generate equivalent expressions. ❑ using exponents, roots and/or absolute value to solve problems. ❑ representing and using expressions and equations to solve problems involving radicals and integer exponents. ❑ expressing, reading, and comparing numbers using scientific notation

Course Name	Math Course 3
Unit Title	Unit 6 Real Numbers: Rational Numbers, Irrational Numbers, and the Pythagorean Theorem

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STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.1: Numbers and Operations CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties. CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers. **CC.2.2: Algebraic Concepts** CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions. **CC.2.3: Geometry** CC.2.3.8.A.1	*Students will be able to independently use their learning to...* ❏ represent values in various ways to have a greater understanding of the capacity of 3-dimensional spaces in their daily lives when they do such things as cooking, packing, etc.

	Meaning	
	UNDERSTANDINGS *Students will understand that...* ❏ An irrational number cannot be written as a terminating or repeating decimal. You can use what you know about working with rational numbers to solve problems with irrational numbers in topics like algebra and geometry. ❏ The side lengths of a right triangle have a	ESSENTIAL QUESTIONS *Students will keep considering...* ❏ How to find unknown measurements of a shape from known dimensions? ❏ How do the different representations of numbers relate to one another?

Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems. CC.2.3.8.A.3 Understand and apply the Pythagorean Theorem to solve problems.	special relationship. You can use this relationship and what you know about triangles to determine unknown side lengths. ❑ You can use what you know about pi and the area of circles to solve real-world problems about the volumes of cylinders, cones, and spheres.	
	Acquisition	
	Students will know... ❑ the properties of rational and irrational numbers. ❑ the difference between rational and irrational numbers. ❑ the components of a right triangle (legs, hypotenuse, right angle) ❑ the different representations of numbers (e.g., integers, fractions, decimals, percents, square roots, and exponents). ❑ the properties of exponents and radicals in relation to the pythagorean theorem	*Students will be skilled at...* ❑ estimating irrational numbers by comparing them to rational numbers. ❑ applying concepts of radicals and integer exponents to generate equivalent expressions. ❑ applying the concepts of volume of cylinders, cones, and spheres to solve real-world mathematical problems. ❑ applying the Pythagorean Theorem to solve problems ❑ using numbers in equivalent forms (e.g., integers, fractions,

	❏ what volume represents in real world mathematical problems.	decimals, percents, square roots, and exponents). ❏ using expressions and equations to solve problems involving radicals and integer exponents. ❏ using and/or developing procedures to determine or describe measures of volume. (May require conversions within the same system.)

Course Name	Math Course 3
Unit Title	Unit 7 Statistics: Two-Variable Data and Fitting a Linear Model

STAGE 1 | DESIRED RESULTS
Context and relevance for student learning

Standards	Transfer
CC.2.4: Measurement, Data and Probability CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations. CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations.	*Students will be able to independently use their learning to…* ❑ ask and answer questions systematically to better understand relationships between two variables.

	Meaning

UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that… ❑ You can build on what you know about one-variable data displays by constructing and analyzing two-variable data displays. ❑ Knowing about linear equations will help you model a linear pattern in a two-variable dataset and use your model to make predictions. ❑ You will organize and interpret two-variable categorical data and	*Students will keep considering…* ❑ How can bivariate data represent relationships between two variables? ❑ What is the importance of using data and visual representations of data to understand variables?

	describe possible associations between the variables using relative frequencies.	
	Acquisition	
	Students will know... ❑ relationships can be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. ❑ what bivariate data is and what it represents ❑ the different representations of bivariate data (scatter plots, two-way tables)	*Students will be skilled at...* ❑ analyzing and/or interpreting bivariate data displayed in multiple representations. ❑ investigating patterns of association in bivariate data. ❑ write and/or assess linear models for good fit to a set of data ❑ construct and interpret two way tables with relative frequencies