

Newburyport Curriculum Map

Grade 7 Mathematics

	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 20 days
	UNIT NAME Rational Number Operations
Essential Questions	*Why do I need mathematical operations? *Why do I need mathematical properties? *How do I know what rule or property to use?
Content Standards	7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real world contexts. c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. d. Apply properties of operations as strategies to add and subtract rational numbers. 7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. c. Apply properties of operations as strategies to multiply and divide rational numbers. d. Convert a rational number to a decimal number using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

Newburyport Curriculum Map

Grade 7 Mathematics

Concepts and subskills	-Students will develop rules for adding and subtracting integers, and they recognize that subtracting a number is the same as adding its opposite. -Students will develop the rules for multiplying and dividing signed numbers. They use the properties of operations and their previous understanding of multiplication as repeated addition to represent the multiplication of a negative number as repeated subtraction. -Students will multiply and divide rational numbers using the properties of operations.	Mathematical Practices 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	● Make sense of positive and negative quantities and their relationships to each other. ● Understand the meaning of positive and negative integers and rational numbers. ● Are flexible in the use of operations with positive and negative integers and rational numbers. ● Create a logical representation of problems with positive and negative integers. ● Apply positive and negative number rules to operations with integers and rational numbers. ● Look for the overall structure of opposite numbers to understand the concept of absolute value. ● Apply the pattern for multiplication of positive and negative integers and rational numbers to the division operation of the same types of numbers. ● See rational numbers in fractions and decimals.	
Content Vocabulary	● Repeating decimal ● Terminating decimal ● Additive inverse	
Text, Materials, and Resources	Resources – enVision mathematics textbook and online account, Today’s Challenge, 3 Act Math, and MathXL online enrichment	

Newburyport Curriculum Map

Grade 7 Mathematics

Assessments, Products, Projects	● Curriculum embedded performance tasks ○ Topic stem projects ○ Lesson quizzes ○ Student self-assessments ○ unit readiness test, mid-topic assessment, unit test and/or performance task	<u>Evaluative Criteria</u> ● relate integers, their opposites, and their absolute values. ● explain how to relate integers, their opposites, and their absolute values. ● recognize rational numbers and write them in decimal form. ● describe how to recognize rational numbers and explain how to write them in decimal form. ● accurately perform operations with integers and explain the process. ● solve problems with rational numbers ● describe ways to solve problems with rational numbers.
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	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 10 days
	UNIT NAME: Analyze and Use Proportional Relationships
Essential Questions	*How does comparing quantities describe the relationship between them? *When and why do I use constant of proportionality?
Content Standards	7.RP.A.2 Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

Newburyport Curriculum Map

Grade 7 Mathematics

	b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. d. Explain what a point on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and where is the unit rate.	
Concepts and subskills	-Students will examine situations to determine if they are describing a proportional relationship. -Students will analyze relationships given in tables, graphs, and verbal descriptions -Students learn that the unit rate of a collection of equivalent ratios is called the constant of proportionality and can be used to represent proportional relationships with equations in the form $y=kx$, where k is the constant of proportionality.	Mathematical Practices 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	• Make sense of proportional quantities and how the quantities are related in problem situations. • Consider units as they solve problems that involve unit rates with rational terms. • Recognize and represent proportional quantities in multiple mathematical models, such as tables, graphs, and equations. • Represent proportional relationships symbolically and understand the meanings of the quantities. • Use properties of operations to perform operations with ratios and rates. • Use what they have previously learned about ratios and rates in constructing arguments and explanations., • Construct arguments by using accurate definitions of proportional quantities. • Justify and support mathematical reasoning by using diagrams, tables, graphs, and equations. • Ask questions to clarify others' reasoning in order to decide whether arguments make sense or to improve the arguments.	
Content Vocabulary	• Proportional relationship • Proportion • Constant of proportionality	
Text, Materials, and Resources	Resources –enVision mathematics textbook and online account, Today's Challenge, 3 Act Math, and MathXL online enrichment	

Newburyport Curriculum Map

Grade 7 Mathematics

Assessments, Products, Projects	● Assessments, Products, Projects ● Curriculum embedded performance tasks ○ topic stem projects ○ lesson quizzes ○ student self-assessments ○ unit readiness test, mid-topic assessment, unit test and/or performance task	<u>Evaluative Criteria</u> ● use ratio concepts and reasoning to solve multi-step problems. ● tell how to use ratio concepts and reasoning to solve multi-step problems. ● find unit rates with ratios of fractions and use them to solve problems. ● explain and show how to find unit rates with ratios of fractions and use them to solve problems. ● test for equivalent ratios to decide whether quantities are in a proportional relationship. ● describe how to test for equivalent ratios to decide whether quantities are in a proportional relationship. ● use the constant of proportionality in an equation to represent a proportional relationship ● explain how to use the constant of proportionality in an equation to represent a proportional relationship. ● use a graph to determine whether two quantities are proportional. ● describe how to use a graph to determine whether two quantities are proportional. ● determine whether a relationship is proportional and use representations to solve problems. ● explain whether a relationship is proportional and show how to use representations to solve problems.
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	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 10 days
	UNIT NAME: Analyze and Solve Percent Problems
Essential Questions	*How are fractions, decimals and percents equal? *How do I decide what strategy will work to solve a given problem?

Newburyport Curriculum Map

Grade 7 Mathematics

	*How do I know if my answer is reasonable?	
Content Standards	7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. 7.RP.A.2 Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation. 7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems.	
Concepts and subskills	-Students will represent percents as decimals and fractions. -Students will use complex fractions to represent non-whole number percents. -Students will write equations to solve multi-step percent problems and relate their conceptual understanding to the representation: Quantity = Percent $\times$ Whole.	Mathematical Practices 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	• Make sense of proportional quantities and how the quantities are related in problem situations. • Think abstractly about real-world problems involving percents and can compute solutions using the percent equation. • Recognize and represent proportional quantities in multiple mathematical models, such as tables, graphs, and equations. • Represent proportional relationships symbolically and understand the meaning of the quantities.	

Newburyport Curriculum Map

Grade 7 Mathematics

	• Use properties of operations to perform operations with the percent equation. • Understand percent to be a rate per hundred and express p% as $\frac{p}{100}$. • Observe and apply the steps involved in finding percent change. • Use place value and the structure of the base-ten number system to find 1% or $\frac{1}{100}$ of a quantity. • Use number sense to find benchmark percents: since 100% is a whole, then 50% is a half, 25% is one-fourth, and so on. • Use the properties of operation to efficiently calculate solutions.	
Content Vocabulary	• Percent equation • Percent change • Percent error • Markup • Markdown • Percent markup • Percent markdown • Interest rate • Principal • Simple interest	
Text, Materials, and Resources	Resources – enVision mathematics textbook and online account, Today’s Challenge, 3 Act Math, and MathXL online enrichment	
Assessments, Products, Projects	• Curriculum embedded performance tasks ○ Topic stem projects ○ Lesson quizzes ○ Student self-assessments ○ unit readiness test, mid-topic assessment, unit test and/or performance task	<u>Evaluative Criteria</u> • understand, find, and analyze percents of numbers. • describe how to understand, find, and analyze percents of numbers. • use proportions to solve percent problems. • explain how to use proportions to solve percent problems. • represent and solve percent problems using equations. • explain how to represent and solve percent problems using equations. • solve problems involving percent change and percent error.

Newburyport Curriculum Map

Grade 7 Mathematics

		- describe how to solve problems involving percent change and percent error. - solve problems involving percent markup and markdown. - describe how to solve problems with percent markup and markdown. - apply percent reasoning to solve simple interest problems. - explain how to apply percent reasoning to solve simple interest problems.
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	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 15 days
	UNIT NAME: Generate Equivalent Expressions
Essential Questions	*How is thinking algebraically different from thinking arithmetically? *How do I use expressions and equations to analyze and solve problems? *How do the properties contribute to algebraic understanding?
Content Standards	7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. 7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert

Newburyport Curriculum Map

Grade 7 Mathematics

	between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ and $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	
Concepts and subskills	- Students will recognize and use the identity properties and the existence of additive inverses to efficiently write equivalent expressions in standard form. -Students will practice operations with rational numbers as they collect like terms with rational number coefficients.	Mathematical Practices 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	• Reason about which terms to group together and what terms to represent. • Apply mathematics and properties of operations to manipulate numbers and variables when decontextualizing problems. • Recognize and represent algebraic expressions in mathematical models, such as graphs and equations. • Demonstrate an understanding of problem-solving situations by representing them symbolically with algebraic expressions. • Use properties of operations to compare and generate equivalent expressions. • Learn to describe algebraic expressions and determine if expressions are equivalent. • Look for patterns in the procedures necessary to expand expressions. • Apply previously learned concepts and combination of properties to add and subtract expressions. • Organize values of expression pairs in tables to determine equivalence and properties that make them so.	
Content Vocabulary	• Expressions • Equivalent expressions • Variables	

Newburyport Curriculum Map

Grade 7 Mathematics

	• Constants • Terms	
Text, Materials, and Resources	Resources - enVision mathematics textbook and online account, Today's Challenge, 3 Act Math, and MathXL online enrichment	
Assessments, Products, Projects	• Curriculum embedded performance tasks ○ Topic stem projects ○ Lesson quizzes ○ Student self-assessments ○ unit readiness test, mid-topic assessment, unit test and/or performance task	Evaluative Criteria • write and evaluate algebraic expressions. • explain how to write and evaluate algebraic expressions. • can write equivalent expressions for given expressions. • explain how to write equivalent expressions for given expressions. • use properties of operations to simplify expressions. • explain how to use properties of operations to simplify expressions. • expand expressions using the Distributive Property. • explain how to expand expressions using the Distributive Property. • use common factors and the Distributive Property to factor expressions. • explain how to use common factors and the Distributive Property to factor expressions. • add expressions that represent real-world problems. • explain how to add expressions that represent real-world problems. • subtract expressions using properties of

Newburyport Curriculum Map

Grade 7 Mathematics

		operations. • explain how to subtract expressions using properties of operations. • use an equivalent expression to find new information. • explain how to use an equivalent expression to find new information.
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	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 15 days
	UNIT 5: Solve Problems Using Equations and Inequalities
Essential Questions	How can you solve real-world and mathematical problems with numerical and algebraic equations and inequalities?
Content Standards	7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. 7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 7.EE.B.4

Newburyport Curriculum Map

Grade 7 Mathematics

	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b. Solve word problems leading to inequalities of the form $px + q > r$ and $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	
Concepts and subskills	- Equations with more than one operation can be used to represent a situation. - One- and two-step problems are both solved using properties of equality. - The Distributive Property can be used to solve equations in the form $p(x+q)=r$. - Solving inequalities with addition and subtraction is the same as solving equations. The inverse relationship between addition and subtraction is used to isolate the variable. - When multiplying or dividing with a negative value, the inequality symbol is reversed.	<i>Mathematical Practices</i> - Make sense of problems and persevere in solving them. - Reason abstractly and quantitatively. - Construct viable arguments and critique the reasoning of others. - Model with mathematics. - Use appropriate tools strategically. - Attend to precision. - Look for and make use of structure. - Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	- Represent situations in a variety of ways to check for understanding. - Manipulate the terms of equations and inequalities to evaluate their relationship. - Link prior knowledge of arithmetic expressions to algebraic equations and utilize the relationship between the two in order to solve equations and inequalities. - Interpret the solutions represented on a number line and relate it back to the original situation represented by the inequality or equation. - Work with models, equations and inequalities interchangeably. - Justify when and how to use the addition, subtraction, multiplication, and division properties of equations and inequalities. - Identify and explain the steps necessary to solve two-step and multi-step equations and inequalities. - Identify and locate mistakes when writing and solving two-step and multi-step equations and inequalities.	

Newburyport Curriculum Map

Grade 7 Mathematics

	- Analyze a problem and represent it as an equation and/or inequality. - Guide other students to solve similar problems.	
Content Vocabulary	- Equation - Inequality - Variable - Term - Constant - Isolate the variable	
Text, Materials, and Resources	Resources – enVision mathematics textbook and online account, Today’s Challenge, 3 Act Math, and MathXL online enrichment	
Assessments, Products, Projects	- Curriculum embedded performance tasks - Topic stem projects - Lesson quizzes - Student self-assessments - unit readiness test, mid-topic assessment, unit test and/or performance task	<u>Evaluation Criteria</u> - Represent a problem with a two-step equation. - Explain how to represent a problem with a two-step equation. - Solve a problem with a two-step equation. - Explain how to solve a problem with a two-step equation. - Use the Distributive Property to solve equations. - Describe how to use the Distributive Property to solve equations. - Solve inequalities using addition or subtraction. - Explain how to solve inequalities using addition or subtraction. - Solve inequalities using multiplication or division.

Newburyport Curriculum Map

Grade 7 Mathematics

		● Explain how to solve inequalities using multiplication or division. ● Write and solve two-step inequalities. ● Explain how to write and solve two-step inequalities. ● Solve inequalities that require multiple steps. ● Explain how to solve inequalities that require multiple steps.
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	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 10 days
	UNIT NAME: Use Samplings to Draw Inferences about Populations
Essential Questions	*How do people use data to influence others? *How do you use data to make predictions? *How can sampling be used to draw inferences about one or more populations?
Content Standards	7.SP.A. Use random sampling to draw inferences about a population. 1. Understand that statistics can be used to gain information about a population by examining a sample of the population; Generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. 2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be. 7.SP.B. Draw informal comparative inferences about two populations. 3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of

Newburyport Curriculum Map

Grade 7 Mathematics

	players on the basketball team is 10 cm greater than the mean height of players on the soccer team and both distributions have similar variability (mean absolute deviation) of about 5 cm. The difference between the mean heights of the two teams (10 cm) is about twice the variability (5 cm) on either team. On a dot plot, the separation between the two distributions of heights is noticeable. 4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.	
Concepts and subskills	- Representative samples must reflect the entire population. - Data from random samples can be used to make valid inferences about a population by looking for patterns or trends in the distribution of the data. - Data displays such as box plots, can be used to make informal comparative influences about two populations. - Dot plots can be used to compare populations based on measures of center and variability.	<i>Mathematical Practices</i> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	- Easily distinguish between a population and a sample. - Objectively assess whether a sample is representative. - Generate, and evaluate, rudimentary experimental design to help obtain random samples. - Interpret and compare data displays and statistical measures. - Reason about data sets in both qualitative and quantitative forms. - Understand that data displays and statistical measures are simplifications of complex information. - Understand that a random sample is an abstract representation of a population. - Can use appropriate statistical metrics to describe and compare populations, and interpret the results. - Understand that data displays are a way to visually represent a sample, and thus a population. - Constantly ask if the results make sense, and devise ways to improve their model.	
Content Vocabulary	- Random sample - Representative sample - Valid inference	

Newburyport Curriculum Map

Grade 7 Mathematics

Text, Materials, and Resources	Resources –enVision mathematics textbook and online account, Today’s Challenge, 3 Act Math, and MathXL online enrichment	
Assessments, Products, Projects	- Curriculum embedded performance tasks - Topic stem projects - Lesson quizzes - Student self-assessments - unit readiness test, mid-topic assessment, unit test and/or performance task	<u>Evaluate Criteria</u> - Determines if a sample is representative of a population. - Explains how a sample is representative of a population. - Makes inferences about a population from a sample data set. - Explains how to make inferences about a population from a sample data set. - Draws comparative inferences about two populations using median and interquartile range (IQR). - Describes how to draw comparative inferences about two populations using median and interquartile range (IQR). - I can compare populations using the mean, median, mode, range, interquartile range, and mean absolute deviation. - I can explain how to compare populations using the mean, median, mode, range, interquartile range, and mean absolute deviation.

	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 15 days
	UNIT 7: Probability

Newburyport Curriculum Map

Grade 7 Mathematics

Essential Questions	*What are the different types of probability? *How can you investigate chance processes and develop, use, and evaluate probability models?	
Content Standards	7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely or likely, and a probability near 1 indicates a likely event. 7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.	
Concepts and subskills	-Students will learn to compute and interpret the probability of an event as the proportion of the time that the event will occur when a chance experiment is repeated many times. -Students will use a variety of methods, including collecting data, using tree diagrams, and using simulations	<i>Mathematical Practices</i> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	● Interpret and make meaning of the problem to find a starting point ● Plan a solution pathway using the given information about the probability instead of jumping to a solution. ● Continually ask, "Does this probability make sense with the given information?" ● Can understand various approaches to the solution. ● Apply rules to determining probabilities of simple and compound events. ● Look for the overall structure of events to find their probability. ● See complicated events as being composed of several simpler events in order to determine compound probabilities.	

Newburyport Curriculum Map

Grade 7 Mathematics

Content Vocabulary	• Outcomes • Probability event • Theoretical probability • Experimental probability • Relative frequency • Sample space • Probability model • Compound event • Simulation	
Text, Materials, and Resources	Resources – enVision mathematics textbook and online account, Today’s Challenge, 3 Act Math, and MathXL online enrichment	
Assessments, Products, Projects	• Curriculum embedded performance tasks ○ Topic stem projects ○ Lesson quizzes ○ Student self-assessments ○ unit readiness test, mid-topic assessment, unit test and/or performance task	<u>Evaluative Criteria</u> • Describes the likelihood that an event will occur. • Determines & explains the theoretical probability of an event. • Determines & explains the experimental probability of an event. • Uses probability models to find probabilities of events. • Explains and shows how to use models to find probabilities of events. • Finds all possible outcomes of a compound event. • Shows and explains how to find all possible outcomes of a compound event. • Finds & explains how to find the probability of a compound event. • Simulates a compound event to approximate its probability.

Newburyport Curriculum Map

Grade 7 Mathematics

		Shows how to simulate a compound event and explain how to use the simulation to approximate probability.
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	Grade Level: 7 Team Members: Matt Moscardini and Michaela Venditti Number of Days of Unit: 20 days	
	UNIT 8: Solve Problems Involving Geometry	
Essential Questions	*How can I use equations to find unknown angle measures? *How do I use a ruler, compass and protractor to make and measure angles and triangles? *How can geometry be used to solve problems?	
Content Standards	7.G.A. Draw, construct, and describe geometrical figures and describe the relationships between them. - Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. - Draw (freehand, with ruler and protractor, and with technology) two-dimensional geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. - Describe the shape of the two-dimensional face of the figure that results from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. 7.G.B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. - Circles and measurement: a. Know that a circle is a two-dimensional shape created by connecting all of the points equidistant from a fixed point called the center of the circle. b. Understand and describe the relationships among the radius, diameter, and circumference of a circle. c. Understand and describe the relationship among the radius, diameter, and area of a circle. d. Know the formulas for the area and circumference of a circle and use them to solve problems. e. Give an informal derivation of the relationship between the circumference and area of a circle. 5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write simple equations and use them to solve for an unknown angle in a figure. 6. Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	
Concepts and subskills	-Students will solve for unknown angles. -Students will work with a ruler, compass, and protractor to construct geometric shapes, mainly triangles.	<i>Mathematical Practices</i> - Make sense of problems and persevere in solving them. - Reason abstractly and quantitatively.

Newburyport Curriculum Map

Grade 7 Mathematics

	- Students will develop understanding about unique triangles.	- Construct viable arguments and critique the reasoning of others. - Model with mathematics. - Use appropriate tools strategically. - Attend to precision. - Look for and make use of structure. - Look for and express regularity in repeated reasoning.
Content Objectives "I Can Statements"	- Create a logical representation of the problem and solve for the angle measures by using known angle relationships. - Use formulas to solve problems involving circumference, area, surface area, and volume. - Decontextualize three-dimensional objects into nets to solve surface area problems. - Connect the formulas and use them to arrive at the correct solution. - Explain proportional reasoning as it relates to scale drawings. - Use patterns in angle relationships to determine angle measures. - Use the structure of right rectangular prisms and pyramids to understand what their vertical and horizontal cross sections would look like. - Apply the structure of the equations of the circumference and area of a circle to find the radius and diameter of a circle. - Use the structure of a composite figure to solve surface area problems. - Describe patterns or structures of triangles.	
Content Vocabulary	- Scale drawing - Adjacent angles - Complementary Angles - Supplementary Angles - Vertical Angles - Circumference - Cross section - Composite figure	
Text, Materials, and Resources	Resources – Additional information that can be accessed in order to enhance the student’s understanding of content.	
Assessments, Products, Projects	- Which type of assessments will you use to assess understanding? - Which facets of understanding will you address with each assessment? - How will you ensure that have met the desired results	<u>Evaluative Criteria</u> - Uses the key in a scale drawing to find missing measures. - Describes how to use the key in a scale drawing to find missing measures.

Newburyport Curriculum Map

Grade 7 Mathematics

	identified in Step 1?	• Draws figures with given conditions. • Describes how to draw figures with given conditions. • Draws triangles when given information about their side lengths and angle measures. • Explains how to draw triangles when given information about their side lengths and angle measures. • Solves problems using angle relationships. • Explains how to solve problems using angle relationships. • Solves problems involving radius, diameter, and circumference of circles. • Explains how to solve problems involving radius, diameter, and circumference of circles. • Solves problems involving the area of a circle. • Explains how to solve problems involving the area of a circle. • Determines what the cross section looks like when a 3D figure is sliced. • Shows and describes what the cross section looks like when a 3D figure is sliced. • Finds the area and surface area of 2-dimensional composite shapes and 3-dimensional prisms. • Explains how to find the area and surface area of
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Newburyport Curriculum Map

Grade 7 Mathematics

		2-dimensional composite shapes and 3-dimensional prisms. • Uses the area of the base of a three-dimensional figure to find its volume. • Explains how to use the area of the base of a three-dimensional figure to find its volume.
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