

EVERGREEN COMMUNITY CHARTER SCHOOL CURRICULUM

MATH

Course: Math

Grade: 7

Make sense of problems and persevere in solving them.
 Construct viable arguments and critique the reasoning of others.
 Use appropriate tools strategically.
 Look for and express regularity in repeated reasoning.

Reason abstractly and quantitatively.
 Model with mathematics.
 Attend to precision.
 Look for and make use of structure.

PA Common Core Standards	Materials	Methods/Assessment
<p>CC.2.1.7.D.1 Analyze proportional relationships and use them to model and solve real-world and mathematical problems.</p> <p>CC.2.1.7.E.1 Apply and extend previous understandings of operations with fractions to operations with rational numbers.</p> <p>CC.2.2.7.B.1 Apply properties of operations to generate equivalent expressions.</p> <p>C.2.3.7.A.1 Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.</p> <p>CC.2.3.7.A.2 Visualize and represent geometric figures and describe the relationships between them.</p> <p>CC.2.2.7.B.3 Model and solve real world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.</p> <p>CC.2.4.7.B.1 Draw inferences about populations based on random sampling concepts.</p> <p>CC.2.4.7.B.2 Draw informal comparative inferences about two populations.</p> <p>CC.2.4.7.B.3 Investigate chance processes and develop, use, and evaluate probability models.</p>	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks</p> <p>Resources:</p> <ul style="list-style-type: none"> ● PDE SAS portal: http://www.pdesas.org ● Teacher-generated/differentiated instruction resources and activities ● PSSA released state sample questions ● http://www.khanacademy.org/ ● Calculators ● Math Counts activities ● Learnzillion.com ● PBS learningmedia.org ● Nces.ed.gov ● Smart TV ● DESMOS <p>Differentiation:</p> <p>Enrichment</p> <ul style="list-style-type: none"> ● Leveled tests and quizzes ● Self-paced <p>Remediation</p> <ul style="list-style-type: none"> ● One on one ● Quiz & test corrections ● Accommodations ● Adapted assignments ● Extra time ● Math Support 	<p>Methods:</p> <ul style="list-style-type: none"> ● Lecture ● Demonstration ● Note-taking ● Discussion ● Practice ● Problem-based Instruction ● Hands-on exploration ● Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> ● Observation ● Participation ● Notes/Portfolios ● Homework ● Question & Answer ● Quizzes ● Tests ● Think-Pair-Share ● Whiteboards ● At the bell activities ● Constructed Response Tasks ● CDTs ● PSSAs

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PSSA Eligible Content	Materials/Unit	Methods/Assessment
<ul style="list-style-type: none"> • M07.A-R.1.1.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. • M07.C-G.1.1.1 Solve problems involving scale drawings of geometric figures, including finding length and area. • 7.G.A.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. • M07.A-R.1.1.2 Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin). • M07.C-G.2.2.2 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. Formulas will be provided. • 7.RP.A.2. Recognize and represent proportional relationships between quantities. • 7.RP.A.2a. Decide whether two quantities are in a proportional relationship, e.g., 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. • 7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems. • 7.G.B.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. 	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks</p> <p>Unit 1 – Scale Drawings</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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<ul style="list-style-type: none"> • M07.A-R.1.1.2 Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin). • M07.A-R.1.1.3 Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. • M07.A-R.1.1.4 Represent proportional relationships by equations. • M07.A-R.1.1.5 Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r), where r is the unit rate. • 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. • 7.RP.A.2a. Decide whether two quantities are in a proportional relationship, e.g., 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. • 7.RP.A.2b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. • 7.RP.A.2c. Represent proportional relationships by equations. • 7.RP.A.2d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit 	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks Pdesas.org</p> <p>Unit 2 – Introducing Proportional Relationships</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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- M07.C-G.1.1.1 Solve problems involving scale drawings of geometric figures, including finding length and area.
- 7.G.A.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
- 7.G.B.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.

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<ul style="list-style-type: none"> • M07.C-G.2.2.1 Find the area and circumference of a circle. Solve problems involving area and circumference of a circle(s). Formulas will be provided. • M07.C-G.2.2.2 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. Formulas will be provided. • 7.G.A.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. • 7.G.B.4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. • 7.G.B.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. • 7.RP.A.2a. Decide whether two quantities are in a proportional relationship, e.g., 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. • 7.RP.A.2c. Represent proportional relationships by equations. • 7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems. • 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, 	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks Pdesas.org</p> <p>Unit 3 - Measuring Circles</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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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.G.A.2. Draw (freehand, with ruler and protractor, and with technology) 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.

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<ul style="list-style-type: none"> • M07.A-N.1.1.3 Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats. • M07.A-R.1.1.6 Use proportional relationships to solve multi-step ratio and percent problems. • 7.RP.A.3. Use proportional relationships to solve multistep ratio and percent problems. • 7.NS.A.2d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. • 7.RP.A.2a. Decide whether two quantities are in a proportional relationship, e.g., 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. • 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. • 7.EE.A.1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks Pdesas.org Unit 4 - Proportional Relationships and Percentages</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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<ul style="list-style-type: none"> • M07.A-N.1.1.1 Apply properties of operations to add and subtract rational numbers, including real-world contexts. • M07.A-N.1.1.2 Represent addition and subtraction on a horizontal or vertical number line. • M07.A-N.1.1.3 Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats. • M07.B-E.2.1.1 Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. • M07.B-E.2.2.1 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. • 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. • 7.NS.A.1a. Describe situations in which opposite quantities combine to make 0. • 7.NS.A.1b. 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. • 7.NS.A.1c. 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. • 7.NS.A.1d. Apply properties of operations as strategies to add and subtract rational numbers. • 7.NS.A.2. Apply and extend previous 	<p>Materials: Illustrative Mathematics: McGraw-Hill and supplementary workbooks Pdesas.org Unit 5 – Rational Number Arithmetic</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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understandings of multiplication and division and of fractions to multiply and divide rational numbers.

- 7.NS.A.2a. 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.
- 7.NS.A.2b. 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.
- 7.NS.A.2c. Apply properties of operations as strategies to multiply and divide rational numbers.
- 7.NS.A.3. Solve real-world and mathematical problems involving the four operations with rational numbers.
- 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. 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.
- 7.EE.B.4a. 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.

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- M07.A-R.1.1.6 Use proportional relationships to solve multi-step ratio and percent problems.
- 7.RP.A.2. Recognize and represent proportional relationships between quantities.
- 7.NS.A.2d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

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<ul style="list-style-type: none"> • M07.B-E.1.1.1 Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients. • M07.B-E.2.1.1 Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. • M07.B-E.2.2.1 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. • M07.B-E.2.2.2 Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers, and graph the solution set of the inequality. • 7.EE.A.1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. • 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. Use variables to represent quantities in a real-world or mathematical problem, 	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks</p> <p>Unit 6 - Expressions, Equations, and Inequalities</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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and construct simple equations and inequalities to solve problems by reasoning about the quantities.

- 7.EE.B.4a. 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.
- 7.EE.B.4b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, 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.
- M07.A-N.1.1.1 Apply properties of operations to add and subtract rational numbers, including real-world contexts.
- 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.
- 7.NS.A.1c. 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.

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<ul style="list-style-type: none"> • M07.C-G.1.1.2 Identify or describe the properties of all types of triangles based on angle and side measures. • M07.C-G.1.1.3 Use and apply the triangle inequality theorem. • M07.C-G.1.1.4 Describe the two-dimensional figures that result from slicing three-dimensional figures. • M07.C-G.2.1.1 Identify and use properties of supplementary, complementary, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. • M07.C-G.2.2.2 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. Formulas will be provided. • 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 • 7.G.A.2. Draw (freehand, with ruler and protractor, and with technology) 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. • 7.G.A.3. Describe the two- 	<p>Materials:</p> <p>Illustrative Mathematics: McGraw-Hill and supplementary workbooks</p> <p>Unit 7 - Angles, Triangles, and Prisms</p>	<p>Methods:</p> <ul style="list-style-type: none"> • Lecture • Demonstration • Note-taking • Discussion • Practice • Problem-based Instruction • Hands-on exploration • Small Group activities <p>Assessment:</p> <ul style="list-style-type: none"> • Observation • Participation • Notes/Portfolios • Homework • Question & Answer • Quizzes • Tests • Think-Pair-Share • Whiteboards • At the bell activities • Constructed Response Tasks • CDTs • PSSAs

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<p>dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</p> <ul style="list-style-type: none"> • 7.G.B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. • 7.G.B.5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. • 7.G.B.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.. • 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. 		
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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.

- 7.SP.A.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.
- 7.SP.B.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.
- 7.SP.B.4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.
- 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 1/2 indicates an event that is neither unlikely nor 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

EVERGREEN COMMUNITY CHARTER SCHOOL CURRICULUM

MATH

Course: Math

Grade: 7

Make sense of problems and persevere in solving them.
 Construct viable arguments and critique the reasoning of others.
 Use appropriate tools strategically.
 Look for and express regularity in repeated reasoning.

Reason abstractly and quantitatively.
 Model with mathematics.
 Attend to precision.
 Look for and make use of structure.

relative frequency and predict the approximate relative frequency given the probability.

- 7.SP.C.7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
- 7.SP.C.7a. Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events.
- 7.SP.C.7b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.
- 7.SP.C.8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- 7.SP.C.8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
- 7.SP.C.8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.
- 7.SP.C.8c. Design and use a simulation to generate frequencies for compound events.