7th Grade Mathematics
Curriculum used: Connected Mathematics Project 3

Holt Public Schools Vision Statement for K-12 Mathematics Instruction:

We believe students in mathematics in Holt Public Schools need a productive disposition towards mathematics and to view themselves as confident mathematicians. In order to build this disposition, students will gain strong conceptual knowledge that then supports development of their procedural skills. Students will make sense of problems and persevere in solving them. In those problems, students will model and reason abstractly and quantitatively. Students will construct viable arguments and critique the reasoning of others.

Math

Tiered Philosophy

In Holt Public Schools, we believe all students are able to become capable mathematicians. We recognize that this does not happen at the same pace for all students, so some students, at various times, will need additional support to be successful. Because we value all students experiencing rigorous math classes with their peers, the support students receive will be in addition to their regular, at-level math course. By increasing the amount of time students engage with mathematics during the day, we are able to help students close existing knowledge gaps that hinder success with their grade level course work, see connections between mathematical ideas, deepen their understanding of current and prior knowledge, and develop a positive mathematical identity.

According to Dr. Rebecca Sarlo, Tier 2 supports and interventions at the secondary level "should be designed to support student success with core instructional content (2014)." The supports should address knowledge or gaps that are more relevant to the current core instruction students are receiving. In addition to supporting students' acquisition of mathematical concepts, students also build their efficacy at being a successful mathematics student. This happens through increasing engagement through goal setting, high quality and high frequency feedback, and students monitoring their own progress.

Students who receive this support at grades 7-9 typically have some gaps in their prior knowledge or underdevelopment of some mathematical habits of mind that will be problematic for future success. Students are identified using data points such as prior course failures, common unit test or exam scores, unit screeners, or teacher recommendation. By utilizing the mathematic support classes, students are engaged in mathematics for more minutes during the day than their peers, which helps to close knowledge gaps. The class sizes are smaller so students receive more frequent teacher feedback. Students engage in the mathematical practice standards and collaborate with their peers in order to become more confident in themselves as capable and successful mathematicians. Teachers organize learning opportunities for students to build their mathematical habits of exploring ideas, orienting/organizing, thinking in reverse, representing, justifying, generalizing, checking for reasonableness, and using mathematical language (Horn 2012). In order to provide these experiences, instruction is not of an "I do, we do, you do" type model.

According to Rollins (2014), support that is remediation of prior content that is not relevant to what the student is expected to do in their current math class only keeps that student behind. She advocates for addressing past conceptual and procedural knowledge gaps connected to the new learning expected students experience in their grade level math class. As a result, the learning opportunities teachers provide are centered on mathematical content that is prerequisite knowledge for what students need to be successful in their core class in real time. This helps students engage in the core instruction with their peers rather than falling further behind and waiting to catch up.

Below are student experiences and related teacher knowledge or actions from literature on best mathematical teaching practices. The resources used to compile this were:

- *Small Steps*, *Big Changes*, Confer and Ramirez (2012)
- *Principles to Actions*, National Council of Teachers of Mathematics (2014)
- *Adding It Up*, National Research Council (2001)
- *Strength in Numbers*, Horn (2012)

We believe all students need to understand the following expectations and engage in these actions at all grades:

Student experiences	Related teacher knowledge or actions
Students justify their mathematical arguments and critique those of others.	• Teachers keep the complexity of authentic learning tasks • Teachers anticipate and use students' errors and misconceptions as learning opportunities • Teachers facilitate a high level of student discourse, probe student thinking through purposeful questions, and ask students to justify • Teachers have multiple mathematical representations and strategies to help support students in making connections between their mathematical ideas and those of others
Students apply multiple strategies.	• Teachers have a strong understanding of the mathematics they teach and how it connects: concepts, procedures, representations, strategies, language • Teachers gather evidence of knowledge during instruction and use assessment data strategically to help students refine their mathematical knowledge and support building connections between ideas.
Students write, talk about, and present their mathematical ideas.	• Teachers facilitate students making connections between mathematical ideas • Teachers anticipate common mathematical errors and misconceptions, and when students make these, use them as learning opportunities • Teachers facilitate a high level of student discourse, probe student thinking through purposeful questions, and ask students to justify
Students engage in solving mathematical problems with peers.	• Teachers keep the complexity of authentic learning tasks • Teachers build interdependence among students by facilitating group work and having norms.
Students engage in productive struggle and persevere.	• Teachers have a strong understanding of the mathematics they teach and how it connects (concepts, procedures, representations, strategies, language) in order to facilitate a productive struggle • Teachers keep the complexity of authentic learning tasks to promote productive struggle • Teachers facilitate a high level of student discourse, probe student thinking through purposeful questions, and ask students to justify • Teachers anticipate prior knowledge and common possible ways students will attempt a problem while planning in order to know entry points into the problems and suggestions of prior knowledge that

	will help students progress through complex tasks.
Students solve complex problems with multiple solution paths.	• Teachers have a strong understanding of the mathematics they teach and how it connects (concepts, procedures, representations, strategies, language) to allow multiple solution paths • Teachers have multiple mathematical representations and strategies to help teach students • Teachers keep the complexity of authentic learning tasks so there are multiple solution paths • Teachers gather evidence of knowledge during instruction and use assessment data strategically in order to facilitate students seeing a robust set of solution paths
Students create and use visual models and multiple representations.	• Teachers have a strong understanding of the mathematics they teach and how it connects (concepts, procedures, representations, strategies, language) to allow multiple representations • Teachers keep the complexity of authentic learning tasks
Students are self-assessing based on learning goals. Related to students use metacognitive strategies to know when to adjust their learning strategies in relation to learning goals.	• Teachers anticipate common mathematical errors and misconceptions, and when students make these, use them as learning opportunities • Teachers differentiate, when appropriate, for students who are struggling as well as those who need additional challenges
Students value mathematics.	• Teachers facilitate a high level of student discourse, probe student thinking through purposeful questions, and ask students to justify to provide multiple opportunities for students to see value in multiple aspects of mathematics • Teachers differentiate, when appropriate, for students who are struggling as well as those who need additional challenges
Students believe in their own efficacy.	• Teachers facilitate a high level of student discourse, probe student thinking through purposeful questions, and ask students to justify to provide multiple opportunities for students to grow their efficacy • Teachers gather evidence of knowledge during instruction and use assessment data strategically in order to provide support to students • Teachers differentiate, when appropriate, for students who are struggling as well as those who need additional challenges • Teachers anticipate prior knowledge and common possible ways students will attempt a problem while planning in order to support all students at being successful in mathematics
Students will make connections based on **conceptual** understandings.	• Teachers have a strong understanding of the mathematics they teach and how it connects: concepts, procedures, representations, strategies, language • Teachers facilitate students making connections between mathematical ideas • Teachers have multiple mathematical representations and strategies to help teach students • Teachers anticipate prior knowledge and common possible ways students will attempt a problem while planning

Students make connections between multiple representations.	• Teachers have a strong understanding of the mathematics they teach and how it connects: concepts, procedures, representations, strategies, language • Teachers have multiple mathematical representations and strategies to help teach students • Teachers facilitate students making connections between mathematical ideas in order to connect conceptual understandings to procedural knowledge and connections across mathematical ideas • Teachers anticipate prior knowledge and common possible ways students will attempt a problem while planning in order to identify the connections students should see

7th grade course overview

The purpose of seventh grade math is to continue to build on the ratio and proportional reasoning students have begun to explore in sixth grade to prepare them for their initial work with linear equations. Students also work with geometric representations of ratios in scaling objects. Operations with all rational numbers (fractions, negatives) is another large focus.

Approximate learning timeline

Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

Measuring and Scaling	Comparing and Scaling	Accentuate the Negative	Moving Straight Ahead	Filling and Wrapping	What Do You Expect?
Measurements of angles on lines and in triangles, parallel lines and transversals, enlarging and shrinking figures, effects of scale factors, ratios between similar figures.	Ratios, unit rate, rate tables, constant of proportionality, solving proportions, inc., measurement conversion; determining whether relationships are proportional or not	Addition, subtraction, multiplication and division of rational numbers, absolute value, opposites, order of operations, distributive property	Representing linear relationships in graphs, tables, equations; writing equations for markups and discounts; solving linear equations; determining whether relationships are proportional or not	Area, circumference of circle; volume and surface area of rectangular and polygonal prisms and compositions of rectangular prisms	Revisit ratios through probability; Probability models, experimental and theoretical probability, analysis of compound events

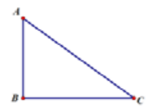
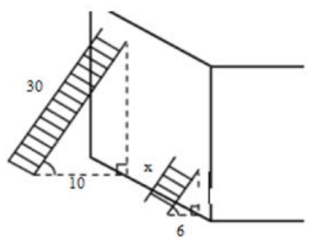
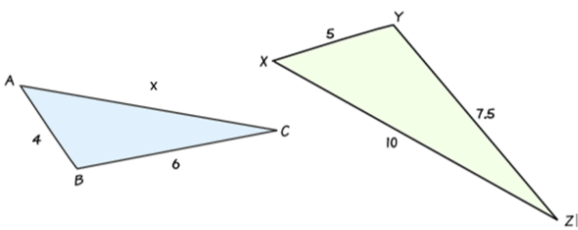
7th grade Performance Scales

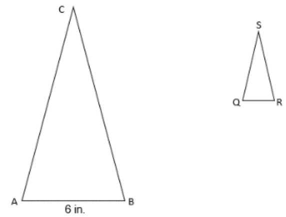
Unit 1: Measuring and Scaling

7.G.2 Drawing Triangles
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions.

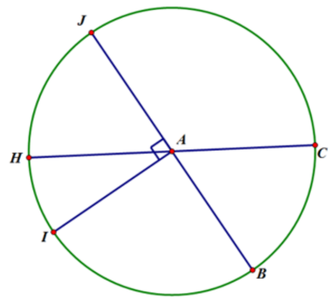
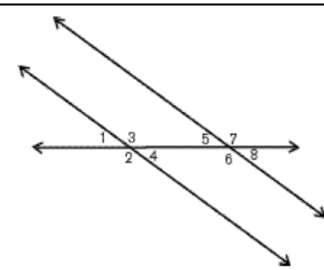
Score	Learning Targets	HPS Assessment question	PSAT assessment question
			PSAT assessment question Not assessed on SAT or PSAT Is assessed on MSTEP
A	Extend your reasoning about triangles to unfamiliar contexts.	Keisha wants to weld together three silver bars to make a triangle for some jewelry. The lengths are 6 mm, 2 mm, and 3 mm. Would she be able to make a triangle out of these bars? Explain your reasoning.	
B	Given 3 side lengths, know whether it will make a triangle. Use drawings and explanations to justify your reasoning. Given 3 angles, know whether it will make a triangle. Use drawings and explanations to justify your reasoning.		
C	Given 3 side lengths or 3 angles, know whether it will make a triangle.	A triangle has an angle that measures 45 □ an angle that measures 112 □. W measure of the third angle? Show all of your work AND EXPLAIN why that's the only angle that would work.	
D	Identify and label sides and angles of triangles.	Given an image labeled: Which sides measure 5 cm? ___________ ___________ Which angle measures 120 ___________	

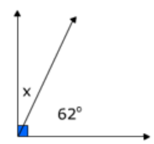
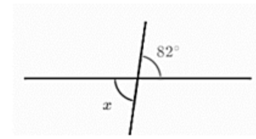
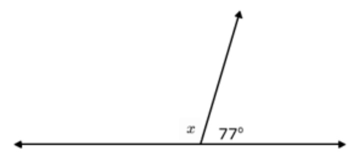
7.G.1 Scale Drawings
Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Score	Learning Targets	HPS Assessment question	PSAT assessment question
Advanced	Reproduce a scale drawing at a different scale.	G.1 Scaling A Level $m\angle ABC = 90^{0}$  8.a. Make a scale drawing of the above triangle in the rectangular area provided below. Make the triangle take up as much room as possible in the space. 8.b. What is the scale factor that you used? 8.c. Explain why you used this particular scale factor.	
Proficient	Solve problems involving scale drawings by scaling up and scaling down. Explain your strategy.	A 30-foot ladder is leaning up against a wall. The bottom of the ladder is ten feet from the wall. The bottom of a second ladder leaning at the same angle is 6 feet from the wall. How long is the ladder? Show all of your work.  	1 On a floor plan for Rosedale Middle School, 1 inch represents 10 feet. If Sarah's classroom is 2 inches by 3 inches on the floor plan, what are the actual dimensions of her classroom? A. 20 feet by 30 feet B. 40 feet by 60 feet C. 200 feet by 300 feet D. 20 yards by 30 yards
Developing	Given two similar shapes, find the missing measurement(s) using corresponding sides and	The shapes below are similar. Find x. Show all of your work.  	

	angles.		
Beginning	Given a scale factor (integer) and measures of an original object, find the measurements of scaled image.	Consider the similar triangles, △ABC and △QRS, below. $\overline{AB}$ = 6 in. The scale factor from the first triangle to the second is 1/3. What is the measure of $\overline{QR}$? Show all work. 	

7.G.5 Facts About Pairs of Angles
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.

Score	Learning Targets	HPS Assessment question	PSAT assessment question
			Not assessed on SAT or PSAT Is assessed on MSTEP
Advanced	Given a complex drawing, find the measurements of other angles using supplementary, complementary, vertical *and* adjacent angles without a protractor. Justify how you would find the measurements using terms such as supplementary, complementary, adjacent and vertical angles	G.5 Angles A  m∠BAC = 58º 10.a. Without using a protractor, find the measure of ∠JAH ______ 10.b. Without using a protractor, find the measure of ∠HAI. ______. 10.c. Justify your answers using mathematical terms like supplementary, complementary, vertical, and/or adjacent angles.	
Proficient	Given a drawing with more than two angles, find the measurements of other angles in the drawing using facts about supplementary, adjacent, complementary and vertical angles instead of a protractor.	9. In the drawing to the right, the two parallel lines are cut by a transversal. The m∠8 = 34º.  m∠4 = ____________ m∠5 = ____________ m∠6 = ____________ m∠7 = ____________ List at least two supplementary angles here: List at least two adjacent angles here:	

Developing	Given one angle in a drawing, find another angle using facts about supplementary, adjacent, complementary and vertical angles.	Find the measure of ∠x in each drawing. Show work for each.   	
Beginning	Use a protractor to draw an angle and label it accurately.	Using a protractor, draw and label ∠MNA that measures 65 □	

Unit: **Comparing and Scaling**

Unit Rates (Standard 7.RP.1)
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

Score	Learning Targets	HPS Assessment question	PSAT assessment question
Advanced	Given nonstandard fractions, compute a unit rate.	Kellie typed 110 words in $2\frac{3}{4}$ minutes. At this rate, how many words can she type in $4\frac{1}{3}$ minutes? Be sure to show your work and give an answer that is exact, not an estimate.	
Proficient	Compute unit rates associated with ratios of benchmark fractions.	Pencils are $1.11 for a package of 3 pencils. What is the price per pencil?	
Developing	Compute unit rates from ratios that have whole numbers.	a. Hershey chocolate bars weigh 43 grams. Out of that weight, 13 grams are fat. What is the percent of the total weight that is fat? (Round to the nearest percent and show your work). b. Is the percent of fat a part:part ratio, a part:whole ratio, or neither?	
Beginning	Identify part:part vs. part:whole.		

Solving Proportions (Standard 7.RP.3)
Use proportional relationships to solve multistep ratio and percent problems.

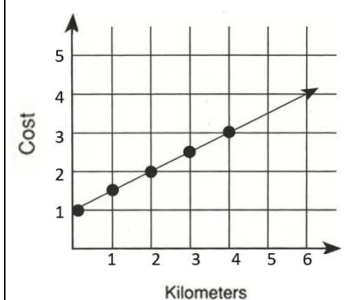
Score	Learning Targets	HPS Assessment question	PSAT assessment question
Advanced	Draw connections between two or more ways of solving a proportion, given examples.	Solve the following proportion showing **two different** strategies. (Show one strategy for the C level and two strategies for the A level). $\frac{5}{8} = \frac{x}{10}$	
Proficient	Use proportional relationships to solve ratio problems with rational numbers.	a. Set up a proportion that could be solved to find the answer to the following problem. The cost for 5 cartons of strawberries is $4. How much would 12 cartons cost? b. Solve the proportion to find the answer. Show your work and be sure to indicate your units.	**24** A random sample of 400 town voters were asked if they plan to vote for Candidate A or Candidate B for mayor. The results were sorted by gender and are shown in the table below. Plan to vote for Candidate A / Plan to vote for Candidate B Female: 202 / 20 Male: 34 / 144 The town has a total of 6000 voters. Based on the table, what is the best estimate of the number of voters who plan to vote for Candidate A? SAT: **5** Nutritional Information for 1-Ounce Servings of Seeds and Nuts Seed or nut / Calories / Total fat (grams) / Protein (grams) Pecan / 198 / 20.2 / 3.0 Pistachio / 80 / 6.5 / 3.0 Pumpkin / 159 / 13.9 / 8.5 Sunflower / 166 / 14.6 / 5.9 Walnut / 185 / 18.5 / 4.3 The table above shows the calories, grams of fat, and grams of protein in 1-ounce servings of selected seeds and nuts. How many more grams of protein are in one pound of pumpkin seeds than are in one pound of pistachios? (1 pound = 16 ounces) A. 48 B. 72 C. 88 D. 136

			14 A greenhouse owner purchases fertilizer in 60-gallon drums. The fertilizer is mixed with water to make several batches of solution. Each batch of solution is made by mixing 3 quarts of fertilizer with water. What is the maximum number of batches of solution that can be made from one 60-gallon drum of fertilizer? (1 gallon = 4 quarts) A. 45 B. 60 C. 80 D. 180
Developing	Find a missing value in a proportion using scale factor or a ratio with whole numbers.	Solve the following proportion showing **two different** strategies. (Show one strategy for the C level and two strategies for the A level). $\frac{5}{8} = \frac{x}{10}$	
Beginning	Set up a proportion to represent a situation.	a. Set up a proportion that could be solved to find the answer to the following problem. The cost for 5 cartons of strawberries is \$4. How much would 12 cartons cost? b. Solve the proportion to find the answer. Show your work and be sure to indicate your units.	

Recognizing Proportions in Situations (Standard 7.RP.2—Part 1)
Recognize and represent proportional relationships between quantities.

<table>
<tr><th>Score</th><th>Learning Targets</th><th>HPS Assessment question</th><th>PSAT assessment question</th></tr>
<tr><td>Advanced</td><td>Describe a real-life relationship between two variables that is not proportional.</td><td>Describe a situation where the relationship between two variables is NOT proportional.
Clearly state your variables in the situation.</td><td></td></tr>
<tr><td>Proficient</td><td>Recognize whether a situation is proportional from its table, graph, or equation, including identifying its constant of proportionality.</td><td rowspan="3">For #15-#17, determine whether the relationship between the variables is proportional or not. Then, explain how you found your answer. Also, if the relationship is proportional, STATE THE CONSTANT OF PROPORTIONALITY.

15. $y = 8x$



X | 1 | 2 | 3 | 4 | 5
Y | 1 | 4 | 9 | 16 | 25</td><td></td></tr>
<tr><td>Developing</td><td>Recognize whether a situation is proportional from two of the three representations.</td><td></td></tr>
<tr><td>Beginning</td><td>Recognize whether a situation is proportional from one of the three representations.</td><td></td></tr>
</table>

Representing Proportional Relationships (Standard 7.RP.2—Part 2)
Recognize and represent proportional relationships between quantities.

<table>
<tr><th>Score</th><th>Learning Targets</th><th>HPS Assessment question</th><th>PSAT assessment question</th></tr>
<tr><td>Advanced</td><td>Given a representation of a proportional relationship (table, graph or equation), create a situation that would be represented.</td><td>Write a story that goes with this equation: y = 12.5x
Explain what x and y represent in your story. Explain how your story connects to this equation.</td><td></td></tr>
<tr><td>Proficient</td><td>Given a situation that describes a proportional relationship, represent it with a table, graph, and equation, identifying the correct constant of proportionality.</td><td rowspan="3">Bud’s car used 12 gallons of gas to travel 450 miles.

a. Fill in the following table to represent the relationship between miles driven and gallons used.

<table><tr><td>Gallons</td><td>0</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td></tr><tr><td>Miles</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>
What is the unit rate for this situation?

b. Write an equation that shows the relationship between the gallons of gas (g) and the miles (m). Circle the unit rate in the equation.
c. Make a graph on the graph paper below that shows the relationship between the amount of gas and the miles. Graph at least 4 coordinate pairs. Remember to label your scale, axes, and variables on the graph. Circle the unit rate on the graph.</td><td></td></tr>
<tr><td>Developing</td><td>Given a situation that describes a proportional relationship, represent it with two of the three representations, identifying the correct constant of proportionality.</td><td></td></tr>
<tr><td>Beginning</td><td>Given a situation that describes a proportional relationship, represent it with one of the three representations, identifying the correct constant of proportionality.</td><td>5 Marisol drove 3 hours from City A to City B. The equation below estimates the distance d, in miles, Marisol traveled after driving for t hours.

d = 45t

Which of the following does 45 represent in the equation?

A. Marisol took 45 trips from City A to City B.
B. The distance between City A and City B is 45 miles.
C. Marisol drove at an average speed of about 45 miles per hour.
D. It took Marisol 45 hours to drive from City A to City B.</td></tr>
</table>

Unit 3 – **Accentuate the Negative**

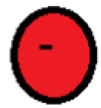
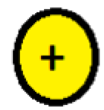
7.NS.1: Adding and Subtracting

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.

Score	Learning Targets	HPS Assessment question	PSAT assessment question Not assessed, but students are expected to work with all rational numbers. Is assessed on MSTEP
Advanced	Justify equivalent expressions using models and/or real world contexts	Write a story or draw a picture to show that 4 + 2 and $4 - (-2)$ are equal.  Remember red = negative coins and black = positive coins	
Proficient	Add and subtract numbers that are not integers.	Add or subtract the following to get an answer. Show all of your work. 9. $3\frac{1}{2} + (-2\frac{1}{2})$ = ______ 10. $-\frac{1}{4} + (-\frac{1}{3})$ = ______ 11. $-\frac{1}{8} - (-2\frac{3}{4})$ = ______ 12. $-5 - 7\frac{1}{5}$ = ______	
Developing	Add and subtract integers.	Add or subtract the following to get an answer. 5. 6 + -5 = ______ 6. -2 + -3 = ______	

		7. -7 – 1 = ______ 8. 5 – (-2) = ______	
Beginning	Demonstrate addition and subtraction of integers on a number line or other context.	Show the following processes on the number line and write the answer in the space. 1. -7 + 4 = ______ 2. -4 – 1 = ______ 3. -2 - (-3) = ______	

7.NS.2: Multiplying and Dividing
Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

Score	Learning Target	HPS Assessment question	PSAT assessment question
			Not assessed, but students are expected to work with all rational numbers. Is assessed on MSTEP
Advanced	Justify equivalent expressions using models and/or real world contexts.	Write a story or draw a picture to show that $-5 \cdot 2$ and $5 \cdot -2$ are equal.   Remember red = negative coins and black = positive coins	
Proficient	Multiply and divide numbers that are not integers.	Multiply or divide the following to get an answer. Show all work. 19. $-30\frac{2}{3} \div 2 =$ ______ 20. $-4 \cdot \frac{1}{4} =$ ______ 21. $-\frac{1}{5} \cdot (-\frac{3}{2}) =$ _____ 22. $-2\frac{1}{3} \div -1\frac{1}{6} =$ ______	
Developing	Multiply integers and divide integers.	Multiply or divide the following to get an answer. 15. $-3 \cdot (-6) =$ ______	

		16. 8 · -5 = _____ 17. -55 ÷ -1 = _____ 18. 10 ÷ (-5) = _____	
Beginning	Demonstrate multiplication and division of integers using a model or other context.	Draw a picture that shows what 3 · -5 MEANS. Remember, a red chip is negative and a black chip is positive.	

7.NS.3: Solve Real-World Problems
Solve real-world and mathematical problems involving the four operations with rational numbers.

Score	**Learning Target**	**HPS Assessment question**	**PSAT assessment question** Not assessed, but students are expected to work with all rational numbers. Is assessed on MSTEP
Advanced	Solve one-step equations with variables and rational numbers.	Solve the following for x. What number for x works in the equation? 33. $x - 5 = (-15)$ 34. $-3x = 18$ 35. $x + 20 = (-5)$ 36. $x \div -2 = -8$	
Proficient	Use the Distributive Property to rewrite expressions with rational numbers in a different form.	Rewrite the following using the Distributive Property to find the expanded form. Example: $3(x - 2)$ is factored form Example: $15x + 45$ is expanded form 29. $3(x - 2)$ = ________________ 30. $-5(x + 10)$ = ________________ Rewrite the following using the Distributive Property to find the factored form. 31. $15x + 45$ = ________________ 32. $-7x + (-21)$ = ________________	
Developing	Use Order of Operations to evaluate expressions with rational numbers.	Use the correct Order of Operations to perform the following operations to get an answer. 25. $3 + 8 \cdot 2$ = ______	

		26. $(4 + -2) + 1\frac{1}{2} \cdot -2 =$ ______ 27. $-32 \div (4)^2 + \frac{3}{5} =$ ______ 28. $-4 \cdot (-5) + 2 \cdot (-3) =$ ______	
Beginning	Write an equation to represent a situation.	Remy started out with $500 in his bank account. He withdrew $50. Then he deposited $200. Write an equation that represents what happened in his account and how much he has now. Start with $500 Take out $50 Put in $200	

Unit 4: Moving Straight Ahead

Writing and Solving Equations and Inequalities (7.EE.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 quantities.

Score	**Learning Targets**	**HPS Assessment question**	**PSAT assessment question**
Advanced	Solve inequalities and graph the solution set.	Solve the following inequalities and graph the solution set. 11. $8x + 6 \leq 30$ 12. $3x + (-12) > -21$	
Proficient	Solve linear equations with more than one step.	Solve the following. Show steps or reasoning for full credit. 7. $7x - 12 = 9$ 8. $-3x + 9 = 42$ 9. $-1.5x + 28 = -13$ 10. $-\frac{1}{4}x - \left(-\frac{2}{3}\right) = -6$	**8** If $3x - 6 = 21$, what is the value of $x - 2$? A. 3 B. 5 C. 7 D. 11 **9** A tree is planted and is expected to grow according to the model below, where t is the number of years since the tree was planted and H is the height of the tree, in feet. $H = 3t + 5$ $0 \leq H \leq 100$ How many years after the tree is planted does the model predict the tree will reach a height of 65 feet? A. 200 B. 23 C. 20 D. 17

			2 $\frac{4x}{5}=20$ In the equation above, what is the value of x ? A. 25 B. 24 C. 16 D. 15 **11** $47=4z-11$ What is the value of z that satisfies the equation above? #11 is on the no calculator part
Developing	Write simple equations and inequalities from contexts.	5. Jasper walked at a speed of 1.5 meters per second. His brother gave him a 12-meter head start from the starting line. Write an equation that shows Jasper's distance, ***d***, from the starting line at any time, ***t***. 6. Jasmine has $15 in her bank account. She starts raking leaves and earns about $25 per week that she adds to her account. Write an equation that shows the total amount, ***m***, in Jasmine's bank account at the end of each week, ***w***.	
Beginning	Solve one-step equations with variables and rational numbers.	Solve the following equations for x. Show all work. 1. $x-5=8$ 2. $-4x=-24$ 3. $\frac{3}{5}x=-6$ 4. $x+3\frac{7}{8}=-10$	

Meaning of Different Forms of Equations and Inequalities (7.EE.1, 7.EE.2)
Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

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.

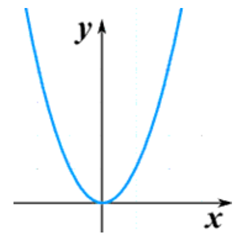
Score	Learning Targets	HPS Assessment question	PSAT assessment question
Advanced	Demonstrate the meaning and usefulness of the factored and expanded form of a linear equation (using the Distributive Property).	J.C. Penney has a 15% discount for everything in the store. a. Write two equations that can be used to find how much you will spend (after the 15% discount) for any original price. Use ***p*** to represent the original price and ***d*** for the discounted price. b. Explain what <u>each</u> of the numbers in <u>each</u> of your equations tells you about the situation. Then describe the benefits, or advantages, of <u>each</u> equation.	
Proficient	Demonstrate the meaning and usefulness of a linear equation and its simplified form (combining like terms).	21. Anaya wants to set up a hot dog business during the summer. She wants to keep track of her costs. Her cart will cost her \$150 to rent for the day. Each bun will cost \$.25, the hot dog will cost \$.75, and the condiments will cost approximately \$.10 per hot dog. She came up with the following equation to represent her costs: $y = .25x + .75x + .10x + 150$ a. Simplify Anaya's equation. b. Describe the benefits, or advantages, of the equation that was given, referring to the meaning of each term. c. Describe the benefits or advantages of the simplified equation that you came up with, referring to the meaning of each	

		term.	
Developing	Rewrite a linear equation using the Distributive Property.	Rewrite the following expressions in the expanded form. 17. $2(x + 10)$ 18. $-7(x - 3)$ Rewrite the following expressions in the factored form. 19. $7x - 35$ 20. $-4x + 32$	
Beginning	Combine like terms in a linear equation.	Combine "like terms" to simplify the following expressions. 13. $5x - 1 + 4 + 2x$ 14. $-3 + 8x - 6x + 12$ 15. $-15x + 2.5x - 3.5 + 4 - 10x +$ 1 16. $9x - (-6x) + 8 - (-1)$	

Recognizing and Representing Proportional Relationships (7.RP.2)

Recognize and represent proportional relationships between quantities.

<table>
<tr><th>Score</th><th>Learning Targets</th><th>HPS Assessment question</th><th>PSAT assessment question</th></tr>
<tr><td>Advanced</td><td>Compare and contrast “proportional” and “linear” relationships with all four representations (table, graph, equation, situation).</td><td rowspan="4">Is this table linear, proportional, both, or neither? Explain your reasoning.
<table><tr><th>x</th><td>0</td><td>1</td><td>2</td><td>3</td><td>5</td></tr><tr><th>y</th><td>5</td><td>10</td><td>15</td><td>20</td><td>25</td></tr></table>
Is this equation linear, proportional, both, or neither? Explain your reasoning.

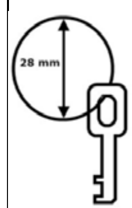
$y = -3x$
Is this graph linear, proportional, both, or neither? Explain your reasoning.


Is this situation linear, proportional, both, or neither? Explain your reasoning.

Savannah saves $25 every 2 weeks and puts it in her piggy bank. She starts with $300 that she got for a gift from her aunt.</td><td></td></tr>
<tr><td>Proficient</td><td>Compare and contrast “proportional” and “linear” relationships with three of the four representations (table, graph, equation, situation).</td><td></td></tr>
<tr><td>Developing</td><td>Compare and contrast “proportional” and “linear” relationships with two of the four representations (table, graph, equation, situation).</td><td></td></tr>
<tr><td>Beginning</td><td>Compare and contrast “proportional” and “linear” relationships with one of the four representations (table, graph, equation, situation).</td><td></td></tr>
</table>

Unit 5: Filling and Wrapping

7.G.4: Circumference of Circles
Know the formula for circumference of a circle and use it to solve problems; give an informal derivation of the relationship between circumference and area of a circle.

Score	**Learning Targets**	**HPS Assessment question**	**PSAT assessment question** Not assessed on SAT or PSAT Is assessed on MSTEP
Advanced	Describe the derivation of Π (pi).	Describe where the number π (pi) comes from. You may draw a diagram, also.	
Proficient	Calculate an accurate solution to a problem involving circumference.	A circular key ring has a diameter of 28 millimeters (mm). What is the circumference of the ring?  A circle has a radius of 20 cm. Calculate its circumference.	
Developing	Know a formula to calculate circumference.	What is the formula that calculates the circumference of a circle?	
Beginning	Identify when to use the formula for	Would you use circumference or area for the measurement described? Write C for circumference and A for area.	

	circumference.	a. The trim around the outside of a circular hot tub. _____ b. The material needed to cover the top of the hot tub. _____ c. The amount of water proofing spray needed for the bottom of a circular rain barrel. _____ d. The length available to engrave the inside of a wedding ring. _____	

7.G.4: Area of Circles

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 circumference and area of a circle.

Score	Learning Targets	HPS Assessment question	PSAT assessment question
Score	**Learning Targets**	**HPS Assessment question**	**PSAT assessment question** Not assessed on SAT or PSAT Is assessed on MSTEP
Advanced	Describe the derivation of the area formula using circumference.	Explain how the area formula for a circle can be created from the circumference formula. You may use a drawing to support your answer.	
Proficient	Calculate an accurate solution to a problem involving the area of a circle.	The face of circular clock has a radius of 42 cm. How much wood was used to make the face of the clock? The lid for a mason jar is in two different parts. One part covers the top of the jar. How much material is used for the cover if the jar has a diameter of 3 inches? 	
Developing	Know a formula to calculate the area of a circle.	What is the formula for the area of a circle?	
Beginning	Identify when to use the formula for area of a	Would you use circumference or area for the measurement described? Write C for circumference and A for area.	

	circle.	a. The trim around the outside of a circular hot tub. ______ b. The material needed to cover the top of the hot tub. ______ c. The amount of water proofing spray needed for the bottom of a circular rain barrel. ______ d. The length available to engrave the inside of a wedding ring. ______	

Appendix

It is a struggle at grades 7-12 to get in all the content that the standards call for at the depth that students need to truly retain the knowledge by the end of the school year. To exacerbate this, we are asking our 7th graders to take the MSTEP (a test assessing all of 7th grade content standards) beginning the second week of May. Because we assess online, it takes about 3 weeks for students to cycle through our labs, so potentially some students have about 2 more weeks of content instruction than others when they take the test. Until school year 2018-2019, 8th graders were beginning their MSTEP (a test assessing all of 8th grade content standards) the first week back from spring break. Beginning with the 2018-2019 school year, the 8th graders will be taking the PSAT, which falls in early April, usually right after spring break.

In order to maximize our instruction time with students, we have prioritized some standards over others. We based these decisions on what content we know needs lots of time to develop conceptually and procedurally, the limited information we have about the more weighted content areas of the MSTEP, and what students will need most to be successful in our high school math courses and the SAT. What follows is the list of content standards we don't assess or have performance scales written for. The rationale behind why are explained below, along with whether or how students still gain exposure to the ideas of the standards.

Standard	Still Taught?	Rationale
7.G.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	Y	Students will use these ideas when they find surface area by determining the shapes of the faces they need to find the area of.
7.SP.1-4 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.* 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 players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) 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.*	N	The statistics content is not a large focus of the MSTEP and it is the last unit in the 7th grade CMP sequence. As a result, school ends before we can get to this unit. The MDE documentation from 2015 that aligns standards to claims and targets for the test show these standards in two claims, and for the second claim it's on the performance task. Beginning school year 2017-2018 there was no math performance task. Students also revisit this information in Algebra D during the statistics unit.
7.SP.5-8 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. 6. Approximate the probability of a chance event by collecting data on the	N	The probability content is not a large focus on the MSTEP. The types of probability questions that are asked of students on the PSAT are simple probabilities that look like ratio or fraction problems. Students work extensively with ratios and fractions in

chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.* 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. 7a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.* 7b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?* 8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 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. 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. 8c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*		6th and 7th grade. Students revisit simple probabilities at the start of the probability unit in Algebra D before extending that knowledge into more complex situations.

Parent Resources

- CMP-written parent letters per unit
- Family resources on the CMP website
- Others….?