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

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Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

MAFS.7.RP.1.2 21

Recognize and represent proportional relationships between quantities.

a. 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.

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 (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.

MAFS.7.RP.1.3 32

Use proportional relationships to solve multistep ratio and percent problems.

Domain 2 – The Number System 43

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

MAFS.7.NS.1.1 44

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.

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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.

MAFS.7.NS.1.2 56

Apply and extend previous understandings of multiplication and division 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 using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

MAFS.7.NS.1.3 67

Solve real world and mathematical problems involving the four operations with rational numbers.

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Domain 3 – Expressions and Equations 74

Use properties of operations to generate equivalent expressions.

MAFS.7.EE.1.1 75

Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

MAFS.7.EE.1.2 85

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.

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

MAFS.7.EE.2.3 90

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.

MAFS.7.EE.2.4 97

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 $px + q > r$ 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.

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Domain 4 – Geometry.....107

Draw construct, and describe geometrical figures and describe the relationships between them.

MAFS.7.G.1.1..... 108

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.

MAFS.7.G.1.2.....116

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.

MAFS.7.G.1.3.....123

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

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

MAFS.7.G.2.4.....129

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.

MAFS.7.G.2.5..... 138

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.

MAFS.7.G.2.6.....143

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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Domain 5 – Statistics and Probability 153

Use random sampling to draw inferences about a population.

MAFS.7.SP.1.1 154

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.

MAFS.7.SP.1.2 161

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.

Draw informal comparative inferences about two populations.

MAFS.7.SP.2.3 170

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.

MAFS.7.SP.2.4 179

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

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

MAFS.7.SP.3.5 189

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.

MAFS.7.SP.3.6 196

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.

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MAFS.7.SP.3.7 202

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.

a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.

b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

MAFS.7.SP.3.8 209

Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

a. 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.

b. 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.

c. Design and use a simulation to generate frequencies for compound events.

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Domain 1

Ratios and Proportional Relationships

Compute Unit Rates Associated with Fractions.....12

Recognize and Represent Proportional Relationships.....21

Use Proportional Relationships to Solve Problems 32

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Everglades K-12 Publishing's Mathematics Florida Standards Grade 7
Domain 1 – Ratios and Proportional Relationships – MAFS.7.RP.1.1

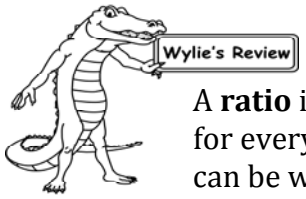
Domain

Standard Coding

Cluster **Title** → **Compute Unit Rates Associated with Fractions**

Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

Standard → *For example, if a person walks* 1/2 *mile in each* 1/4 *hour, compute the unit rate as the complex fraction* (1/2)/(1/4)*miles per hour, equivalently 2 miles per hour.*



A **ratio** is a mathematical statement that compares two numbers. "Three boys for every two girls" is a ratio that compares the number of boys to girls. Ratios can be written 3 different ways: with a fraction bar, with a colon or with the word "to". "Three boys for every two girls" can be written in the following ways: $\frac{3}{2}$, 3: 2 or 3 to 2.

A rate is a special ratio. A **rate** compares two measurements with *different* units of measure. "100 miles on 5 gallons of gasoline" is rate that compares miles to gallons. A **unit rate** compares the measure of a quantity to only *one* unit of measure of the other quantity. Written as a fraction, the denominator of a unit rate will always be 1.

To convert the rate, $\frac{100 \text{ miles}}{5 \text{ gallons}}$ to a unit rate, we must divide the numerator and denominator by 5, so the denominator will be equal to 1.

$$\frac{100 \text{ miles} \div 5}{5 \text{ gallons} \div 5} = \frac{20 \text{ miles}}{1 \text{ gallon}} = 20 \text{ miles per 1 gallon}$$

The unit rate for miles to gallons is 20 miles per gallon of gasoline.

What if we wanted to know how many gallons of gasoline it would take to travel 1 mile? The rate would be "5 gallons of gasoline to 100 miles".

$$\frac{5 \text{ gallons} \div 100}{100 \text{ miles} \div 100} = \frac{\frac{5}{100} \text{ miles}}{1 \text{ gallon}} = \frac{\frac{1}{20} \text{miles}}{1 \text{ gallon}} = \frac{1}{20} \text{gallon per 1 mile}$$

The unit rate for gallons to miles is $\frac{1}{20}$ of gallon of gasoline per mile.

Since a fraction bar represents division, the unit rate can also be found by writing the ratio as a division expression.

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Example 1: Fritzland swam $\frac{1}{2}$ mile in $\frac{3}{4}$ of an hour. How far can Fritzland swim in one hour?

Solution:

$\frac{\frac{1}{2}\text{mile}}{\frac{3}{4}\text{ hour}}$ $\quad$ $\text{Rate} = \frac{\text{Distance}}{\text{Time}}$

$\frac{1}{2}\text{mile} \div \frac{3}{4}\text{ hour}$ $\quad$ Rewrite as a division expression

$\frac{1}{2}\text{mile} \bullet \frac{4}{3}\text{hours}$ $\quad$ Follow division rules for dividing fractions; change division to multiplication and take the reciprocal of the divisor.

$\frac{4}{6}\text{miles per hour}$ $\quad$ Multiply

$\frac{2}{3}\text{miles per hour}$ $\quad$ Write in lowest terms

Fritzland can swim $\frac{2}{3}$ of a mile in one hour.

When the unit rate is the cost of one item, it is called the **unit price**.

Example 2: Belinda paid \$2.13 for $\frac{1}{3}$ of a pound of baloney. Find the unit rate, the price of one pound of baloney.

Solution:

$\frac{\$2.13}{\frac{1}{3}\text{pound}}$ $\quad$ Rate

$\$2.13 \div \frac{1}{3}\text{pound}$ $\quad$ Rewrite as a division expression.

$\frac{\$2.13}{1} \bullet \frac{3}{1}\text{pound}$ $\quad$ Follow division rules for dividing fractions; change division to multiplication and take the reciprocal of the divisor.

\$6.39 per pound $\quad$ Multiply

The unit price for baloney is \$6.39 per pound.

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Example 3: A cleaning solution calls for $\frac{2}{3}$ of a cup of vinegar for every $\frac{1}{2}$ gallon of water. Find the unit rate for (a) vinegar to water and (b) water to vinegar.

Solution:

Place the quantity that you wish to find "one" of in the denominator.

(a) $\dfrac{\frac{2}{3}\text{cup vinegar}}{\frac{1}{2}\text{gal. water}}$

$\frac{2}{3}\text{cup vinegar} \div \frac{1}{2}\text{gal. water}$

$\frac{2}{3}\text{cup vinegar} \bullet \frac{2}{1}\text{ gal. water}$

$\frac{4}{3}$ or $1\frac{1}{3}$ cup vinegar per gallon of water

(b) $\dfrac{\frac{1}{2}\text{gal.water}}{\frac{2}{3}\text{cup vinegar}}$

$\frac{1}{2}\text{gal. water} \div \frac{2}{3}\text{cup vinegar}$

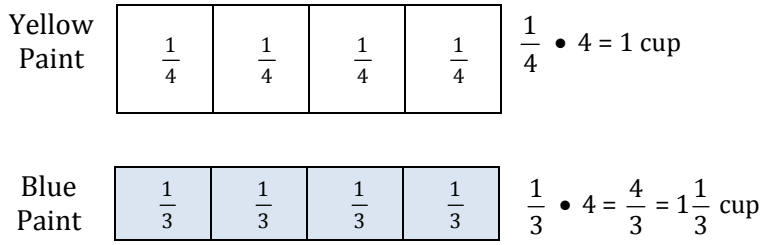
$\frac{1}{2}\text{gal. water} \bullet \frac{2}{3}\text{cup vinegar}$

$\frac{1}{3}$ gallon of water per cup vinegar

Example 4: Aston mixes $\frac{1}{3}$ cup of blue paint with $\frac{1}{4}$ cup of yellow paint to make the shade of green paint he needs for his science project. How many cups of blue paint should he mix with 1 cup of yellow paint? Use a model to illustrate your answer.

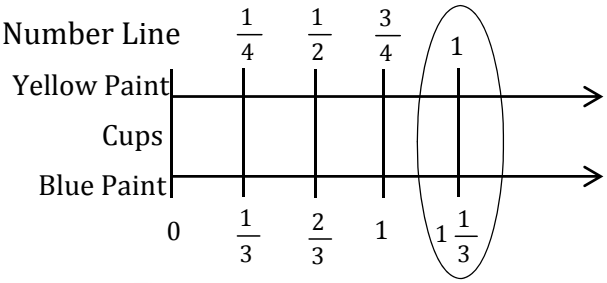
Solution:

Tape Diagram



$1\frac{1}{3}$ cup of blue paint should be used with every 1 cup of yellow paint.

Double Number Line



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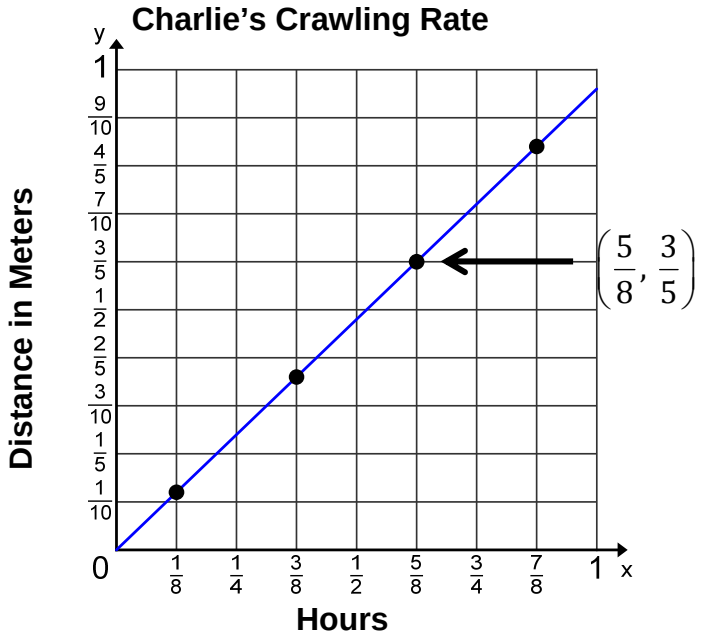
Example 5: Use the graph below to find Charlie the crab's crawling rate in meters per hour. If Charlie keeps crawling at the same pace, how far will Charlie travel in $2\frac{1}{2}$ hours?



Solution:

Identify a point on the graph whose coordinates can easily be read. In this example, the point $\left(\frac{5}{8}, \frac{3}{5}\right)$ can be easily read. The point $\left(\frac{5}{8}, \frac{3}{5}\right)$ can be translated to "Charlie crawled $\frac{3}{5}$ of a meter in $\frac{5}{8}$ of an hour."

Since, Rate = Distance ÷ Time, Charlie's rate is $\frac{\frac{3}{5} \text{ meters}}{\frac{5}{8} \text{ hours}}$ or $\frac{3}{5} \div \frac{5}{8}$.

Solving the division problem yields: $\frac{3}{5} \div \frac{5}{8} = \frac{3}{5} \bullet \frac{8}{5} = \frac{24}{25}$.

Charlie traveled $\frac{24}{25}$ meters per hour.

Charlie's total travel time = $\frac{24}{25}$ meters per hour $\bullet 2\frac{1}{2}$ hours =

$$\frac{24}{25} \bullet \frac{5}{2} = \frac{12}{5} = 2\frac{2}{5} \text{ meters}$$

Charlie traveled $2\frac{2}{5}$ meters in $2\frac{1}{2}$ hours.

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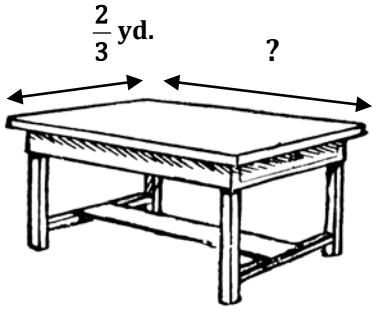
Example 6: The top of a small table has an area of $\frac{3}{4}$ yds^2. The width of the table top measures $\frac{2}{3}$ of a yard. What does the length of the table top measure?



Solution:

Area Formula $\quad A = \text{Length} \bullet \text{Width}$

Substitution $\quad \frac{3}{4}\text{ yd.}^2 = \text{Length} \bullet \frac{2}{3}\text{yd.}$

Solve for Length $\quad \frac{\frac{3}{4}\text{yds.}^2}{\frac{2}{3}\text{yd.}} = \frac{\text{Length} \bullet \frac{2}{3}\text{yd.}}{\frac{2}{3}\text{yd.}}$

Simplify $\quad \frac{\frac{3}{4}\text{yds.}^2}{\frac{2}{3}\text{yd.}} = \text{Length}$

Division Rules $\quad \frac{3}{4}\text{yds.}^2 \bullet \frac{3}{2}\text{yd.} = \text{Length}$

Multiplication $\quad \frac{9}{8}\text{yd.} = \text{Length}$

Convert $\quad 1\frac{1}{8}\text{yd.} = \text{Length}$

The length of the table measures $1\frac{1}{8}$yd.

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Now Try These:

For 1-6, Equation Editor

1. Mrs. Plunket paid \$1.78 for $\frac{2}{3}$ of a pound of potatoes. What is the price of a pound of potatoes?

2. A motorcycle can travel 15 miles on $\frac{3}{8}$ of a gallon of gasoline. How far can the motorcycle travel on one gallon of gasoline?

3. It takes Marvin $\frac{2}{3}$ of an hour to mow $\frac{1}{2}$ of his lawn. If Marvin continues mowing at the same rate, how long will it take him to mow his entire lawn?

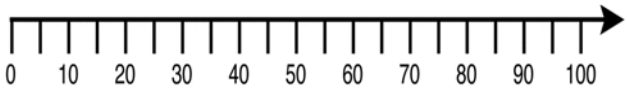
4. Yvonne can read $\frac{3}{8}$ of a book in $\frac{1}{4}$ of a day. At this rate, how many hours will it take Yvonne to finish reading the book?

5. It takes Erika $1\frac{1}{3}$ hours to bake $\frac{5}{6}$ of a batch of cupcakes. How long will it take Erika to bake one batch of cupcakes?

6. Marlene runs $\frac{2}{3}$ of a mile in $\frac{1}{12}$ an hour. What is Marlene's running rate in miles per hour?

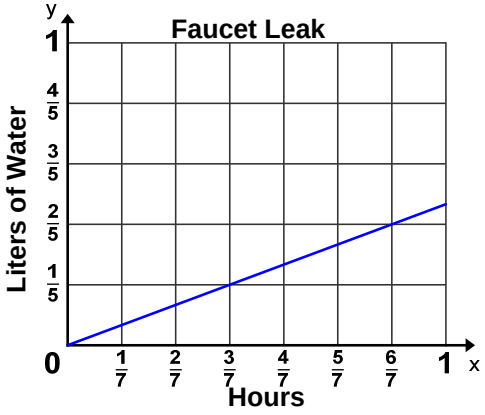
7. GRID

Dhakirah participates in a math marathon to raise money for a children's charity. Her sponsors agree to donate money for every math problem she completes. After $\frac{2}{5}$ of an hour, Dhakirah completed 18 problems. If she continues at this rate, how many problems will she be able to solve in one hour? Plot your answer on the number line below.



8. Open Response

The graph below shows the rate in which water is leaking from Trevor's faucet. How much water will have leaked from the faucet after 3 hours?



Explain how you determined your answer.

For 9-10. Equation Editor

For 9-10, Chandler wants to make rock candy. He finds the following recipe on the internet.

Rock Candy

1 cup sugar

$\frac{1}{3}$ *cup water*

$\frac{1}{2}$ *teaspoon food coloring*

9. Use the rock candy recipe to find the unit rate of food coloring to water.

10. Write an expression that can be used to find the unit rate of water to food coloring.

11. Table Item

Complete the table using the following information. Mr. Grove has $5\frac{1}{2}$ acres of oranges for every $2\frac{3}{4}$ acres of grapefruit on his farm.

Ratio	Unit Rate
Oranges to Grapefruit	
Grapefruit to Oranges	

12. GRID

Three candidates for a secretarial position take a typing test. They are each given the same document to type.

Candidate 1, types $\frac{3}{4}$ of the document in $\frac{1}{5}$ of an hour.

Candidate 2, types $\frac{4}{5}$ of the document in $\frac{1}{6}$ of an hour.

Candidate 3, types $\frac{2}{3}$ of the document in $\frac{1}{4}$ of an hour.

Use the words and symbols in the box below to order the candidates by their typing ability. Assume no typing mistakes were made.

Candidate 1	<
Candidate 2	=
Candidate 3	>

13. Equation Editor

Mr. Ring purchases a rectangular piece of property with an area of $\frac{1}{50}$ square mile. If the length of property is $\frac{3}{10}$ of a mile, what is the width of the property?

For 14-17, Multiple Choice

14. A granola recipe calls for $\frac{3}{4}$ of a cup of peanuts and $\frac{2}{3}$ of a cup of raisins. How many cups of raisins should be used for every one cup of peanuts?

A. $\frac{1}{2}$ cup of raisins

B. $\frac{8}{9}$ cup of raisins

C. $1\frac{1}{4}$ cups of raisins

D. 2 cups of raisins

15. Carl ate $\frac{1}{4}$ of a gallon of pudding in $\frac{3}{10}$ of an hour, while Rick ate $\frac{1}{3}$ of a gallon of pudding in $\frac{2}{5}$ of an hour.

Which of the following statements is true about the rate in which Carl and Rick eat pudding?

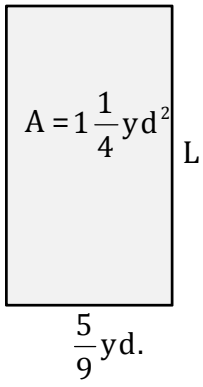
A. Carl eats pudding at a faster rate than Rick.

B. Rick eats pudding at a faster rate than Carl.

C. The rate at which Carl and Rick eat pudding is the same.

D. The rate at which Carl and Rick eat pudding cannot be determined.

16. Jared has a rectangular shape piece of poster board with area of $1\frac{1}{4}$ square yards. If the width of the poster board measures $\frac{5}{9}$ of a yard, what measurement is the length of the poster board?



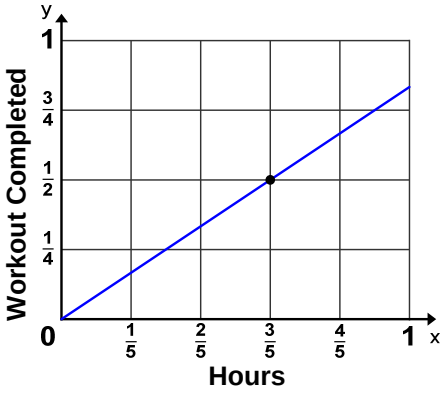
A. $\frac{25}{36}$ yards

B. $\frac{9}{20}$ yards

C. $1\frac{4}{9}$ yards

D. $2\frac{1}{4}$ yards

17. Graph shows the rate in which Mia completes her daily workout routine.



How many hours does it take Mia to complete her workout routine?

A. $1\frac{1}{5}$ hours

B. $\frac{5}{6}$ hour

C. $1\frac{3}{10}$ hours

D. $1\frac{1}{3}$ hours

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18. Multiselect

After paddling upstream in a kayak for $\frac{1}{12}$ hour, Kathy traveled $\frac{1}{3}$ of a mile.

Select all the true statements.

- ☐ In 15 minutes, Kathy can paddle 1 mile upstream.
- ☐ At her current rate, it will take Kathy 12 hours to paddle 3 miles.
- ☐ At her current rate, it will take Kathy 4 hours to paddle 16 miles.
- ☐ Kathy paddled her kayak 4 miles per hour.
- ☐ Kathy paddled her kayak $\frac{1}{4}$ mile per hour.
- ☐ Kathy can paddle 440 feet per minute upstream.

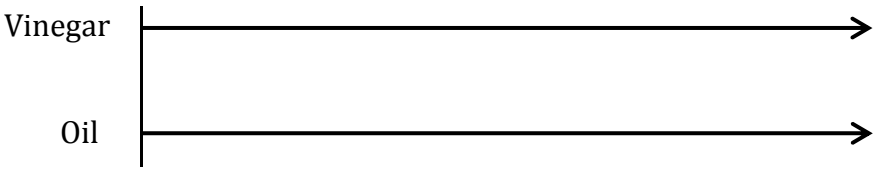
19. GRID

Don paints $\frac{1}{4}$ of room in $\frac{5}{8}$ of an hour. How long will it take Don to paint the entire room? Draw a tape diagram to solve the problem.

Room	
Hours	

20. GRID

A salad dressing recipe calls for $\frac{1}{4}$ cup vinegar for every $\frac{2}{3}$ cup olive oil. Ms. Swift accidently used 1 cup of vinegar instead of $\frac{1}{4}$ cup. If she hasn't added any oil yet, how much oil needs to be added to the vinegar, according to the recipe? Complete the double line diagram to solve the problem.



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

Formative Assessment 1

Solve and answer all of the problems on this assessment.

For 1-6, Equation Editor

1. It takes Louis $1\frac{2}{3}$ hours to write $\frac{5}{6}$ of a short story. How long will it take Louis to complete the story? MAFS.7.RP.1.1

_____

2. Write an equation to represent the data in the table. MAFS.**7**.RP.1.2

Let x = bags and
y = erasers

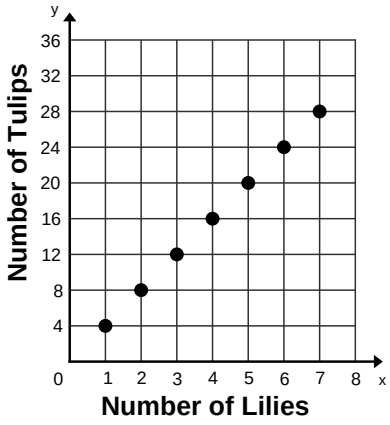
Number of Bags	4	9	13
Number of Erasers	32	72	104

_____

3. Ivana works at a department store selling perfume and makeup. She earns $375 per week and 4% commission on her sales. If Ivana's sales for the week were $2513, what are her total earnings for the week? MAFS.7.RP.1.3

_____

4. Write an equation to represent the relationship between the number of lilies, x and the number of tulips, y in a flower arrangement. MAFS.7.RP.1.2



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5. The area of a rectangle is $\frac{2}{3}$yd². The length of the rectangle is $\frac{5}{9}$yd. What is the width of the rectangle? MAFS.7.RP.1.1

_____

6. Mrs. Maytag is purchasing a dryer that sells for $640. She has a coupon for a 15% discount. The sales tax in her area is $7\frac{1}{2}$%. What will be the final cost of the dryer? MAFS.7.RP.1.3

_____

7. Equation Editor

A school's enrollment grew from 640 to 820 students. MAFS.7.RP.1.3

a. Complete the proportion below showing how to calculate the percent of increase in enrollment.

$$\frac{\square}{\square} = \frac{\square}{\square}$$

b. What was the percent of increase in enrollment to the nearest whole percent?

$\square$

8. Table Item

Complete the table using the following information. On Monday, Malia jogged $1\frac{3}{4}$ miles in $\frac{1}{4}$ hour.

MAFS.7.RP.1.1

Ratio	Unit Rate
miles to hours	
hours per mile	

9. Table Item

Complete the table so the relationship between the number of cans and the cost per can is proportional. MAFS.7.RP.1.2

Number of Cans	Cost
1	
5	$6.45
12	
	$20.64

10. Equation Editor and Open Response

Turtle A and Turtle B are in a race. Turtle A crawled $\frac{1}{4}$ yard in $\frac{1}{5}$ hour. Turtle B crawled $\frac{4}{9}$ yard in $\frac{1}{3}$ hour. MAFS.7.RP.1.1

a. What is the speed of Turtle A in yards per hour?

_____

b. What is the speed of Turtle B in yards per hour?

_____

c. What would be the distance between the two turtles if they traveled at their same rate for 6 hours? Explain your answer.

_____

_____

_____

For 11-15, Multiple Choice

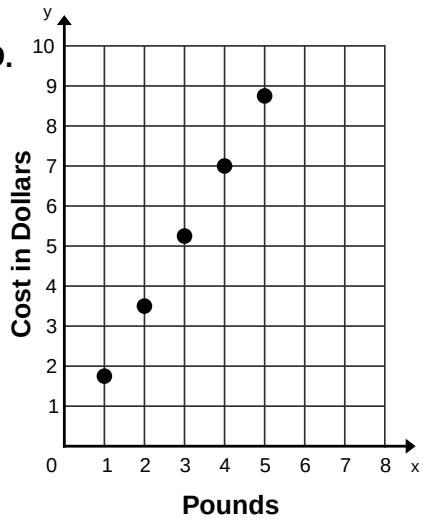
11. Which of the following does NOT represent the same unit rate as the others? MAFS.7.RP.1.2

A. 2 pounds of apples cost $3.50.

B. (1, 3.50)

C. If p represents the number of pounds and c represents the total cost, then c = 1.75p.

D.



12. Kent opened a savings account with a $450 deposit. His money earns 2.5% simple interest per year. If Kent does not deposit or withdraw money from the account, what will be the account balance after 15 years? MAFS.7.RP.1.3

A. $168.75
B. $618.75
C. $900.00
D. $1,125.00

13. A guacamole recipe calls for $\frac{3}{4}$ of a cup of diced avocado and $\frac{1}{3}$ of cup of diced tomatoes. How many cups of diced tomatoes should be used for every one cup of diced avocado? MAFS.RP.1.1

A. $\frac{2}{3}$ cup of diced tomatoes

B. $\frac{4}{9}$ cup of diced tomatoes

C. $\frac{1}{4}$ cups of diced tomatoes

D. $\frac{2}{3}$ cups of diced tomatoes

14. A biologist estimates the weight of a loggerhead turtle to be 275 pounds. If the actual weight of the sea turtle is 300 pounds, what was the percent of error? MAFS.7.1.3

A. $8\frac{1}{3}\%$

B. $9\frac{1}{6}\%$

C. $81\frac{1}{3}\%$

D. $91\frac{2}{3}\%$

15. The relationship between one side of an equilateral triangle, x and the perimeter of the equilateral triangle, y can be represented by a straight line through the origin of a coordinate plane. Which of the points with coordinates (x, y) lie on the line? MAFS.7.RP. 1.2

A. (2, 6)
B. (6, 2)
C. (2, 8)
D. (8, 2)

16. Table Item

Complete the table by finding the missing values. MAFS.7.RP.1.3

Cost	Tax Rate	Total
	5%	$30.03
$120.00		$129.00

17. Open Response

Does the table represent a proportional relationship? Justify your answer. MAFS.7.RP.1.2

Cups of Flour(x)	$\frac{3}{4}$	$2\frac{1}{4}$	$3\frac{3}{4}$
Number of Cookies(y)	12	36	60

_____

_____

_____

18. Multiselect

Kurt walked $\frac{3}{4}$ mile in $\frac{1}{3}$ of an hour.

If Kurt walked at a constant rate, which of the following statements will be true? MAFS.7.RP.1.1

- ☐ Kurt's walking pace is $\frac{4}{9}$ miles per hour.
- ☐ Kurt's walking pace is $2\frac{1}{4}$ miles per hour.
- ☐ Kurt's walking pace is $\frac{1}{4}$ miles per hour.
- ☐ Kurt can walk one mile in $\frac{4}{9}$ hour.
- ☐ Kurt can walk one mile in about 27 minutes.
- ☐ Kurt can walk one mile in 27 minutes.

19. Matching Item

Match each tip with the percent used to calculate the amount of the tip. MAFS.RP.1.1

Cost of Meal	Tip	15%	18%
$18.50	$3.33		
$76.20	$11.43		
$34.80	$5.22		

20. GRID and Equation Editor

An experimental calculation of the boiling point of olive oil yields 550°F. The actual boiling point of olive oil is 570°F. MAFS.RP.1.3.

a. Use the values in the box below to set up a proportion which can be used to find the percent of error in the experimental calculation.

$$\frac{\square}{\square} = \frac{\square}{\square}$$

Operational Symbols	Values
+ − × ÷ % ||	20 100 550 570 1120

b. Calculate the percent of error to the nearest tenth of a percent.

_____

21. GRID

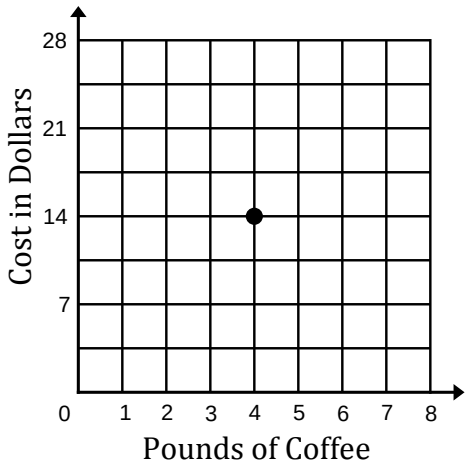
Kiana knits $\frac{1}{5}$ of a sweater in $\frac{7}{10}$ of an hour. If Kiana continues to knit at the same pace, how long will it take Kiana to complete the sweater? Draw a tape diagram to solve the problem. MAFS.7.RP.1.1

Sweater ☐

Hours ☐

22. GRID and Equation Editor

a. Place points on the graph that will have a proportional relationship with the other points. Then draw a line through the points. MAFS.7.RP.1.2



b. Identify the coordinates of the point on the line that represents the unit rate of coffee.

(_____ , _____)

c. If p represents pounds of coffee and c represents total cost, write an equation that can be used to find the cost total of any number of pounds of coffee.

_____

23. Equation Editor and Open Response

Mariah is shopping for a laptop. The laptop she wants to purchase is on sale at two different stores:

- At Electronics Warehouse, the laptop regularly sells for $620, but the store is offering a 20% discount this week.
- Computer Emporium is having an anniversary sale and all of their merchandise over $200 is discounted by 15%. The regular price of the laptop Mariah wants is $580. MAFS.7.RP.1.3

a. What is the discounted price of the laptop at Electronics Warehouse?

_____

b. What is the discounted price of the laptop at Computer Emporium?

_____

c. Both stores will match their competitor's price and give an additional 5% off. What will be Mariah's final cost for the laptop, if the tax rate in her area is 8%. Justify your answer.

_____

_____

_____

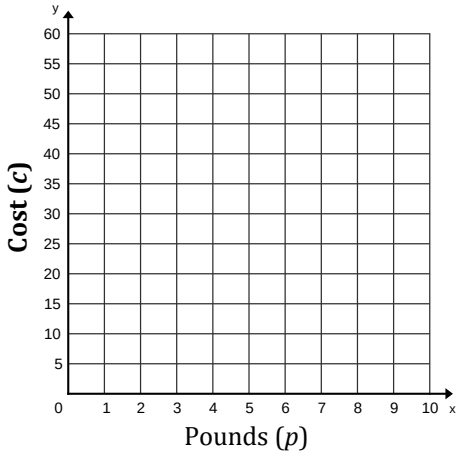
24. Table Item, GRID and Equation Editor

Giovanni's Chocolates sells chocolate candy by the pound. The cost of chocolate c is proportional to the number of pounds p of chocolate sold. MAFS.7.RP.1.2

a. Complete the table below.

Pounds (p)	Cost (c)
2	
	$22.00
6	$33.00
	$44.00
10	

b. Graph the points from part a and draw a line through the points.



c. Write an equation that can be used to find the total cost of any number of pounds of chocolate.

_____

25. Open Response

Julie works at a store that sells bridal gowns and formal wear. She earns $300 per week, plus 5% commission on her sales. MAFS.7.RP.1.3.

a. If Julie's sales for the year were $350,000. How much did Julie earn last year? Justify your answer.

_____

_____

_____

b. Bridal Bonanza has offered Julie a job at their store. She would earn a salary of $250 per week, plus 7% commission. What would Julie's annual pay at Bridal Bonanza be if her yearly sales remained the same? Explain how you determined your answer.

_____

_____

_____

c. Give one reason why Julie should stay with her present employer and one reason why Julie should go to work for Bridal Bonanza.

_____

_____

_____

For 26-27, Editing Task Choice

26. For each highlighted area, select the correct word, phrase or value.

If Kalen swam 1.8 miles per hour then Kalen swam **0.8, 0.6 or 1.2** miles in **18, 12 or 20** minutes. MAFS.7.RP.1.2.

27. For each highlighted area, select the correct word, phrase or value.

If the point (1, 4) indicates the unit rate of watermelons to cost, then **10, 8 or 4** watermelons cost **$32, $14 or $6.** MAFS.7.RP.1.2.

For 28-29, Hot Text

28. When red paint is mixed with blue paint, purple paint is created. Complete the table, using the numbers in the box below, to produce the same shade of purple paint. MAFS.7.RP.1.2.

Red Paint (x)	4	16	
Blue Paint (y)		24	36

48	6	12	24	18	20	32

29. The graph of proportional relationship is represented by the equation y = 6x. Use the numbers in the box below to write the coordinates of two points on the graph of y = 6x. MAFS.7.RP.1.2.

(___, ___) and (___, ___)

24	6	12	36	4	18	9