ST Math Texas

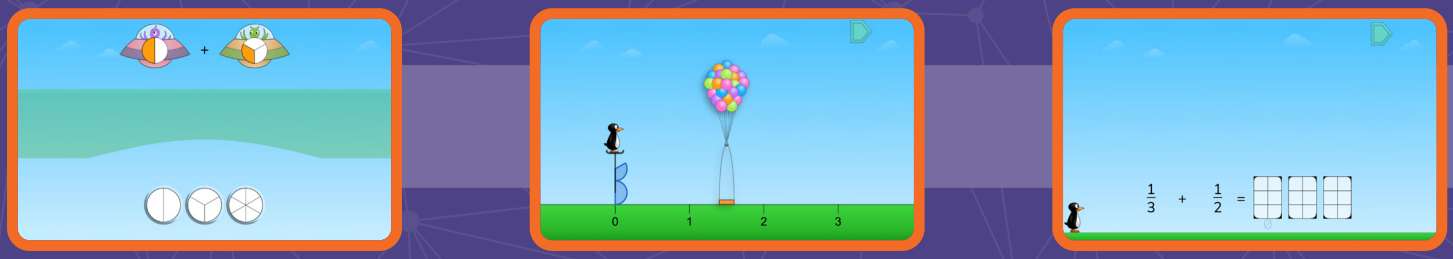
Grade 5

ST Math Practice Book

MIND EDUCATION

TEACHER EDITION

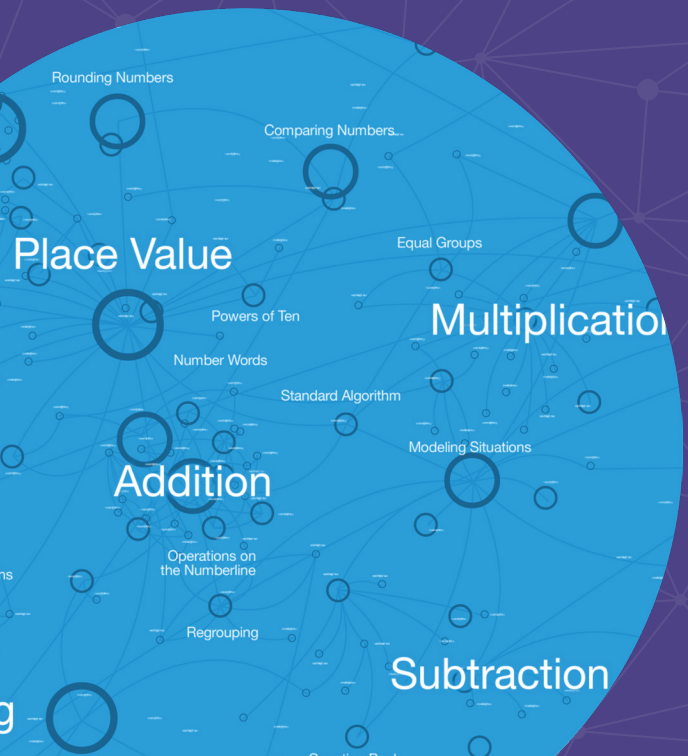
Building Mathematical Progressions Within and Across Grade Levels



Multiple models for every concept within a grade level

Visual-First Learning That Makes Math Click

ST Math Texas is built around a patented visual-first approach that helps students see and understand math. Interactive visuals activate students' spatial-temporal reasoning, building deep understanding even before introducing formal language or procedures.

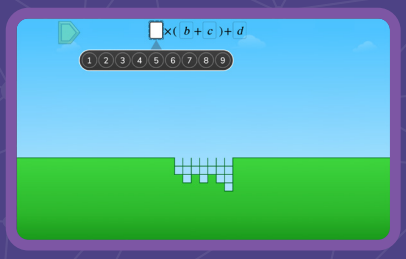


These scaffolded models support problem-solving, strategy sharing, and big-picture thinking—making math feel coherent and connected across and within grade levels.

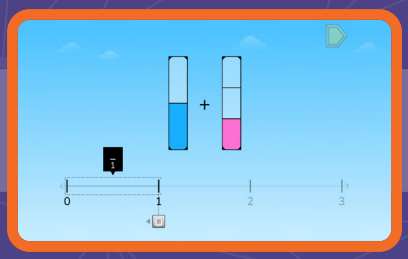
To deepen learning, lessons use multiple representations—visuals, numbers, words, and symbols—helping students form a rich network of ideas they can apply to new problems.

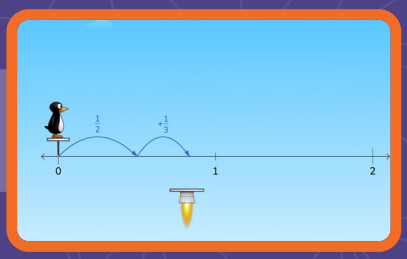
With **ST Math Texas** students go beyond memorization. They develop a connected understanding of math concepts, apply their learning flexibly, and build lasting confidence.

Expressions
Grade 5

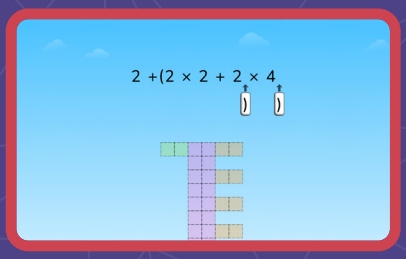


Fractions
Grade 4

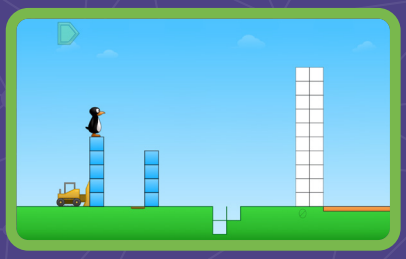




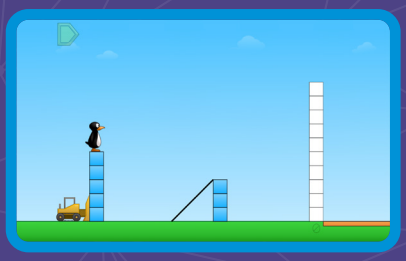
Multiplication
Grade 3



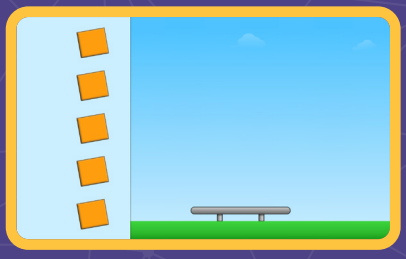
Subtraction
Grade 2



Addition
Grade 1



Counting
Grade K



Connected visual models build in complexity across grade levels

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How to Use This Document

This practice book is a standards-based, year long practice book companion to ST Math Texas.

To use this book in conjunction with ST Math Texas, find the digital games and objectives tied to each Topic. The hyperlinks will take you to the page that allows you to assign the ST Math Texas Objectives that go along with these practice pages.

These pages are designed to be printed and solved with paper and pencil. They come with spiral review, related topics and problems, and world problems that connect to the world around us.

Our help site offers further ties between ST Math, this practice book, and your school or district's curriculum.

Content Overview

In **Topic 1 (Extending Place Value, Addition, and Subtraction with Decimals)** students extend their understanding of the relationship between adjacent place values in whole numbers to decimals. They use this understanding to also extend their strategies for addition and subtraction to decimals, to explore the impact of multiplying and dividing by powers of 10, and to make sense of conversions between topics in the metric system. They extend this understanding of place value and powers of 10 to multiply and divide multidigit whole numbers in **Topic 2 (Extending Multiplication and Division to Multidigit Whole Numbers)** using the standard algorithms.

In **Topic 3 (Exploring Multistep Problems)**, students grow in their ability to interpret, represent, and solve multistep problems using symbolic notation and the convention order of operations. They extend their schema of equivalence to numerical expressions and explore the concept of "simplifying" expressions.

Topic 4 (Exploring Two- and Three-Dimensional Space) challenges students to think about and quantity size in three-dimensions: length (one dimension), area (two dimensions), and volume (three dimensions) while thinking about how the base unit, square unit, and cubic Topic are used in each case. They use area and volume as models to identify factors and to understand prime and composite numbers.

The next pair of topics addresses operations with fractions: first addition and subtraction (**Topic 5, Extending Equivalence, Addition, and Subtraction to Fractions**), then multiplication and division (**Topic 6, Extending Multiplication and Division to Fractions**). Addition and subtraction strategies are rooted in conceptual understanding: they can only be added or subtracted if they are expressed with the same-sized parts. In Topic 6, students rely on both interpretations of multiplication (iteration of a fraction or finding the fractional part of another number) and division (dividing a fraction into a whole number of parts, or determining how many fractional parts fit into a whole number).

Topic 7 (Extending Multiplication and Division to Decimals) builds on students' understanding of operations with both whole numbers and fractions. Students rely on extensions of place value patterns and/or fraction operations to interpret word problems and develop reliable strategies to multiply and divide decimals.

Topic 8 (Expanding Financial Literacy) provides students to practice computation and problem solving with decimals in money contexts while students learn about taxation and budgeting.

In **Topic 9 (Organizing Two-Dimensional Space)**, students expand their understanding of classification and come to understand classification of shapes as hierarchical. They are also introduced to the coordinate plane as a tool for quantifying location in two-dimensions. In **Topic 10 (Exploring Relationships in Data)**, students begin to use the coordinate plane to model inputs and outputs, identify patterns in data and graphs, and interpret them in real-world contexts. They make connections between algebraic and graphical representations, laying a foundation for working with and graphing algebraic equations in the future.

Topic 1: Extending Place Value, Addition, and Subtraction with Decimals

ST Math Objectives: Decimal Place Value, Rounding Decimals, Comparing with Decimals

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.2.A 5.2.B 5.2.C 5.3.A 5.3.D 5.3.E 5.3.F 5.3.G 5.3.K 5.7.A

ELPS: 1.B 1.C 1.E 1.F 2.A 2.B 2.C 2.D 2.E 2.F 3.C 3.F 3.G 3.H 4.A 4.B 4.C 4.E 4.F

Topic 2: Extending Multiplication and Division to Multidigit Whole Numbers

ST Math Objectives: Multiplication Algorithm, Whole Number Division, Prime and Composite Numbers

TEKS: 4.1.D 4.1.E 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.3.A 5.3.B 5.3.C 5.3.G 5.7.A

ELPS: 1.C 1.D 1.E 2.A 2.B 2.C 2.D 2.E 2.F 3.D 3.E 3.G 3.H 4.A 4.B 4.C 4.E 4.F

Topic 3: Exploring Multistep Problems

ST Math Objectives: Interpret Expressions, Patterns and Relationships, Converting Measurements

TEKS: 5.1.A 5.1.B 5.1.D 5.1.E 5.1.F 5.1.G 5.3.B 5.4.B 5.4.E 5.4.F 5.4.H 5.7.A

ELPS: 1.A 1.D 1.E 1.F 2.E 2.F 3.B 3.D 3.E 3.F 3.H 4.A 4.B 4.C 4.E 4.F

Topic 4: Exploring Two- and Three-Dimensional Space

ST Math Objectives: Volume, Shapes and Properties, Prime and Composite Numbers

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.4.A 5.4.F 5.4.G 5.4.H 5.6.A 5.6.B

ELPS: 1.A 1.B 1.E 1.F 2.A 2.B 2.C 2.D 2.E 2.F 3.A 3.B 3.C 3.G 3.H 4.A 4.B 4.C 4.E 4.F

Topic 5: Extending Equivalence, Addition, and Subtraction to Fractions

ST Math Objectives: Common Denominators and Equivalent Fractions, Adding and Subtracting Fractions with Unlike Denominators, Patterns and Relationships

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.3.A 5.3.H 5.3.K 5.4.F 5.9.A 5.9.C

ELPS: 1.A 1.B 1.C 1.E 1.F 2.B 2.C 2.D 2.E 2.F 3.A 3.B 3.E 3.F 3.G 3.H 4.A 4.B 4.C 4.E 4.F

Topic 6: Extending Multiplication and Division to Fractions

ST Math Objectives: Fraction Multiplication, Introduction to Fraction Division, Common Denominators and Equivalent Fractions

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.3.A 5.3.C 5.3.H 5.3.I 5.3.J 5.3.L 5.4.B 5.4.F 5.7.A 5.9.A 5.9.C

ELPS: 1.E 2.A 2.B 2.D 2.E 2.F 3.A 3.C 3.F 3.G 3.H 4.A 4.B 4.C 4.E 4.F

Topic 7: Extending Multiplication and Division to Decimals

ST Math Objectives: Multiplying with Decimals, Dividing with Decimals, Decimal Place Value

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.2.A 5.3.A 5.3.D 5.3.E 5.3.F 5.3.G 5.3.I 5.3.K 5.4.F 5.4.H 5.7.A

ELPS: 1.A 1.B 1.C 1.D 1.E 1.F 2.A 2.B 2.C 2.D 2.E 2.F 3.A 3.B 3.C 3.D 3.E 3.F 3.G 3.H 4.A 4.B 4.C 4.E 4.F

Topic 8: Expanding Financial Literacy

ST Math Objectives: Comparing with Decimals, Multiplying with Decimals, Decimal Place Value

TEKS: 5.1.A 5.1.B 5.1.C 5.1.E 5.1.F 5.1.G 5.10.A 5.10.B 5.10.C 5.10.D 5.10.E 5.10.F 5.3.B 5.3.C 5.3.E 5.3.K

ELPS: 1.F 2.C 2.D 2.E 3.A 3.B 3.H 4.A 4.B 4.C 4.E 4.F

Topic 9: Organizing Two-Dimensional Space

ST Math Objectives: The Coordinate Plane, Shapes and Properties, Angles

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.5.A 5.8.A 5.8.B 5.8.C 5.9.C

ELPS: 1.C 1.E 2.B 2.C 2.E 2.F 3.A 3.C 3.F 3.H 4.A 4.B 4.C 4.E 4.F

Topic 10: Exploring Relationships in Data

ST Math Objectives: Using Data and Graphs, Patterns and Relationships, Converting Measurements

TEKS: 5.1.A 5.1.B 5.1.C 5.1.D 5.1.E 5.1.F 5.1.G 5.4.C 5.4.D 5.8.C 5.9.A 5.9.B 5.9.C

ELPS: 1.A 1.C 1.D 1.F 2.A 2.B 3.A 3.B 3.D 3.G 3.H 4.A 4.B 4.C 4.D 4.E 4.F

Topic 1

Extending Place Value, Adding, and Subtraction with Decimals

Recommended ST Math Objectives:

Decimal Place Value
Rounding Decimals
Comparing with Decimals

Name: Date:

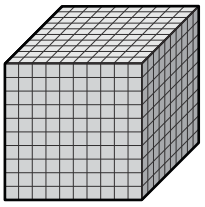
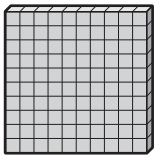
Extending Place Value to Thousandths

1. Represent this statement with an equation: 42 is 6 times as many as 7.

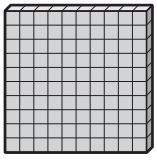
   42 = 6 × 7

2. Round 31,692 to the nearest thousand.

   32,000

3. If  represents 1.0, what does  represent?

Ones	●	Tenths	Hundredths	Thousandths
0	.	1		

4. If  represents 0.01, what does  represent?

Ones	●	Tenths	Hundredths	Thousandths
0	.	1		

5. The harvest at a banana farm was 146,876 bananas. The next year, the same farm harvested 278,382 bananas. How many bananas did they harvest in the 2 years put together?

   425,258 bananas

Name: Date:

Representing Decimals in Multiple Forms

1. Solve.

$3{,}025 - 486 =$ **2,539**

2. Draw a set of parallel lines.

Student answers will vary.

3. How is this decimal written as a fraction?

$0.2 = \frac{2}{10}$

4. How would you write this number as a decimal?

$(2 \times 1) + (5 \times \frac{1}{10}) + (7 \times \frac{1}{100}) =$ **2.57**

5. Last year, a bookstore sold 146,876 books. This year, it sold 278,382 books. How many more books did the bookstore sell this year than last year?

131,506 books

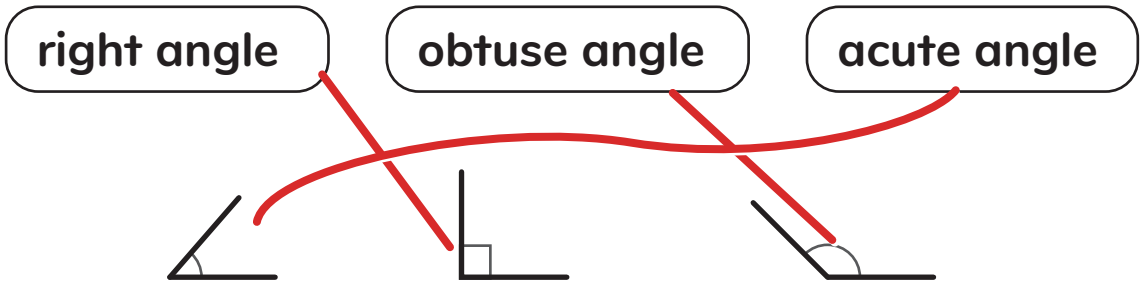
Name: _____ Date: _____

Investigating Multiplicative Comparisons with Different Unit Wholes

1. Write 45,903 in expanded notation.

(4 × 10,000) + (5 × 1,000) + (9 × 100) + (3 × 1)

2. Match each angle to the correct description.



3. Write 3.14 in expanded notation.

(3 × 1) + (1 × $\frac{1}{10}$ or 0.1) + (4 × $\frac{1}{100}$ or 0.01)

4. Write 25.62 in expanded notation.

(2 × 10) + (5 × 1) + (6 × $\frac{1}{10}$ or 0.1) + (2 × $\frac{1}{100}$ or 0.01)

5. A school cafeteria ordered 42 boxes of ketchup packets with 86 packets in each box. **Estimate** about how many packets of ketchup they ordered. Explain your thinking.

Possible answer:

about 3,600 ketchup packets

40 × 90 = 3,600

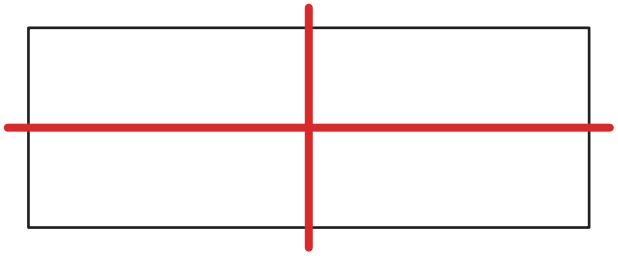
Name: _____ Date: _____

Composing and Decomposing Decimals Using Place Value

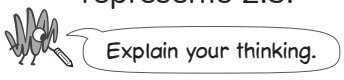
1. Decompose the fraction $\frac{4}{6}$ into a sum of fractions.

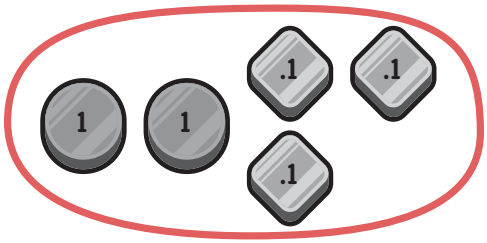
Possible answer: $\frac{2}{6} + \frac{2}{6}$

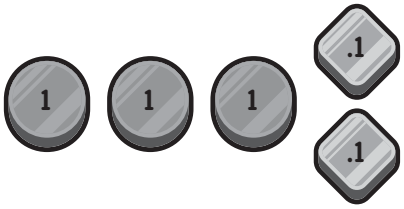
2. Draw all of the lines of symmetry.



3. Circle the group of tokens that represents 2.3.







Student explanations will vary.

4. Write 0.375 in expanded notation.

$(3 \times 0.1) + (7 \times 0.01) + (5 \times 0.001)$

5. There are 16 buses that pick up students from a school. If each bus can seat 70 students, how many total students can ride a bus home from school?

1,120 students

Name: _____ Date: _____

Comparing Decimals with Number Lines

1 Solve.

930 – 287 = **643**

468 + 392 = **860**

2 A tablecloth is 8 feet long. A table is 86 inches long. How much longer is the tablecloth than the table? Show your work.

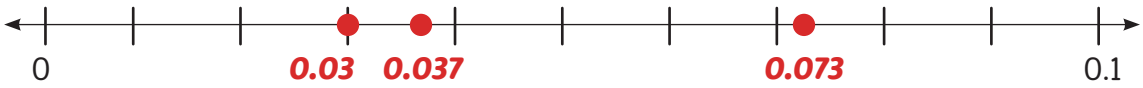
Possible solution:

8 × 12 = 96 inches

96 – 86 = 10

The tablecloth is 10 inches longer than the table.

3 a) Plot the following points on the number line: 0.037, 0.073, 0.03.



b) Complete the inequality with these numbers: 0.037, 0.073, 0.03.

0.03 < **0.037** < **0.073**

4 a) Complete the inequality with these numbers: 0.8, 0.008. 0.08.

0.8 > **0.08** > **0.008**

b) Complete the sentences:

0.08 is 10 times as much as **0.008**.

0.08 is one tenth as much as **0.8**.

Name: _____ Date: _____


Mateo

Comparing and Ordering Decimals to the Thousandths Place

1. Compare using $>$, $<$, or $=$.

$58.78 \; < \; 58.86$

2. Mateo bought 400 cm of fabric. How many meters of fabric did Mateo buy?

4 m

3. Fill in the missing box with a number that fits in the order from least to greatest.

Possible answer:

2.1	2.31	*2.39*	2.4	2.7
least				**greatest**

4. Create a true comparison statement using numbers of your choice.

Student answers will vary.

_____ < _____

5. Mateo made a snack as a surprise for his teacher. The recipe called for $\frac{2}{8}$ cup almonds and $\frac{4}{8}$ cup raisins. How many cups of almonds and raisins did he need to make the snack?

$\frac{6}{8}$ or $\frac{3}{4}$ cup

Name: _____ Date: _____

Rounding Decimals Through the Thousandths

1. A rectangular carpet has an area of 96 square feet. If the length of the carpet is 12 feet, what is the width? Explain your thinking.

8 feet

Possible explanation:
The area of the carpet is 96 square feet.
Length times width equals area, and 12 × 8 = 96.

2. Draw a set of perpendicular lines.

Student answers will vary.

3. a) 3.___ rounds to 3.0.

Student answers will vary.

b) 3.___ rounds to 4.0.

Student answers will vary.

4.
- I am thinking of a number that has the digits 1, 2, 3, and 4.
- The number is greater than 3 but less than 4.
- The number has a 1 in the thousandths place.

What might the number be?

Possible answers: ***3.241*** ***or 3.421***

5. If it takes a person 2,252 steps to walk 1 mile, how many steps would it take that person to walk 5 miles?

11,260 steps

Name: _____ Date: _____

Adding and Subtracting Decimals with Place Value Strategies

1 Complete the equations.

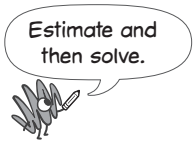
9 × 8 = **72**	9 × 80 = **720**	9 × 800 = **7,200**
3 × 7 = **21**	3 × 70 = **210**	30 × 70 = **2,100**

2 A rectangle has a length of 8 inches and a width of 4 inches. What is its area? Show your work.

Possible solution:

8 inches × 4 inches = 32 square inches

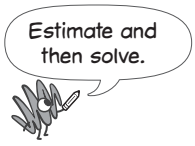
3 Find the sum. 57.208 + 6.87 ***Possible answer:***



My estimate: **57** + **7** = **64**

	Tens	Ones	.	Tenths	Hundredths	Thousandths
	1 5	1 7	.	2	0	8
+		6	.	8	7	
	6	4	.	0	7	8

4 Find the difference. 43.921 – 28.35 ***Possible answer:***



My estimate: **44** – **28** = **16**

	Tens	Ones	.	Tenths	Hundredths	Thousandths
	~~4~~ 3	~~3~~ 13	.	~~9~~ 8	~~2~~ 12	1
–	2	8	.	3	5	
	1	5	.	5	7	1

Name: _____ Date: _____

Solving Word Problems Involving Decimal Addition and Subtraction

1. Round 872,611 to the nearest thousand. **873,000**

2. At the art store, a sketch pad costs $17.19 and a set of pencils costs $5.73.

   a) Estimate the cost of both items.

   Possible answer:

   $17 + $6 = $23

   b) Determine the exact cost of both items.

   $22.92

3. 23.09 + 5.93 = **29.02**

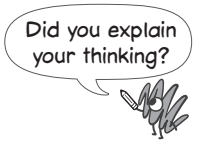
4. 7.24 – 3.06 = **4.18**

5. A school wanted to get enough sidewalk chalk for each student in 5th grade to have a stick of chalk. There are 104 students in 5th grade. The package they bought has 12 boxes with 16 sticks of chalk in each box. Will there be enough chalk for each student to have their own stick? Explain your thinking.

   Yes

   Possible explanation:

   12 × 16 = 192, which is more than 104.



Name: _____ Date: _____

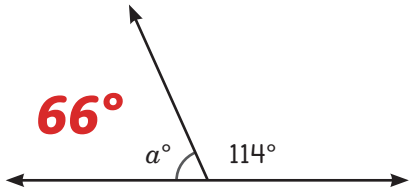

Anjali

Discovering Patterns in Repeated Multiplication and Division by 10

1 Solve.

$\frac{3}{5} + \frac{2}{5} =$ **$\frac{5}{5}$ or 1**

2 Find the value of the missing angle.

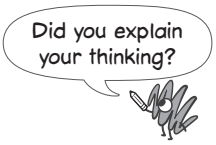


3 Which is more money, $100 or 10,000 dimes? Explain your thinking.

10,000 dimes

Possible explanation:

10,000 dimes equals $1,000.

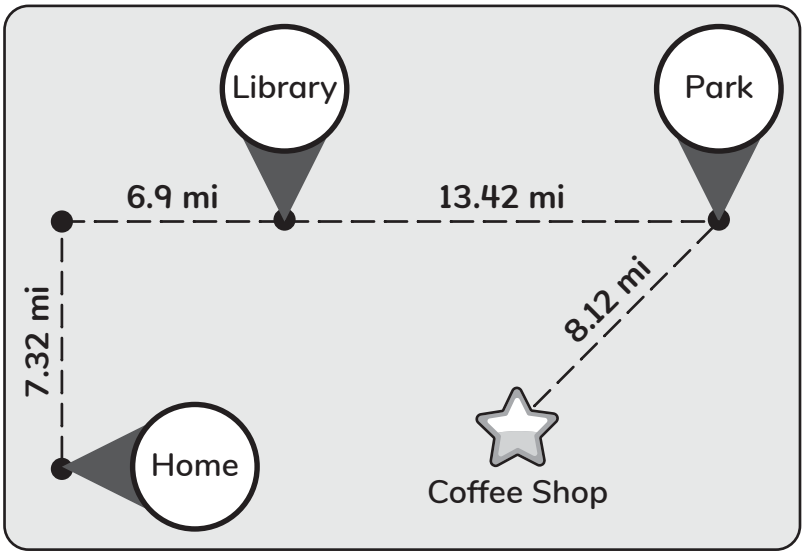


4 Finish the equation.

$4.36 \times$ **1,000** $= 4{,}360$

5 Anjali wanted to find out how far she traveled from her house to the coffee shop. Using the picture, what was the total distance Anjali traveled?

35.76 mi



Name: _____ Date: _____


Mateo

Exploring Multiplicative Comparisons with Powers of Ten

1 Solve.

$3\frac{3}{8} + 5\frac{5}{8} =$ **9**

2 Mateo is painting tiles for an art project. He painted 194 tiles last month and 178 tiles this month. If he wants to paint a total of 400 tiles, how many more tiles does he need to paint? Show your thinking.

28 tiles

Possible explanation:

400 – 194 – 178 = 28

3 a) $10 \times 10 \times 10 =$ ***1,000***

b) $10 \times 10 \times 10 \times 10 =$ ***10,000***

4 Fill in the blanks to make the equation and statements true.

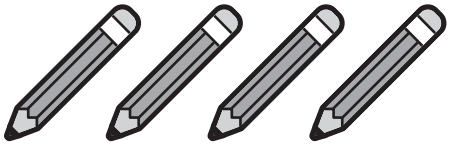
a) ***6.5*** $\times 10 = 65$

b) 65 is 10 times as much as ***6.5***.

Possible answer:

c) ***650*** is ***10 times*** as much as 65.

5 Mateo wants to buy 4 pencils that each cost $0.75. What is the total cost of the pencils? Show your thinking.



$0.75 + $0.75 + $0.75 + $0.75 = $3.00

Name: _____ Date: _____

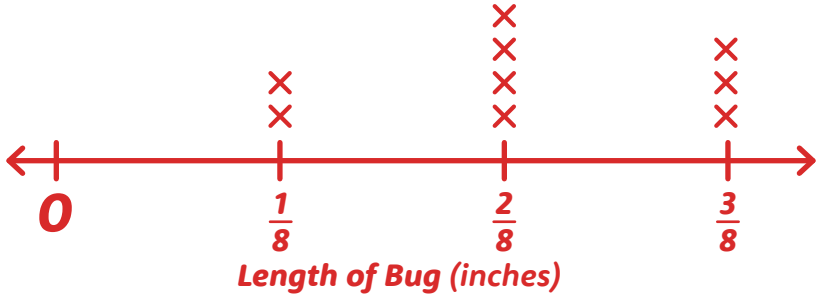

Mateo

Converting Between Units of Metric Length

1. If a circle is divided into 4 equal parts, what is the measurement of each angle that is formed?

90 degrees

2. A scientist measured the length in inches of the bugs he collected at the pond. Create a dot plot to show the following data: $\frac{2}{8}, \frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \frac{3}{8}, \frac{1}{8}, \frac{2}{8}, \frac{2}{8}, \frac{3}{8}$.



3. a) 1 meter = **100** centimeters

b) **10** centimeters = 100 millimeters

4. 50,000 centimeters ÷ **100** = **500** meters

5. Mateo went on a 1.6-kilometer walk with his dog, Arturito. How many meters did they walk?

1,600 meters

Name: _____ Date: _____

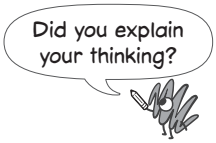

Brian

Solving Word Problems Involving Metric Measurements

1. Brian is making chili for the campground dinner. If he uses $3\frac{3}{4}$ cups of pinto beans, $1\frac{1}{4}$ cups of white beans, and $2\frac{1}{4}$ cups of kidney beans, how many cups of beans will Brian use in his chili? Explain your thinking.

$7\frac{1}{4}$ cups of beans

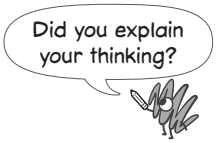
$3\frac{3}{4} + 1\frac{1}{4} + 2\frac{1}{4} = 7\frac{1}{4}$



2. What is the value of the 6 in the number 3,654? How does that compare to the value of the 6 in the number 6,523? Explain your thinking.

The value of 6 in 3,654 is 600.
That is one tenth as much as the value of 6 in 6,523.

Student explanations will vary.



3. $27.19 + 12.81 =$ ***40***

4. $11.43 - 8.56 =$ ***2.87***

5. A dog is fed 60 grams of food twice a day. How many **kilograms** of food does the dog eat in a day?

0.12 kilograms

Topic 2

Extending Multiplication and Division to Multidigit Whole Numbers

Recommended ST Math Objectives:

Multiplication Algorithm
Whole Number Division
Prime and Composite Numbers

Name: Date:

Exploring Zero Patterns with Multiples of 10

1. Round 48.347 to the nearest hundredth.

48.35

2. Use >, <, or = to compare the fractions.

$\frac{7}{8}$ **<** $\frac{3}{2}$

3. $2 \times 3 =$ **6** $20 \times 3 =$ **60**

$20 \times 30 =$ **600**

4. If $9 \times 52 = 468$, then $90 \times 52 =$ **4,680**.

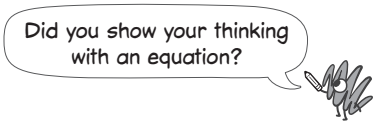
9 $\times 520 = 4{,}680$

Possible answer:

90 $\times$ **5,200** $= 468{,}000$

5. There are 5,280 feet in 1 mile. How many feet are in 4 miles? Show your thinking with an equation.

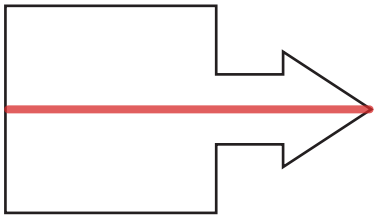
5,280 × 4 = 21,120 feet



Name: Date:

Using Place Value to Multiply Multidigit Numbers by Two-Digit Numbers

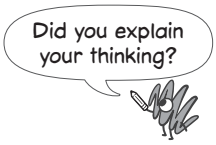
1 Draw any possible lines of symmetry.



2 A recipe for punch calls for 2 liters of lemonade and 3 liters of mango juice. How many milliliters of punch does the recipe make? Explain your thinking.

5,000 mL

Student explanations will vary.



3 Use partial products to solve.

364
× 27

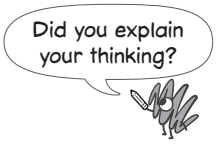
6,000	← 300 × 20
2,100	← 300 × 7
1,200	← 60 × 20
420	← 60 × 7
80	← 4 × 20
+ ***28***	← 4 × 7
9,828	

4 Would you use 60 × 20 or 60 × 30 to estimate the product of 64 × 27? Explain your thinking.

Possible answer:

60 × 30

That is what both numbers round to when rounded to the nearest 10.



Name: _____ Date: _____

Multiplying with the Standard Algorithm

1 Ms. Sanchez's class has 12 points in the school-wide read-a-thon. Mr. Banh's class has 4 times as many points as Ms. Sanchez's class. How many points does Mr. Bahn's class have?

48 points

2 How many times greater is the 4 in 147,210 than the 4 in 204,988? Explain your thinking.

10

Student explanations will vary.

3 Estimate. 293 × 6 is about ***300*** × ***6*** = ***1,800***. ***Possible answer:***

Multiply with each strategy.

Partial Products

Possible answer:

$$\begin{array}{r} 293 \\ \times \quad 6 \\ \hline \end{array}$$

18 ← 6 × ***3***
540 ← ***6 × 90***
+1,200 ← ***6 × 200***
1,758

Standard Algorithm

5 1
293
× 6
1,758

3 Estimate. 64 × 87 is about ***60*** × ***90*** = ***5,400***. ***Possible answer:***

Multiply with each strategy.

Partial Products

Possible answer:

$$\begin{array}{r} 64 \\ \times \quad 87 \\ \hline \end{array}$$

28 ← ***7 × 4***
420 ← ***7 × 60***
320 ← ***80 × 4***
+4,800 ← ***80 × 60***
5,568

Standard Algorithm

3
2
64
× 87
448
+5,120
5,568

Name: _____ Date: _____

Solving Open-Ended Problems with the Standard Algorithm

1. Draw an example of a ray and a line segment.

Student answers will vary.

2. Round 84.788 to the nearest tenth.

84.8

3. At the amusement park, the Starship ride can run with 18 to 35 riders. It runs between 85 and 107 times per day.

a) What is the **greatest** number of riders in one day?

Estimate: ***Possible answer:***

100 × ***35*** = ***3,500***

Exact: ***3,745***

```
  2
  3
  107
×  35
 535
+3,210
 3,745
```

b) What is the **least** number of riders in one day?

Estimate: ***Possible answer:***

20 × ***80*** = ***1,600***

Exact: ***1,530***

```
  4
  85
×  18
 680
+ 850
 1,530
```

c) What is another reasonable number of riders in one day? Explain your thinking.

Student answers will vary.

Name: _____ Date: _____


Brian

Introducing Fractions as Division

1. Brian rode his bike for 6 kilometers on Saturday. How many meters did Brian ride?

6,000 meters

2. The fraction $\frac{5}{6}$ can be decomposed into $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$.
What is another way to decompose the fraction $\frac{5}{6}$?

Possible answer: $\frac{4}{6} + \frac{1}{6}$

3. Which expression will have a greater quotient? Explain your thinking.

$3 \div 8$ or $8 \div 3$

Possible explanation:

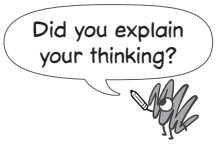
8 divided by 3 will have a greater quotient because when we divide 3 into 8 pieces, each piece will be less than 1 whole, but when we divide 8 into 3 pieces, each piece will be greater than 1 whole.

4. Brian had 7 cookies to share with 10 of his friends. Will each friend get a whole cookie? Explain your thinking.

No

Possible explanation:

Brian has fewer cookies than friends, so each friend will get only part of a cookie.

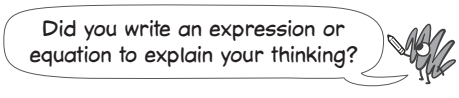


5. Brian learned how to bake blueberry muffins. He wanted to take some of his muffins to school. He brought 2 blueberry muffins and wanted to share them with his 3 friends. Can you determine how to share the muffins fairly among his 3 friends? Write an expression or equation to represent your thinking.

Possible answer:

$2 \div 3 = \frac{2}{3}$

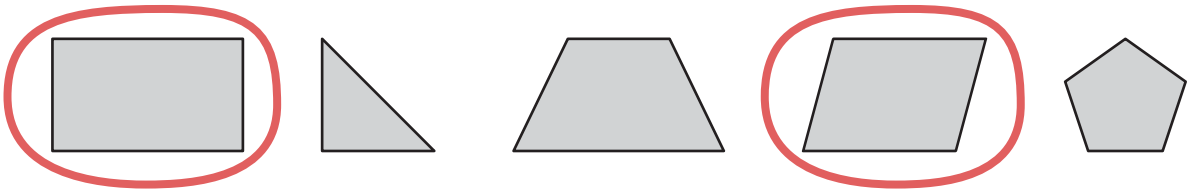
2 muffins can be divided between 3 friends and each friend will get $\frac{2}{3}$ of a muffin.



Name: Date:

Exploring Division with Mixed Number Quotients

1. Circle the shapes that have 2 sets of parallel sides.



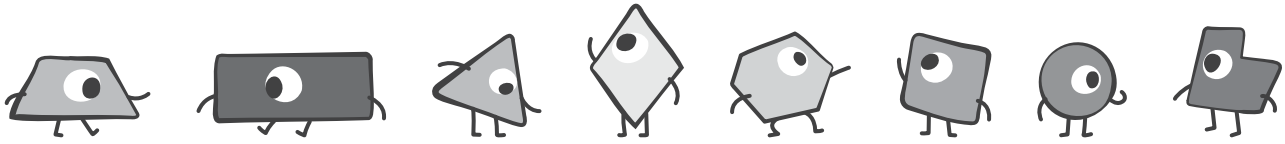
2. Solve. $34 \times 57 =$ **1,938**

3. Solve. Write the quotient as a mixed number.

$9 \div 4 =$ **$2\frac{1}{4}$**

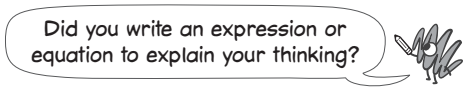
$14 \div 4 =$ **$3\frac{2}{4}$ or $3\frac{1}{2}$**

4. 8 critters decided to share 17 treats. If they wanted to share them fairly, how many treats would each critter get? Include an expression or an equation to show your thinking.



Possible answer:

17 ÷ 8 = $\frac{17}{8}$ = $2\frac{1}{8}$, so each critter would get 2 whole treats and $\frac{1}{8}$ of another one.

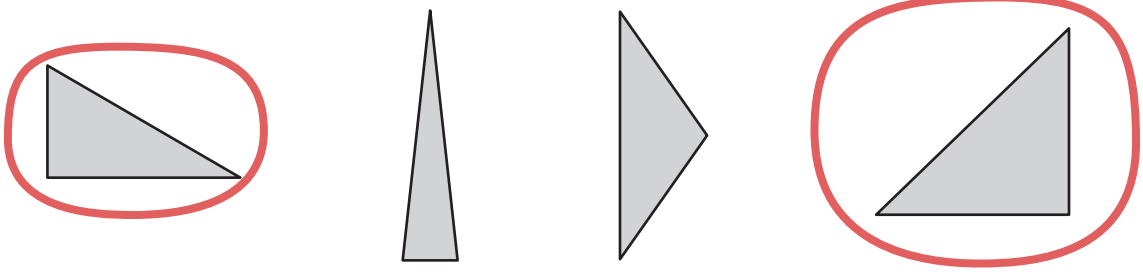


Name: _____ Date: _____


Donner

Interpreting Remainders in Context

1 Circle ALL of the triangles that appear to be right triangles.



2 A number is shown in expanded notation.

$(5 \times 100) + (3 \times 10) + (2 \times 1) + (8 \times 0.01) + (9 \times 0.001)$

Write this number in standard form.

532.089

3 Donner is planning another camping trip. The tents they use will sleep 4 people. If there are 10 people going on the trip, how many tents will be needed?

3 tents

4 Solve.

$8 \div 3 =$ ***2 R2 or $2\frac{2}{3}$***

5 More s'mores supplies were found in a camper's tent. They now have 45 graham crackers, 24 marshmallows, and 15 chocolate bars. How many s'mores can they now make?

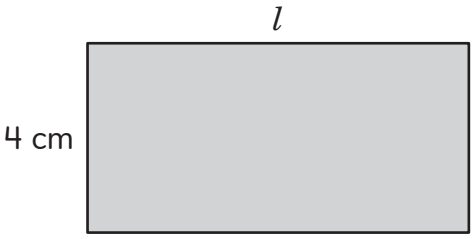
22 s'mores

S'more Recipe (makes 1)
2 graham crackers
1 marshmallow
$\frac{1}{2}$ chocolate bar
Put chocolate on one of the crackers. Then roast a marshmallow and put it between the chocolate and the other cracker.

Name: Date:

Exploring Division Strategies with One-Digit Divisors

1. If the area of this rectangle is 32 square centimeters, what is the value of l?



8 cm

2. Write 38.799 in expanded notation.

$(3 \times 10) + (8 \times 1) + (7 \times \frac{1}{10}) + (9 \times \frac{1}{100}) + (9 \times \frac{1}{1{,}000})$

or $(3 \times 10) + (8 \times 1) + (7 \times 0.1) + (9 \times 0.01) + (9 \times 0.001)$

3. The quotient of 537 ÷ 9 is

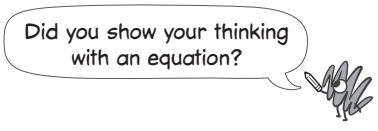
- ☐ between 10 and 40.
- ☑ between 40 and 80.
- ☐ between 80 and 120.
- ☐ greater than 120.

4. Solve.

$537 \div 9 =$ **59 R6**

5. There is a collection of 426 acorns that 3 squirrels want to share equally. How many acorns would each squirrel get? Show your thinking with an equation.

426 ÷ 3 = 142 acorns



Name: _____ Date: _____

Using Place Value Strategies to Divide by Multiples of 10

1. A student ran 3 miles to raise money for her school. A teacher ran 3 times as many miles as the student. How many miles did the teacher run?

9 miles

2. Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 1\ \ }\\ {\scriptstyle 4\ 2\ }\\ 364\\ \times\ \ 27\\ \hline 2{,}548\\ +\ 7{,}280\\ \hline 9{,}828 \end{array}$$

3. a) Circle the expression that has the greater quotient.

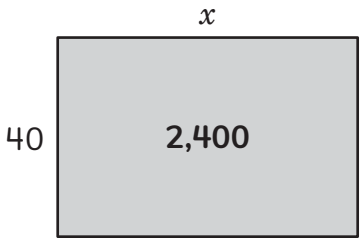
3,200 ÷ 8

3,200 ÷ 80

b) Explain your reasoning.

Student explanations will vary.

4. Find the value of x in this area model.



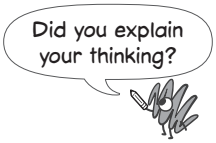
$x = 60$

5. On a farm, the workers are packing 3,600 pears into boxes that can each hold 40 pears. How many boxes can they fill? Explain your thinking.

90 boxes

Possible explanation:

Since 4 × 9 = 36, I know that 40 × 90 = 3,600, so they can fill 90 boxes with pears.



Name: _____ Date: _____

Dividing by Two-Digit Divisors

1 Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 1} \\ 82 \\ \times\ 83 \\ \hline 246 \\ +\ 6,560 \\ \hline 6,806 \end{array}$$

2 Use > or < to compare.

0.624 **<** 0.642

3 a) Estimate:

Possible answer: 6,852 ÷ 12 is about

7,000 ÷ **10** = **700**.

b) Solve with the standard algorithm.

$$\begin{array}{r} 571 \\ 12\overline{)\,6,852} \\ -\ 6,000 \\ \hline 852 \\ -\ 840 \\ \hline 12 \\ -\ 12 \\ \hline 0 \end{array}$$

4 a) Estimate:

Possible answer: 4,592 ÷ 25 is about

5,000 ÷ **25** = **200**.

b) Solve with the standard algorithm.

$$\begin{array}{r} 183\ R17 \\ 25\overline{)\,4,592} \\ -\ 2,500 \\ \hline 2,092 \\ -\ 2,000 \\ \hline 92 \\ -\ 75 \\ \hline 17 \end{array}$$

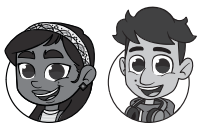
5 There are 5,280 feet in one mile. How many feet are in 4 miles? Show your work.

21,120 feet

Student work will vary.

Name: _____ Date: _____

Solving Division Word Problems with Remainders



1. Solve. $38.4 - 29.03 =$ ***9.37***

2. Write twenty-five and four hundredths in standard form.

   25.04

3. Dani and Mateo are building more doghouses. Each doghouse needs 40 shingles and 60 nails. If 1,280 shingles and 1,800 nails have been donated, how many doghouses can Dani and Mateo build? Explain your thinking.

   32 30 doghouses

   Possible explanation:

   1,280 ÷ 40 = 32

   1,800 ÷ 60 = 30

   There are enough shingles to build 32 doghouses, but there are enough nails to build only 30 doghouses. Therefore, only 30 doghouses can be built.

4. Dani spent 120 minutes a day for 14 days working on her doghouse project. How many **hours** did Dani spend working on doghouses?

   28 hours

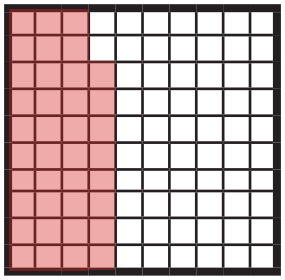
Name: Date:

Using Multiples of Two-Digit Divisors to Divide

1. Compare using $>$, $<$, or $=$.

$35.808 \; > \; 35.088$

2. This large square represents 1 whole. Show 0.38.



3. a) Complete the list of multiples.

$10 \times 17 =$ **170** $\quad 20 \times 17 =$ **340**

$40 \times 17 =$ **680** $\quad 80 \times 17 =$ **1,360**

b) Use the list of multiples to help you find the quotient of $1{,}411 \div 17$.

83

4. How does using a list of multiples help you divide larger numbers?

Student explanations will vary.

Name: _____ Date: _____


Brian

Solving Problems Involving Customary Unit Conversions

1 Use the standard algorithm to solve.

```
  1 1
  1 1
   265
 ×  32
 -----
   530
+ 7,950
 -----
 8,480
```

2 Use > or < to compare.

2.818 **<** 2.881

3 Use the conversion chart to help you solve.

Brian made 2 gallons of lemonade for the birthday party.

a) How many pints of lemonade did Brian make?

16 pints

b) How many cups of lemonade did Brian make?

32 cups

Customary Units
1 gallon = 4 quarts
1 quart = 2 pints
1 pint = 2 cups
1 cup = 8 fluid ounces

4 There are 5,280 feet in 1 mile. How many feet are in 6 miles?

31,680 feet

Topic 3

Exploring Multistep Problems

Recommended ST Math Objectives:

Interpret Expressions
Patterns and Relationships
Converting Measurements

Name: _____ Date: _____

Relating Models and Expressions with Parentheses


Anjali

1. Write 238.224 in expanded notation.

   $(2 \times 100) + (3 \times 10) + (8 \times 1) + (2 \times \frac{1}{10}) + (2 \times \frac{1}{100}) + (4 \times \frac{1}{1{,}000})$

   or $(2 \times 100) + (3 \times 10) + (8 \times 1) + (2 \times 0.1) + (2 \times 0.01) + (4 \times 0.001)$

2. 0.5 liters of party punch were left over after the school picnic.
   How many milliliters of party punch were left over?

   500 mL

3. Circle the expression that has the least value.

   $6 \times (2 + 3) + 4$ $\quad$ $(6 \times 2) + 3 + 4$ $\quad$ $6 \times (2 + 3 + 4)$

4. Circle the expression that has the greatest value.

   $(17 + 23) + 50$ $\quad$ $17 + 23$ $\quad$ $50 \times (17 + 23)$

5. Anjali is reading a 308-page book. She reads 14 pages every day. How many days will it take Anjali to read the entire book?

   22 days

Name: Date:

Representing Multistep Equations with Parentheses

1 Solve.

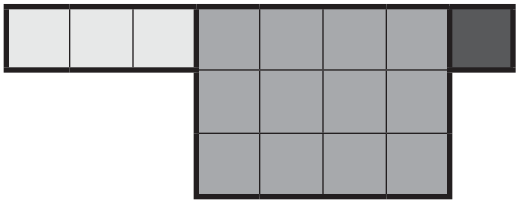
$(6 \times 5) + 2 =$ **32**

2 Use >, <, or = to make this statement true.

121.384 **>** 121.348

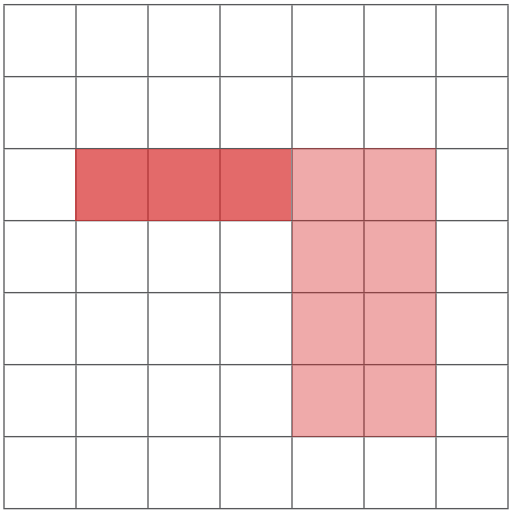
3 Use parentheses to create an expression that matches this model.

3 + **(** 3 × 5 **)** + 1



4 Use the grid to represent the expression 3 + (4 × 2).

Possible answer:



5 The pattern for making a blanket needs 225 yards of yarn. If each roll of yarn has 32 yards, how many rolls of yarn should be bought to make the whole blanket? Show your thinking.

8 rolls of yarn

Student explanations will vary.

Name: Date:

Relating Expressions, Models, and Words

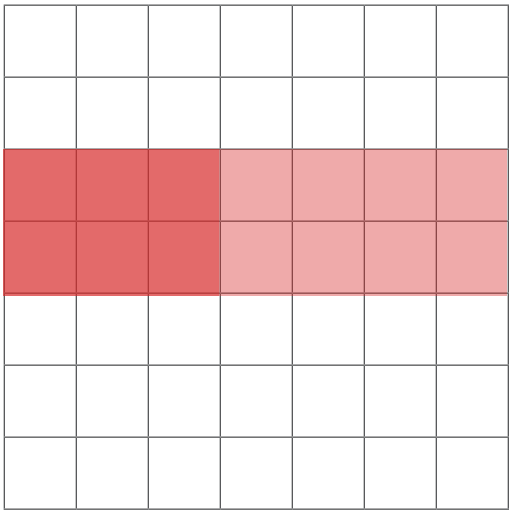
1. Solve. $72 \times 35 =$ **2,520**

2. a) Using the grid, create a model to represent "2 times the sum of 3 and 4."

   b) Write an expression to represent your model.

   2 × (3 + 4)

Possible answer:



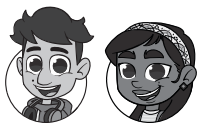
3. Write an expression to represent "triple the sum of 8 and 2 and subtract 5."

   3 × (8 + 2) – 5

4. What is the product of 156 and 22 added to 30?

   3,462

Name: _____ Date: _____



Using Order of Operations to Simplify Expressions

1 Use the standard algorithm to solve.

$$\begin{array}{r} 89 \\ 24\overline{)\,2{,}136} \\ -\;1{,}920 \\ \hline 216 \\ -\;216 \\ \hline 0 \end{array}$$

2 Solve.

$92.17 - 38.20 =$ **53.97**

3 Use order of operations to simplify each expression.

$6 + 2 \times 8 - 3$

$= 6 + 16 - 3$

$= 22 - 3$

$= 19$

$14 - 9 \div 3 \times 2$

$= 14 - 3 \times 2$

$= 14 - 6$

$= 8$

$5 \times 8 + 7 \times 4$

$= 40 + 7 \times 4$

$= 40 + 28$

$= 68$

4 Mateo and Dani are finding the sum of 9 + 4 + 1.

Mateo says, "Order of operations says that we should solve addition from left to right. So we have to add 9 + 4 before we add 1."

Dani says, "When we are only adding or only multiplying, we can be more efficient by using a different order."

Who is correct? Explain your thinking.

Possible answer:

Dani is correct. Since we are only adding, we can add the numbers in any order and get the same sum. It would be more efficient to add 9 + 1 = 10 and then add 4 more to get 14.

Name: Date:

Simplifying with Nested Parentheses

1. Circle the expression that has the greater quotient.

4,800 ÷ 8 **4,800 ÷ 80**

2. Round 74.984 to the nearest tenth. ***75.0***

3. Use order of operations to simplify the expression.

$270 \div 3 + 4[2 \times 5 + (8 - 6)]$

= 270 ÷ 3 + 4[2 × 5 + 2]

= 270 ÷ 3 + 4[10 + 2]

= 270 ÷ 3 + 4[12]

= 270 ÷ 3 + 48

= 90 + 48

= 138

4. A farmer is selling 5 fruit baskets. Each basket contains 4 peaches, 6 plums, and 2 cartons of 10 figs. This equation shows the total pieces of fruit in the baskets: $f = 5[4 + 6 + 2(10)]$.

a) What does each of these numbers and symbols mean in the equation?

f: ***pieces of fruit in all the baskets***

5: ***number of baskets***

4: ***number of peaches in each basket***

6: ***number of plums in each basket***

2: ***number of cartons of figs in each basket***

10: ***number of figs in each carton***

b) Solve the equation. How many pieces of fruit are there?

$f = 5[4 + 6 + 2(10)]$

= 5[4 + 6 + 20]

= 5[30]

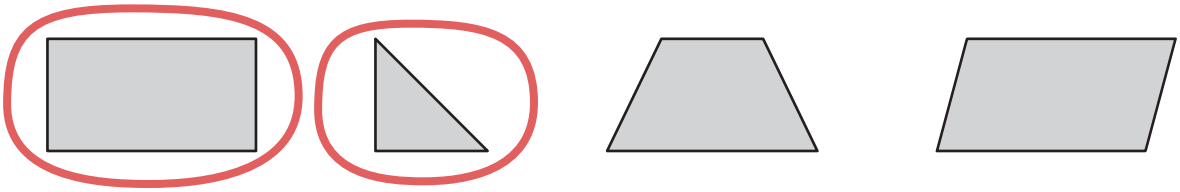
= 150

There are 150 pieces of fruit.

Name: _____ Date: _____

Solving Multistep Area Problems

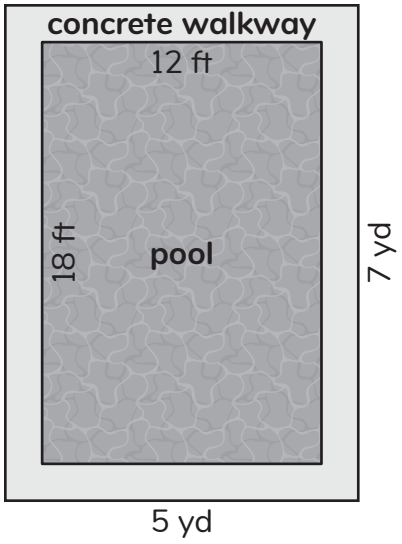
1. Circle the shapes that appear to have perpendicular lines.



2. Circle the numbers that are multiples of 12.

36 **72** **88** **24** **46**

3. Use the model to answer the following questions.



a) What is the area of the pool in sq. ft?

216 sq. ft

b) What is the area of the concrete walkway in sq. ft?

99 sq. ft

4. It rained on the day of the carnival, and only 350 adults and 800 children attended. How much money did the carnival make?

Admission Ticket Prices

Adult (18 years and up)	$5
Child (Age 2–17)	$3

$4,150

Name: Date:

Solving Multistep Problems with All Four Operations

1. Use > or < to compare.

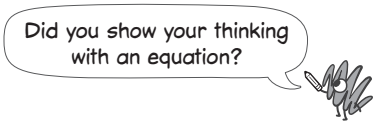
4.229 **<** 4.922

2. Solve.

2,086 ÷ 35 = ***59 R21***

3. There are 15 packs of unsharpened pencils on the teacher's desk. Each pack has 12 pencils. There are also 25 sharpened pencils on the teacher's desk. How many pencils are on the teacher's desk in all? Show your work with an equation.

(15 × 12) + 25 = 205 pencils



4. At the Fall Fest Fundraiser, the school sold 62 fruit baskets.

Friut Baskets Sold	Money Raised
62	$1,488

a) Find the cost of 1 fruit basket.

$1,488 ÷ 62 = $24

b) After the sale, they had 8 fruit baskets left, so they sold them at half the price to the volunteers. What was the total amount that the school made selling half-price and full-price fruit baskets? Show your work.

$24 ÷ 2 = $12
$12 × 8 = $96
$1,488 + $96 = $1,584

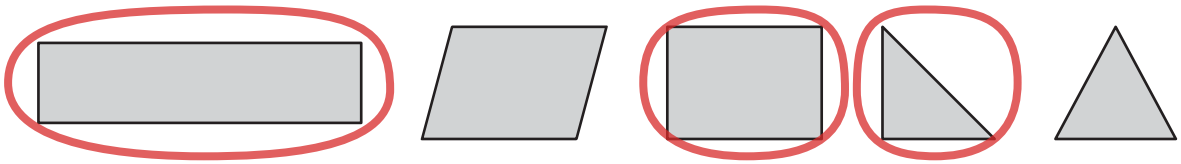
The school raised $1,584 in total selling fruit baskets.

Name: _____ Date: _____


Mateo

Representing Multistep Situations with Strip Diagrams and Equations

1. Circle the shapes that appear to have at least one set of perpendicular lines.



2. Represent the statement "42 is 7 times as many as 6" as an equation.

$42 = 7 \times 6$

3. Mateo bought a shirt for \$18, 3 bracelets for \$4 each, and a hat for h dollars. He spent a total of \$46.

a) Draw a strip diagram to represent the situation.

\$18	\$4	\$4	\$4	h
\$46				

b) What was the cost of the hat? **\$16**

c) Circle the equation that represents the model.

$18 + (3 \times 4) + h = 46$ $\qquad$ $18 + 3(4) - h = 46$

d) Plug your answer into the equation and simplify to check that the equation is correct.

$18 + (3 \times 4) + h = 46$
$18 + (3 \times 4) + 16 = 46$
$18 + 12 + 16 = 46$
$46 = 46$ ✓

Name: _____ Date: _____


Dani

Choosing Operations to Represent Situations with Equations

1. Write an expression to represent "the quotient of 72 divided by 8 subtracted from 12."

   12 – (72 ÷ 8)

2. Write twenty-five and four hundredths in standard form.

   25.04

3. Fill in the operations (+, –, ×, or ÷) to complete the equation to represent each situation.

   a) Dani plans to use 14 wooden boards to make bird houses. She chooses 4 packages that each contain s short boards as well as 2 long boards.

   $$14 = 4 \times s + 2$$

   b) Dani also buys 75 steel nails and 3 packages that each contain z zinc-coated nails. She buys a total of 150 nails.

   $$75 + 3 \times z = 150$$

4. Dani had a board that was 108 inches long. She cut a piece that was 12 inches long and 4 pieces that were each 18 inches long. She wants to know how many inches of wood, w, she has left. Complete the stirp diagram to model her situation.

108					
12	18	18	18	18	w

Circle the equation that matches Dani's situation:

$108 = 12 - (18 \times 4) - w$ $108 = 12 + (18 \times 4) - w$ **$108 = 12 + (18 \times 4) + w$**

Topic 4

Exploring Two- and Three-Dimensional Space

Recommended ST Math Objectives:

Volume

Shapes and Properties

Prime and Composite Numbers

Name: _____ Date: _____

Finding the Area and Perimeter of Rectangles and Squares

1 Write 20,428 in expanded notation.

(2 × 10,000) + (4 × 100) + (2 × 10) + (8 × 1)

In the number 20,428, the 2 in the ten thousands place is **1,000** times the value of the 2 in the tens place.

2 a) Draw an obtuse angle.

Student answers will vary.

b) Draw an acute angle.

Student answers will vary.

3 a) One formula for the perimeter of a rectangle is shown. Use multiplication to write the formula a different way.

$$P = l + l + w + w$$

$P =$ **2l + 2w or 2(l + w)**

b) Write the formulas for the area and perimeter of a square with a side length of s.

$A =$ **$s \times s$** $P =$ **$4s$**

4 A square floor tile has an area of 81 inches. What is the length of each side? What is the perimeter? Remember to include units.

side length = **9 inches** perimeter = **36 inches**

5 The rectangular window inside a door has a length of 14 inches and a perimeter of 48 inches. What is the width of the window? What is its area? Remember to include units.

width = **10 inches** area = **140 square inches**

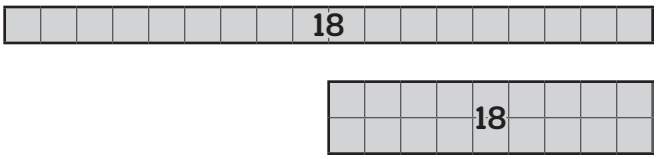
Name: Date:

Discovering Prime Numbers Through Factor Pairs

1 Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 1\ 3} \\ {\scriptstyle 2\ 4} \\ 837 \\ \times\ \ 56 \\ \hline 5{,}022 \\ +\ 41{,}850 \\ \hline 46{,}872 \end{array}$$

2 Some of the factor pairs for 18 are shown. Which factor pair is missing?



The missing factor pair is 3 and 6.

3 Is 25 a prime number? Explain your thinking.

25 is not prime.

Possible explanation:

25 has more than 2 factors, so it is not prime.

4 The dimensions of a rectangular sign are 4.55 ft by 6.25 ft. What is the perimeter of the sign? Explain your thinking.

21.6 ft

Possible explanation:

4.55 + 4.55 + 6.25 + 6.25 = 21.6 ft

Did you explain your thinking?

Name: ______________________ Date: ____________

Determining Prime and Composite Numbers

① Use the standard algorithm to solve.

$$\begin{array}{r} 689 \\ 12\,\overline{)\,8{,}268} \\ -\;7{,}200 \\ \hline 1{,}068 \\ -\;960 \\ \hline 108 \\ -\;108 \\ \hline 0 \end{array}$$

② Use the standard algorithm to solve.

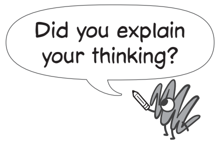
$$\begin{array}{r} {\scriptstyle 2\;1} \\ {\scriptstyle 1\;1} \\ 485 \\ \times\quad 32 \\ \hline 970 \\ +\;14{,}550 \\ \hline 15{,}520 \end{array}$$

③ Is 37 prime or composite? Explain your thinking.

37 is prime.

Possible explanation:

It has 2 factors (1 and 37).



④ List the factor pairs for 12.

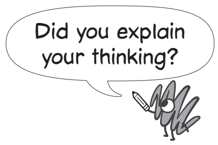
1 and 12, 2 and 6, 3 and 4

⑤ List all the prime numbers between 10 and 30. Explain your thinking.

11, 13, 17, 19, 23, 29

Possible explanation:

These are the only numbers between 10 and 30 that have exactly 2 factors.



Name: _____ Date: _____


Brian

Using Multiples to Generate Prime Numbers

1 Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 2\ \ } \\ {\scriptstyle 7\ 1} \\ 382 \\ \times\ \ 39 \\ \hline 3{,}438 \\ +\ 11{,}460 \\ \hline 14{,}898 \end{array}$$

2 Use the standard algorithm to solve.

$$\begin{array}{r} 615 \\ \hline 8\ \big)\ 4{,}920 \\ -\ 4{,}800 \\ \hline 120 \\ -\ \ 80 \\ \hline 40 \\ -\ \ 40 \\ \hline 0 \end{array}$$

3 a) Is 35 an odd number? **(Yes)** No

b) Is 35 a prime number? Yes **(No)**

Possible solution:

It is odd because it ends in 5, and it is not prime because it has more than 2 factors.

4 List the factor pairs for 45.

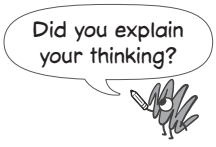
1 and 45, 3 and 15, 5 and 9

5 Brian says the number 2 is composite because it is even. Do you agree with Brian? Explain your thinking.

No, I do not agree.

Possible solution:

The number 2 is prime because it has exactly 2 factors, 1 and 2. 2 is the only prime number that is even.



Name: Date:

Solving Multistep Problems with Area and Perimeter

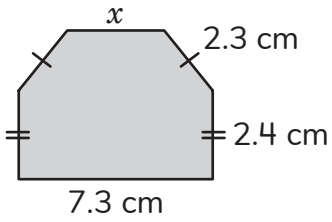
1. Solve. $2{,}428 \times 8 =$ **19,424**

2. A number is greater than 0.7 and less than 0.8. List 3 numbers that fit this description.

Possible answers:

0.71, 0.72, and 0.73

3. This polygon has a perimeter of 21 centimeters. What is the length of side x?



2.3 + 2.3 + 2.4 + 2.4 + 7.3 = 16.7

21 – 16.7 = 4.3

Side x is 4.3 cm.

4. The perimeter of a rectangular field is 36 meters. The width of the field is 7 meters. What is the length of the field? What is the area of the field? Show your work. Remember to include units.

Possible answers:

$P = 2l + 2w$

$36 = 2l + 2(7)$

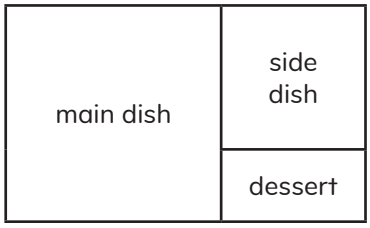
$36 = 2l + 14$

I know 36 = 22 + 14, so if 2l is 22, then l = 11.
The length of the field is 11 meters.

$A = 7 \times 11 = 77$

The area of the field is 77 square meters.

5. A lunch box has a square main dish section with an area of 36 square inches and a square side dish section with an area of 16 square inches. What is the area of the dessert section? Show your work.



Possible answers:

main dish: 6 × 6 = 36

missing side: 6 – 4 = 2

side dish: 4 × 4 = 16

dessert = 2 × 4 = 8 square inches

Name: Date:

Exploring Volume of Solid Figures

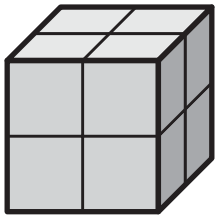
1. List the factor pairs for 80.

(1, 80); (2, 40); (4, 20); (5, 16); (8, 10)

2. Solve.

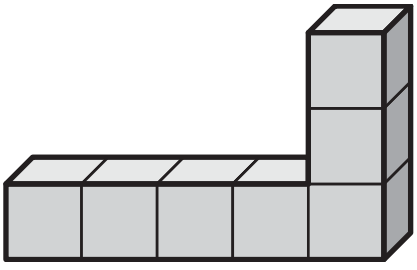
$9 \times 3 \times 7 =$ **189**

3. How many unit cubes would be needed to build this figure?



8 cubic units

4. How many unit cubes would be needed to build this figure?



7 cubic units

5. How does using unit cubes help when you are finding the volume of a figure?

Student answers will vary.

Name: Date:

Exploring Volume of Containers and Solid Figures

1. Will 9 ÷ 4 or 4 ÷ 9 have a greater quotient? Explain.

9 ÷ 4

Possible answer:

9 ÷ 4 has a quotient that is greater than 1.
4 ÷ 9 has a quotient that is less than 1.

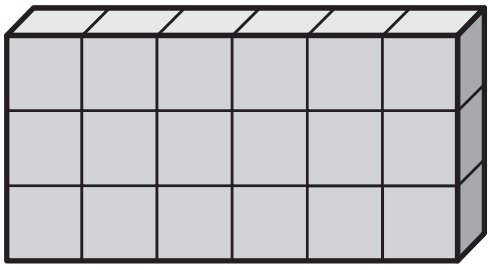
2. Find the area of the rectangle.

15 inches

7 inches

105 square inches

3. How many unit cubes would be needed to build this figure?



18 cubic units

4. The bottom layer of a box is packed tightly with 12 unit cubes. The box can hold 4 layers of cubes. How many unit cubes will be needed to fill the box?

48

Name: _____ Date: _____

Finding the Volume of Figures with Hidden Cubes

1. List all of the prime numbers between 2 and 30.

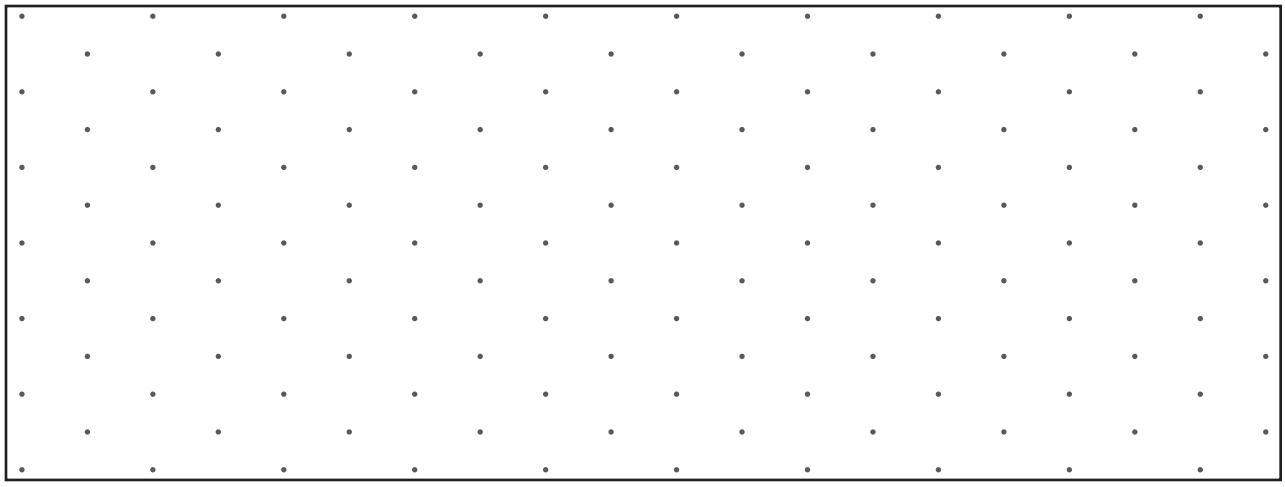
3; 5; 7; 11; 13; 17; 19; 23; 29

2. Will $\frac{1}{8} + \frac{4}{8} + \frac{2}{8}$ be more or less than 1? How do you know?

Less than 1. The sum is $\frac{7}{8}$.

3. Draw a figure with a volume of 8 cubic units.

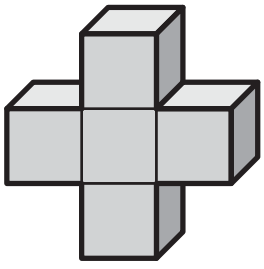
Student answers will vary.



4. If there are 9 unit cubes in the bottom layer of a rectangular prism and there are 2 layers, how many unit cubes will be needed to build the figure?

18 unit cubes

5. How many layers of this shape would be needed to make a figure with a volume of 45 cubic units?



9 layers

Name: ____________________ Date: __________

Using Layers to Find the Volume of Rectangular Prisms

① Use the standard algorithm to solve.

$$\begin{array}{r} 245 \\ 28 \overline{)6,860} \\ -\ 5,600 \\ \hline 1,260 \\ -\ 1,120 \\ \hline 140 \\ -\ 140 \\ \hline 0 \end{array}$$

② Use the standard algorithm to solve.

$$\begin{array}{r} {}^{1}_{1}\ \\ 502 \\ \times\ 88 \\ \hline 4,016 \\ +\ 40,160 \\ \hline 44,176 \end{array}$$

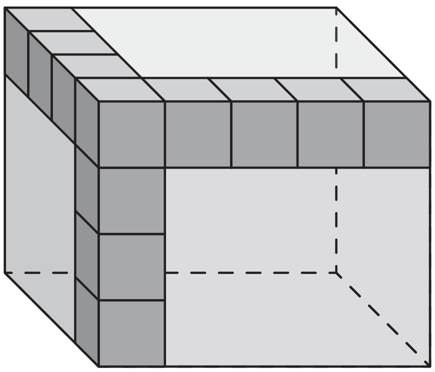
③ a) A rectangular prism has a layer of 18 unit cubes. There are 5 layers of unit cubes. Write an equation to find the number of unit cubes in the rectangular prism.

18 × **5** = **90** cubic units

b) Circle the expressions that might represent the volume of the rectangular prism.

(6 × 3) × 5 (circled) (6 + 3) + 5 (2 × 9) × 5 (circled) (4 × 4) × 5

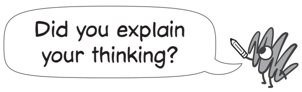
④ Anjali says that she can use the expression (4 × 4) × 5 or (4 × 5) × 4 to find the volume of this rectangular prism. Do you agree with Anjali? Explain your thinking.



Yes, I agree.

Possible explanation:

The length, width, and height of the rectangular prism are represented in each expression. Either expression can be used to find the volume because the same 3 numbers are multiplied.



Name: _____ Date: _____

Using the Base of a Prism to Find Volume

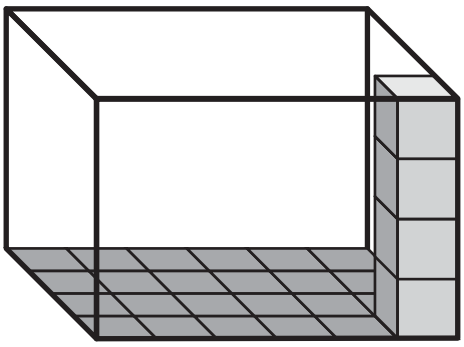
1. Circle the numbers that are prime.

11 12 7 14 9 5 15 2 17

2. A fruit punch recipe uses 2 liters of orange juice, 250 mL of pineapple juice, 250 mL of cranberry juice, and 500 mL of seltzer. What is the total volume of punch that the recipe makes? Include units in your answer.

3 L or 3,000 mL

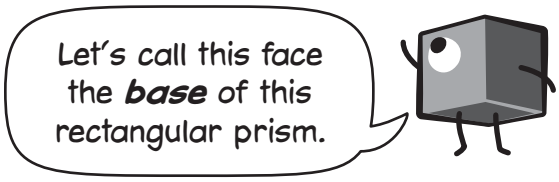
3. a) What is the area of the base of the rectangular prism?



Possible solution:

area of the base = 4 × 6 = 24 square units

b) What is the volume of the rectangular prism? Show your work.



Possible solution:

$$V = B \times h$$

$$V = 24 \times 4$$

$$V = 96 \text{ cubic units}$$

4. A rectangular prism has a volume of 60 cubic inches and a height of 5 inches. Circle any dimensions that could be used for the base.

2 inches × 6 inches

3 inches × 3 inches

2 inches × 5 inches

3 inches × 4 inches

Name: _____ Date: _____


Anjali

Using the Dimensions of a Prism to Find Volume

1 Solve.

$4\frac{3}{8} - 2\frac{1}{8} =$ **$2\frac{2}{8}$**

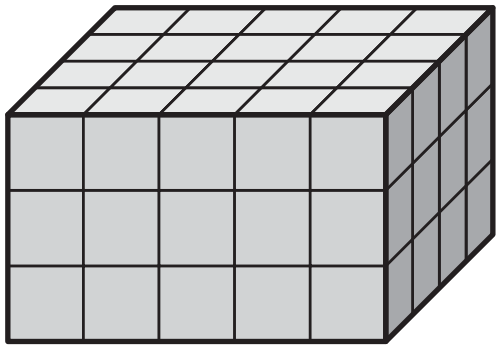
2 How would you write this number in standard form?

$(7 \times 1) + (3 \times \frac{1}{10}) + (5 \times \frac{1}{100})$

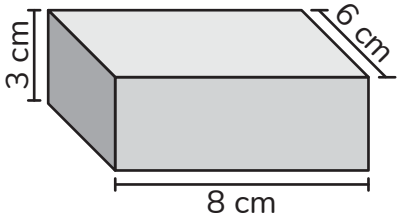
7.35

3 Find the volume of the rectangular prism.

60 cubic units



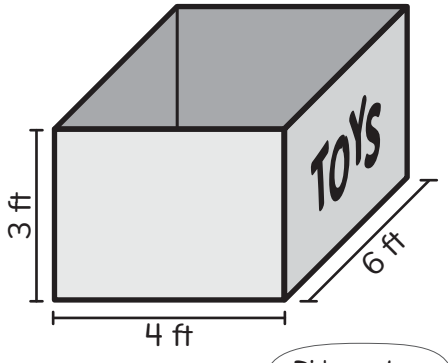
4 Complete the equation to find the volume of the rectangular prism.



$V =$ **8** $\times$ **6** $\times$ **3**

$V =$ **144**

5 Anjali is planning to build a toy box for her toys. She calculated that she needs at least 75 cubic feet to store all of her toys. Will this box have enough space? Show your thinking.



Possible solution:

$V = l \times w \times h$

$V = 3 \times 4 \times 6$

$V = 3 \times 24$

$V = 72$

Anjali will not have enough space, because 72 cubic feet is less than the 75 cubic feet that she needs.

Name: _____ Date: _____

Finding Missing Dimensions of Rectangular Prisms


Anjali

1. Find the volume of a rectangular prism that has a length of 12 inches, a width of 4 inches, and a height of 8 inches.

   384 cubic inches

2. Write the factor pairs for 64.

   (1, 64); (2, 32); (4,16); (8, 8)

3. What is the volume of a rectangular prism with a base of 27 square inches and a height of 5 inches?

   135 cubic inches

4. If a rectangular prism has a volume of 24 cubic inches and a height of 2 inches, what might be the length and width?

   Possible answer:

   3 inches and 4 inches

5. Anjali wants to buy a series of historical books that each cost $13. There are 12 books in the series. Her aunt gives her $75 to spend on books and she already has $48 saved. How much more money would she need to save to buy the whole set? Show your thinking.

   Cost of books: $13 × 12 = $156

   Anjali's savings: $75 + $48 = $123

   Money Anjali needs to save: $156 – $123 = $33

Name: Date:

Solving Problems with Rectangular Prisms

1. Use the standard algorithm to solve.

$$
\begin{array}{r}
115 \\
34 \overline{)\,3{,}910} \\
-\ 3{,}400 \\
\hline
510 \\
-\ 340 \\
\hline
170 \\
-\ 170 \\
\hline
0
\end{array}
$$

2. Use the standard algorithm to solve.

$$
\begin{array}{r}
{\scriptstyle 2\ 2} \\
434 \\
\times\ 62 \\
\hline
868 \\
+\ 26{,}040 \\
\hline
26{,}908
\end{array}
$$

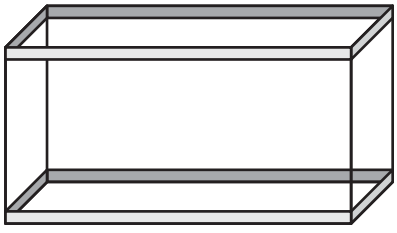
3. A small fish tank has a volume of 12 cubic feet. If the length is 3 feet and the width is 2 feet, what is the height of the fish tank?

2 feet

4. What could be the dimensions of a fish tank that has a volume of 24 cubic feet?

Possible answer:

4 feet by 6 feet by 1 foot



5. What is important to remember when finding volume?

Student answers will vary.

Topic 5

Extending Equivalence, Addition, and Subtraction to Fractions

Recommended ST Math Objectives:

Common Denominators and Equivalent Fractions
Adding and Subtracting Fractions with Unlike Denominators
Patterns and Relationships

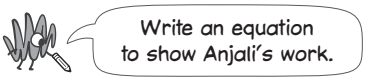
Name: _____ Date: _____


Anjali


Donner

Adding and Subtracting Fractions with Common Denominators

1. Anjali added 6 and 9 and then multiplied the sum by 4. What number did she find?



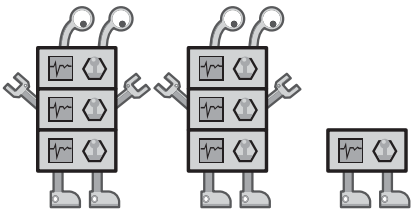
60

(6 + 9) × 4 = 60

2. Solve.

$5 \times (9 + 2) =$ **55**

3. What are 2 ways that you could add these parts to create $\frac{7}{3}$?

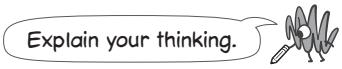


Possible answers:

$1 + 1 + \frac{1}{3} = \frac{7}{3}$

$\frac{3}{3} + \frac{3}{3} + \frac{1}{3} = \frac{7}{3}$

4. Donner uses a new recipe for trail mix. He uses $\frac{1}{8}$ cup of raisins, $\frac{2}{8}$ cup of pretzels, and $\frac{4}{8}$ cup of cashews. Does Donner have less than 1 cup, exactly 1 cup, or more than 1 cup of trail mix? Explain your thinking.



less than 1 cup of trail mix

Student explanations will vary.

5. A school orders 360 notebooks to share equally between 15 classrooms. How many notebooks will each classroom get? Show your thinking.

24 notebooks

Student work will vary.

Name: _____ Date: _____

Adding and Subtracting Mixed Numbers with Common Denominators

1 Circle the numbers that are composite.

(9) (4) 13 (12) (65) 17 (42) 19 2

2 An artist has 3 meters of wire. How many centimeters long is the wire?

300 centimeters

3 Subtract the mixed numbers by decomposing.

$7\frac{3}{5} \rightarrow (6 + \frac{5}{5} + \frac{3}{5}) \rightarrow 6\frac{8}{5}$

$-\ 1\frac{4}{5} \qquad -\ 1\frac{4}{5} \qquad -\ 1\frac{4}{5}$

$5\frac{4}{5}$

4 Add and subtract the mixed numbers using a strategy of your choice. Show your work.

a) $4\frac{2}{6} + 3\frac{5}{6} = 8\frac{1}{6}$

Possible solution:

$4\frac{2}{6} + 3 = 7\frac{2}{6}$

$\rightarrow 7\frac{2}{6} + \frac{4}{6} = 8$

$\rightarrow 8 + \frac{1}{6} = 8\frac{1}{6}$

b) $6\frac{1}{4} - 2\frac{2}{4} = 3\frac{3}{4}$

Possible solution:

$6\frac{1}{4} - 2 = 4\frac{1}{4}$

$\rightarrow 4\frac{1}{4} - \frac{1}{4} = 4$

$\rightarrow 4 - \frac{1}{4} = 3\frac{3}{4}$

Name: _____ Date: _____


Dani

Using Fraction Benchmarks to Estimate Sums and Differences

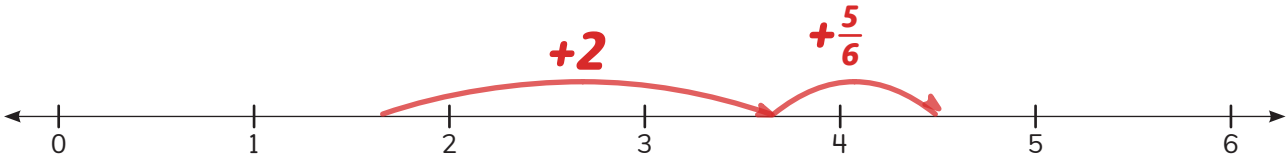
1. Round 98.348 to the nearest **tenth**.

98.3

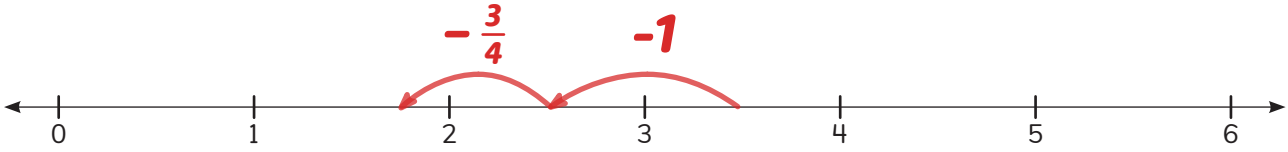
2. Use > , < , or = to make this statement true.

$$220.78 \; \boxed{=} \; (2 \times 100) + (2 \times 10) + (7 \times \tfrac{1}{10}) + (8 \times \tfrac{1}{100})$$

3. Use the number line to show your estimate for $1\frac{2}{3} + 2\frac{5}{6}$.



4. Use the number line to show your estimate for $3\frac{1}{2} - 1\frac{3}{4}$.



Dani has a box of 138 nails on her workbench. She places 11 more boxes of nails on the workbench. Each box contains 45 nails. About how many nails does Dani have on her workbench now? Estimate to find your answer. Show your thinking.

Possible answer:

About 650 nails

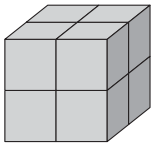
150 + (10 × 50) = 650

Name: _____ Date: _____


Mateo

Adding and Subtracting Fractions with Related Denominators

1. What is the volume of this shape?



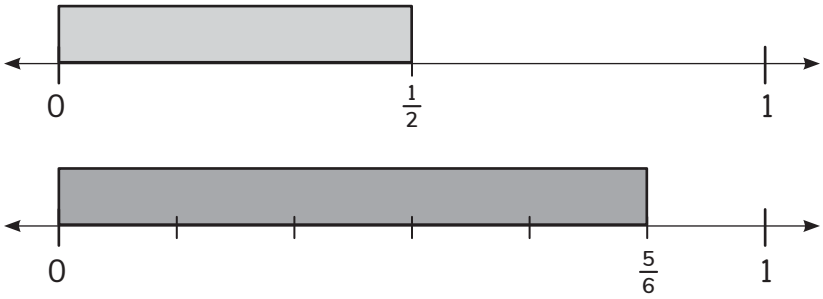
8 cubic units

2. Use >, <, or = to make this statement true.

$\frac{4}{6}$ **=** $\frac{8}{12}$

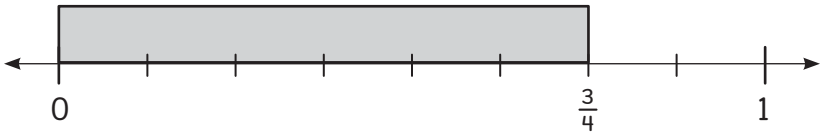
3. Find the sum.

$\frac{1}{2} + \frac{5}{6} =$ **8/6**



4. Find the difference.

$\frac{3}{4} - \frac{1}{8} =$ **5/8**



5. Mateo's dog, Arturito, drinks 0.4 liter of water every day for 7 days. How many milliliters of water does Arturito drink during the 7 days? Show your thinking.

2,800 mL of water

Possible explanation:

0.4 × 1,000 = 400

400 × 7 = 2,800

Name: _____ Date: _____

Finding a Common Denominator with Related Fractions

1 List the factor pairs of each number. Then, circle the factors that both numbers have in common.

a) factors of 12: 1 and 12, 2 and 6, 3 and 4

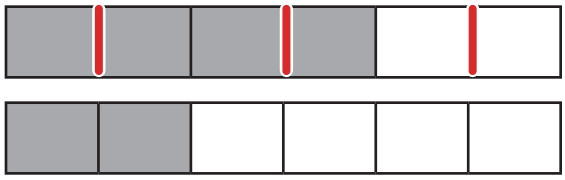
b) factors of 16: 1 and 16, 2 and 8, 4 and 4

2 List the first 8 multiples of each number. Then, circle the common multiples.

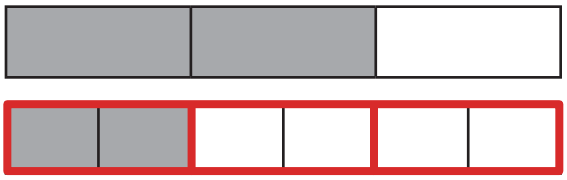
a) multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48

b) multiples of 8: 8, 16, 24, 32, 40, 48, 56, 64

3 Use the models to show two different ways to make common denominators to add $\frac{2}{3} + \frac{2}{6}$.



$\frac{4}{6} + \frac{2}{6} = \frac{6}{6}$



$\frac{2}{3} + \frac{1}{3} = \frac{3}{3}$

4 Add and subtract by writing equivalent fractions that have the same denominator. Show your work.

a) $\frac{5}{6} + \frac{4}{12} = \frac{14}{12}$ or $\frac{7}{6}$

Possible strategies:

$\frac{5 \times 2}{6 \times 2} = \frac{10}{12}$

$\frac{10}{12} + \frac{4}{12} = \frac{14}{12}$

OR

$\frac{4 \div 2}{12 \div 2} = \frac{2}{6}$

$\frac{5}{6} + \frac{2}{6} = \frac{7}{6}$

b) $\frac{9}{16} - \frac{1}{4} = \frac{5}{16}$

Possible strategy:

$\frac{1 \times 4}{4 \times 4} = \frac{4}{16}$

$\frac{9}{16} - \frac{4}{16} = \frac{5}{16}$

Name: _____ Date: _____

Adding and Subtracting Fractions and Mixed Numbers with Related Denominators

1 Write 42.567 in **expanded notation**.

Possible answers: $(4 \times 10) + (2 \times 1) + (5 \times \frac{1}{10}) + (6 \times \frac{1}{100}) + (7 \times \frac{1}{1{,}000})$

$(4 \times 10) + (2 \times 1) + (5 \times 0.1) + (6 \times 0.01) + (7 \times 0.001)$

2 Round 37.698 to the nearest **hundredth**.

37.70

3 Use common multiples or factors to add or subtract with equivalent fractions. Show your work.

a) $\frac{18}{20} - \frac{1}{5} - \frac{6}{10} =$ $\frac{1}{10}$

Possible solution:

$\frac{18 \div 2}{20 \div 2} = \frac{9}{10}$

$\frac{1 \times 2}{5 \times 2} = \frac{2}{10}$

$\frac{9}{10} - \frac{2}{10} - \frac{6}{10}$

$= \frac{7}{10} - \frac{6}{10}$

$= \frac{1}{10}$

b) $2\frac{5}{6} + 1\frac{1}{3} + 4\frac{8}{12} =$ $8\frac{5}{6}$

Possible solution:

$\frac{1 \times 2}{3 \times 2} = \frac{2}{6}$

$\frac{8 \div 2}{12 \div 2} = \frac{4}{6}$

$2\frac{5}{6} + 1\frac{2}{6} + 4\frac{4}{6}$

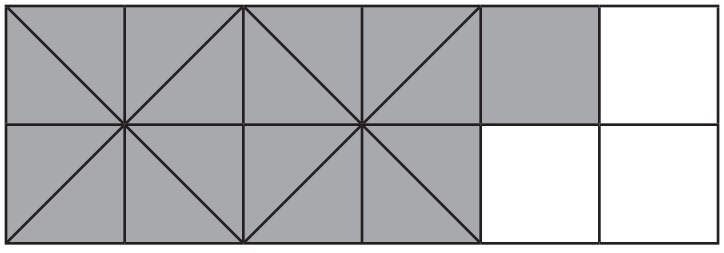
$= 2 + 1 + 4 + \frac{5}{6} + \frac{2}{6} + \frac{4}{6}$

$= 7 + \frac{11}{6}$

$= 7 + \frac{6}{6} + \frac{5}{6}$

$= 8\frac{5}{6}$

4 Use the model to complete and solve the equation.



$\frac{9}{12} - \frac{2}{3} = \frac{1}{12}$

5 A baker has $\frac{1}{2}$ pound of raisins. She uses $\frac{3}{8}$ pound of the raisins for a recipe. How much does she have left? Show your work.

$\frac{1}{2} - \frac{3}{8}$

$\frac{1 \times 4}{2 \times 4} = \frac{4}{8}$

$= \frac{4}{8} - \frac{3}{8}$

$= \frac{1}{8}$ pound

Name: _____ Date: _____


Aleki

Choosing Strategies to Add and Subtract with Related Denominators

1 Use the standard algorithm to solve.

$$
\begin{array}{r}
363 \\
23 \overline{)\,8{,}349} \\
-\ 6{,}900 \\
\hline
1{,}449 \\
-\ 1{,}380 \\
\hline
69 \\
-\ 69 \\
\hline
0
\end{array}
$$

2 Use the standard algorithm to solve.

$$
\begin{array}{r}
{\scriptstyle 1\ \ } \\
{\scriptstyle 4\ 1\ } \\
782 \\
\times\ \ 26 \\
\hline
4{,}692 \\
+\ 15{,}640 \\
\hline
20{,}332
\end{array}
$$

3 Find the difference.

$4\frac{1}{2} - 1\frac{1}{4} =$ $3\frac{1}{4}$

4 Find the sum.

$3\frac{3}{4} + 1\frac{5}{8} =$ $5\frac{3}{8}$

5 Aleki and his uncle go on a three-day fishing trip. On the first day, they fish for $2\frac{3}{4}$ hours. On the second day, they fish for $3\frac{1}{2}$ hours. On the third day, they fish for $4\frac{3}{4}$ hours. How many hours do Aleki and his uncle fish in all? Show your thinking.

$2\frac{3}{4} + 3\frac{1}{2} + 4\frac{3}{4} = 11$ hours

Name: _____ Date: _____


Aleki

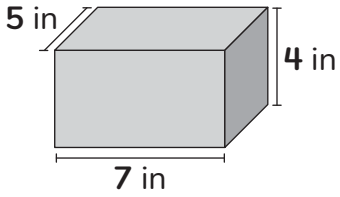
Using Dot Plots to Add and Subtract Mixed Numbers with Related Denominators

1 Solve. $8\frac{1}{8} - \frac{3}{4} =$ **$7\frac{3}{8}$**

$2\frac{1}{6} + 3\frac{2}{3} =$ **$5\frac{5}{6}$**

2 Find the volume of this rectangular prism.

140 cubic inches



3 Aleki caught a wahoo fish that was $4\frac{3}{4}$ feet long and a giant trevally fish that was $5\frac{1}{2}$ feet long. Is the combined length of the fish less than, equal to, or greater than 10 feet?

The combined length is greater than 10 feet.

4 a) Aleki arrived at his favorite fishing spot at 9:55 a.m. He spent 30 minutes fishing and did not catch any fish. He then walked for 15 minutes to another location. The fishing was so good there that he spent 2 hours and 45 minutes fishing. When Aleki looked at his watch, what time did he see?

1:25 p.m.

b) Aleki's uncle will pick up Aleki at his current fishing spot at 2:00 p.m. How much longer can Aleki fish?

35 minutes

Name: _____ Date: _____

Finding a Common Denominator from Unrelated Denominators

1 Complete the comparison statement.

The value of the digit 4 in 3.24 is **one tenth** / **ten times** as much as the value of the digit 4 in 0.324.

2 Below each expression, write a common denominator that you could use to help you add or subtract.

$\frac{1}{3} + \frac{4}{6}$ — ***3 or 6***

$\frac{1}{2} + \frac{3}{5}$ — ***10***

$\frac{5}{6} - \frac{3}{4}$ — ***12 or 24***

3 Use the models to find equivalent fractions with common denominators. Then add.

$\frac{3}{4} = \frac{9}{12}$

$\frac{2}{3} = \frac{8}{12}$

$\frac{3}{4} + \frac{2}{3}$

$= \frac{9}{12} + \frac{8}{12}$

$= \frac{17}{12}$

4 Use the models to find equivalent fractions with common denominators. Then subtract.

$\frac{1}{2} = \frac{5}{10}$

$\frac{1}{5} = \frac{2}{10}$

$\frac{1}{2} - \frac{1}{5}$

$= \frac{5}{10} - \frac{2}{10}$

$= \frac{3}{10}$

Name: _____ Date: _____


Aleki

Adding and Subtracting Fractions with Unrelated Denominators

1 Use the standard algorithm to solve.

$$
\begin{array}{r}
454 \\
18 \overline{)\ 8{,}172} \\
-\ 7{,}200 \\
\hline
972 \\
-\ 900 \\
\hline
72 \\
-\ 72 \\
\hline
0
\end{array}
$$

2 Use the standard algorithm to solve.

$$
\begin{array}{r}
{\scriptstyle 3\ \ } \\
{\scriptstyle 2\ \ } \\
981 \\
\times\ \ 43 \\
\hline
2{,}943 \\
+\ 39{,}240 \\
\hline
42{,}183
\end{array}
$$

3 Solve.

$\frac{5}{6} - \frac{3}{4} = \frac{1}{12}$

$\frac{2}{3} + \frac{1}{2} = 1\frac{1}{6}$

4 Aleki caught a fish that was $\frac{7}{8}$ of a pound. His uncle caught a fish that was $\frac{1}{2}$ pound. How much more did Aleki's fish weigh than his uncle's fish?

$$\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$$

Aleki's fish was $\frac{3}{8}$ of a pound heavier than his uncle's fish.

Name: _____ Date: _____

Adding and Subtracting More Than Two Fractions

~~Possible answer: The sum of $\frac{5}{12} + \frac{7}{8} + 0.25$ is about $1\frac{3}{4}$ because I think that $\frac{5}{12} + \frac{7}{8}$ is about $1\frac{1}{2}$. So when I add 0.25, or $\frac{1}{4}$, the sum is about $1\frac{3}{4}$.~~

1 Write each decimal as an equivalent fraction with 10 or 100 in the denominator.

$0.63 = \frac{63}{100}$ $0.4 = \frac{4}{10}$ or $\frac{40}{100}$ $1.27 = \frac{127}{100}$ or $1\frac{27}{100}$

2 Write each fraction as an equivalent decimal.

$\frac{5}{10} = 0.5$ $\frac{98}{100} = 0.98$ $\frac{240}{100} = 2.4$ or 2.40

3 a) Estimate the sum of $\frac{5}{12} + \frac{7}{8} + 0.25$ and explain your thinking.

Possible answer:
About $1\frac{3}{4}$ because $\frac{5}{12} + \frac{7}{8}$ is about $1\frac{1}{2}$. So when I add 0.25, or $\frac{1}{4}$, the sum is about $1\frac{3}{4}$.

Students may make other estimates using fractions or decimals with totals between $1\frac{1}{2}$ and 2.

b) Use common denominators to find the exact sum.

$\frac{10}{24} + \frac{21}{24} + \frac{6}{24} = \frac{37}{24}$ or $1\frac{13}{24}$

c) Was your estimate close to your exact answer? Explain how you know.

Possible answer: My estimate is pretty close to my answer. $1\frac{13}{24}$ is a bit more than $1\frac{1}{2}$, which is close to $1\frac{3}{4}$.

4 Three friends worked together to make a fruit salad. The first friend cut up $\frac{4}{5}$ pound of watermelon. The second friend cut up $\frac{3}{4}$ pound of strawberries. The third friend cut up 0.6 pound of kiwi fruit.

a) Estimate: Will the total weight of the fruit salad be more or less than 2 pounds? Explain how you know.

Possible answer:
The total weight will be more than 2 pounds. $\frac{4}{5}$ and $\frac{3}{4}$ are each a bit less than 1. So, together they are a bit less than 2. 0.6 is more than $\frac{1}{2}$. So, when all 3 weights are added together, the sum will be more than 2 pounds.

b) Find the exact weight of fruit salad that they made. Show your work.

$\frac{16}{20} + \frac{15}{20} + \frac{12}{20} = \frac{43}{20}$ pounds or $2\frac{3}{20}$ pounds

Name: _____ Date: _____

Adding and Subtracting Mixed Numbers with Unrelated Denominators

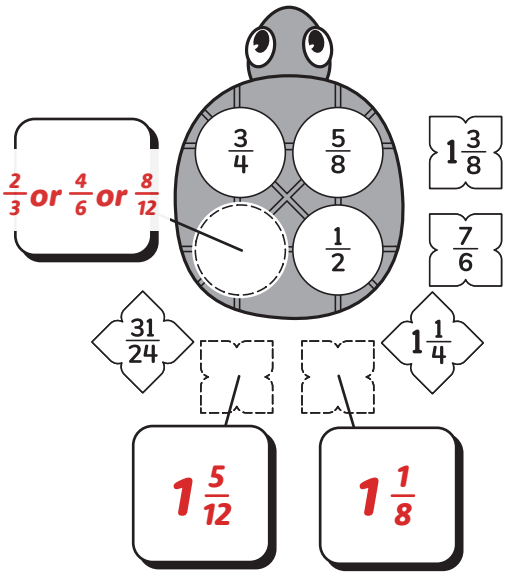
1 Find the sum. $3\frac{2}{5} + \frac{5}{8} + 5\frac{1}{4} =$ **$9\frac{13}{24}$**

2 Solve.

$\frac{3}{4} + \frac{2}{8} =$ **1**

$2\frac{1}{4} - 1\frac{1}{3} =$ **$\frac{11}{12}$**

3 Find the missing numbers.



4 Dani has 3 packages of nails. Each package weighs 680 grams. How many kilograms of nails does Dani have?

2.04 kilograms of nails

Name: _____ Date: _____


Anjali


Mateo

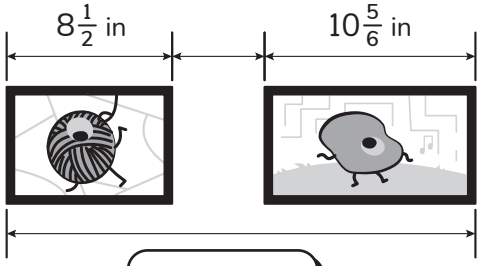
Solving Word Problems Involving Fractions and Mixed Numbers

1 Round 12.458 to the nearest **hundredth**.

12.46

2 Solve. $\frac{4}{3} + \frac{7}{4} =$ ***$3\frac{1}{12}$***

3 Anjali wants to have a space of $4\frac{3}{4}$ inches between these photos. What is the total length she will need to have available on her wall for her photo gallery?



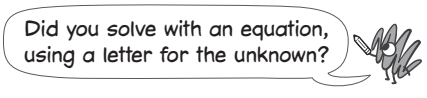
$24\frac{1}{12}$ in

4 Mateo has a painting that is $14\frac{2}{3}$ inches tall. He has another painting that is $18\frac{3}{8}$ inches tall. What is the difference in height between these paintings?

$3\frac{17}{24}$ in

5 Over the summer, Anjali and her family traveled from New York City to Los Angeles. They decided to go on a road trip and drive the 2,445 miles. On their first day, they left late and drove only 300 miles. They decided to drive the remaining part of their trip equally over 3 more days. How many miles do they need to drive each day? Solve with an equation, using a letter for the unknown.

m = (2,445 – 300) ÷ 3
m = 715 miles each day



Topic 6

Extending Multiplication and Division to Fractions

Recommended ST Math Objectives:

Fraction Multiplication

Introduction to Fraction Division

Common Denominators and Equivalent Fractions

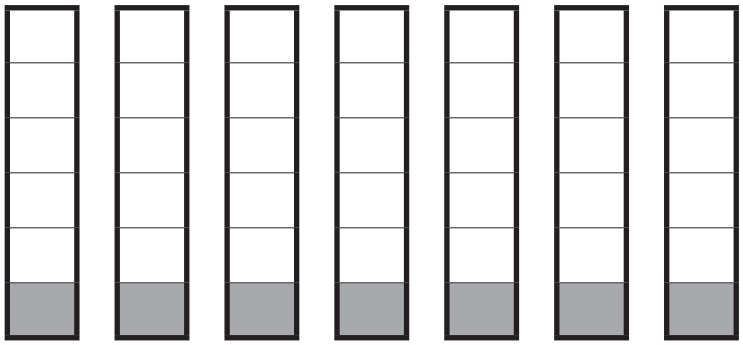
Name: _____ Date: _____


Anjali

Representing Non-Unit Fractions as Sums and Products of Unit Fractions

1. Solve. $8\frac{1}{6} - \frac{3}{4} =$ ***$7\frac{5}{12}$*** $3\frac{2}{5} + 7\frac{2}{3} =$ ***$11\frac{1}{15}$***

2. Write 2 equations that represent the model.



Possible answers:

$7 \times \frac{1}{6} = \frac{7}{6}$

and

$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{7}{6}$ or $1\frac{1}{6}$

3. $3 \times \frac{1}{4} =$ ***$\frac{1}{4}$*** $+$ ***$\frac{1}{4}$*** $+$ ***$\frac{1}{4}$***

4. Anjali says $4 \times \frac{1}{5}$ and $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$ are equivalent expressions.
Do you agree or disagree with Anjali? Explain your thinking.

Agree

Possible explanation:

Both expressions have a value of $\frac{4}{5}$.

Name: Date:

Using Number Lines to Model Unit Fractions Multiplied by Whole Numbers

1 Use the standard algorithm to solve.

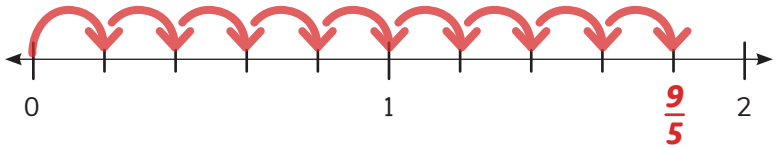
$$\begin{array}{r} 463 \\ 9\overline{)\,4{,}167} \\ -\;3{,}600 \\ \hline 567 \\ -\;540 \\ \hline 27 \\ -\;27 \\ \hline 0 \end{array}$$

2 Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 5\;1} \\ 981 \\ \times\;\;43 \\ \hline 582 \\ +\;40{,}740 \\ \hline 41{,}322 \end{array}$$

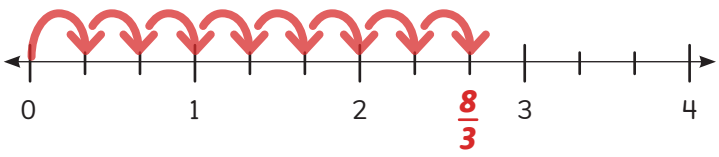
3 Use the number line to find the missing factor.

$$\boxed{9} \times \frac{1}{5} = \frac{9}{5}$$



4 Finish the equation and represent it on the number line.

$$\frac{8}{3} = \boxed{8} \times \frac{\boxed{1}}{\boxed{3}}$$

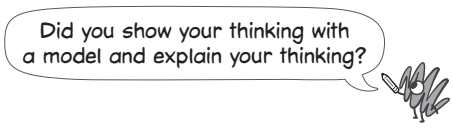


5 A critter partitioned a number line into sixths. It started at 0 and hopped 3 times. Each hop landed on the next tick mark on the number line. On what space on the number line did the critter land? What are 2 other numbers that could represent that spot on the number line? Show your thinking with a model and explain your thinking.

Possible answer:

$\frac{3}{6}, \frac{1}{2}, \frac{2}{4}$

Student models and explanations will vary.



Name: _____ Date: _____

Modeling and Solving Non-Unit Fractions Multiplied by Whole Numbers

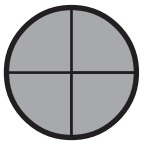
1 Dani cut $12\frac{3}{4}$ inches off a board that was $48\frac{1}{2}$ inches long.

a) How is the length of the remaining board written in mixed number form?

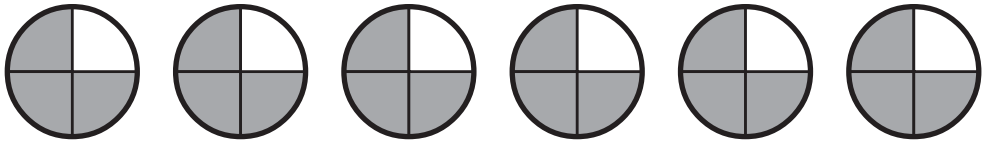
35 3/4 inches

b) How is the length of the remaining board written in decimal form?

35.75 inches

2 The circle is one whole. 

Circle the expressions that can be used to represent this quantity.



$6 \times 3 \times \frac{1}{4}$ $\quad 3 \times \frac{3}{4}$ $\quad 18 \times \frac{1}{4}$ $\quad 6 \times \frac{3}{4}$

3 Solve. $7 \times \frac{2}{3} =$ ***14/3 = 4 2/3*** $\quad 4 \times \frac{3}{4} =$ ***12/4 = 3***

4 Brian baked 36 muffins. $\frac{1}{3}$ of the muffins were blueberry muffins and $\frac{2}{3}$ of the muffins were banana muffins. How many muffins were blueberry muffins? How many muffins were banana muffins?

12 were blueberry muffins;

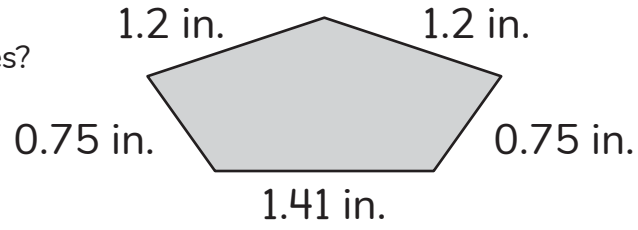
24 were banana muffins.

Name: _____ Date: _____


Donner

Discovering Patterns Involving Fractions Multiplied by Whole Numbers

1. A pentagon and its side lengths are shown.
What is the perimeter of the pentagon in inches?



5.31 in

2. Circle the composite numbers. **31** **32** **33** **34** **35**

3. Model and solve. $2 \times \frac{3}{2} = \boxed{3}$

Student models will vary.

4. The product of $8 \times \frac{7}{8}$ is equal to the numerator of the fraction. **True** **False**

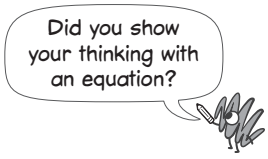
Possible explanation:

When the whole number and the denominator of the fraction are the same, the product is equal to the numerator.

5. Donner went on a $\frac{3}{4}$-mile hike in the morning and 0.5-mile hike in the afternoon.
How far did Donner hike in all? Show your thinking with an equation.

$\frac{3}{4} + \frac{1}{2} = 1\frac{1}{4}$ miles

or 0.75 + 0.5 = 1.25 miles



Name: _____ Date: _____


Logan

Solving Word Problems Involving Fractions Multiplied by Whole Numbers

1 Write the number 420.351 in expanded notation.

(4 × 100) + (2 × 10) + (3 × 0.1) + (5 × 0.01) + (1 × 0.001)
or (4 × 100) + (2 × 10) + (3 × $\frac{1}{10}$) + (5 × $\frac{1}{100}$) + (1 × $\frac{1}{1{,}000}$)

3 Solve. $3\frac{1}{2} - \frac{4}{5} =$ *$2\frac{7}{10}$* $2\frac{2}{3} + 6\frac{3}{4} =$ *$9\frac{5}{12}$*

3 Using Logan's recipe, how much honey will be needed to make 3 batches of lemonade?

Show your thinking with an equation.

2 cups

Possible equation:

$3 \times \frac{2}{3} = \frac{6}{3} = 2$ cups

Logan's Lemonade Recipe
Serves 8

$\frac{5}{2}$ cups of lemon juice
$\frac{2}{3}$ cup of honey
8 cups of water
Some ice cubes
Mint

4 Solve.

$6 \times \frac{4}{5} =$ *$\frac{24}{5}$ or $4\frac{4}{5}$* $3 \times \frac{4}{6} =$ *$\frac{12}{6}$ or 2* $5 \times \frac{2}{3} =$ *$\frac{10}{3}$ or $3\frac{1}{3}$*

5 Logan wants to try a strawberry lemonade recipe. The recipe calls for $\frac{5}{6}$ cup strawberry puree for each batch of lemonade. If each batch is enough for 6 people, how many cups of strawberry puree does Logan need to serve 30 people? Explain you thinking.

$4\frac{1}{6}$ cups

Possible explanation:

If enough lemonade for 6 people requires $\frac{5}{6}$ cup of strawberry puree, then the recipe needs to be made 5 times to have enough for 30 people because 6 × 5 = 30. 5 × $\frac{5}{6} = \frac{25}{6} = 4\frac{1}{6}$, so $4\frac{1}{6}$ cups of strawberry puree are needed.

Did you explain your thinking?

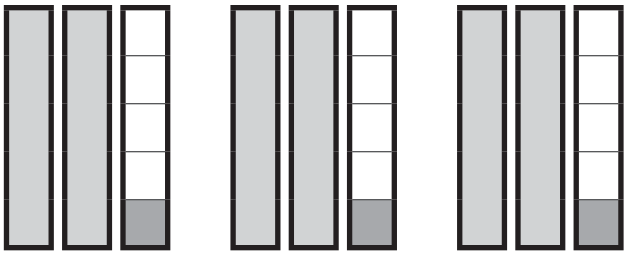
Name: _____ Date: _____


Logan

Modeling and Solving Mixed Numbers Multiplied by Whole Numbers

1 Solve. $[2 \times (3 + 4)] - (3 \times 4) =$ **2**

2 Finish the equation to represent this model and find the product.



$3 \times$ **$2\frac{1}{5}$** $=$ **$\frac{33}{5}$ or $6\frac{3}{5}$**

3 Rewrite this equation using parentheses and solve.

$5 \times 3\frac{1}{2}$

$= 5 \times ($ **3** $+$ **$\frac{1}{2}$** $)$

$= (5 \times$ **3** $) + (5 \times$ **$\frac{1}{2}$** $)$

$=$ **15** $+$ **$2\frac{1}{2}$**

$=$ **$17\frac{1}{2}$**

4 Logan drank $3\frac{3}{4}$ quarts of water yesterday. She drank $2\frac{1}{3}$ quarts of water today. How many more quarts of water did she drink yesterday than today? Show your thinking with an equation.

$3\frac{3}{4} - 2\frac{1}{3} = 1\frac{5}{12}$ more quarts of water

Name: _____ Date: _____

Solving Word Problems Involving Mixed Numbers Multiplied by Whole Numbers

1. Write the number 27.509 in expanded notation.

   (2 × 10) + (7 × 1) + (5 × 0.1) + (9 × 0.001)

   or (2 × 10) + (7 × 1) + (5 × $\frac{1}{10}$) + (9 × $\frac{1}{1{,}000}$)

2. Solve. $[7 \times (8 - 3)] + (2 \times 5) =$ ***45***

3. a) Last week, Logan walked a path at the lake that is $2\frac{5}{8}$ miles long. She walked the same path each day for 5 days. How many miles did she walk?

   Show your thinking with an equation.

   $13\frac{1}{8}$ miles

   $5 \times 2\frac{5}{8} = (5 \times 2) + (5 \times \frac{5}{8})$
   $= 10 + \frac{25}{8}$
   $= 13\frac{1}{8}$

   b) This week, she walked a different path by the lake that is $3\frac{1}{4}$ miles long. She walked that path each day for 4 days. Did she walk farther this week or last week?

   Explain your thinking.

   She walked farther last week.

   Possible explanation:

   She walked $3\frac{1}{4} \times 4 = 13$ miles this week and $13\frac{1}{8}$ miles last week.
   $13\frac{1}{8}$ miles is a greater distance that 13 miles.

4. Brian uses $3\frac{1}{4}$ cups of flour in each loaf of bread. How many cups of flour does Brian need in order to make 6 loaves of bread? Explain your thinking with an equation.

   $6 \times 3\frac{1}{4} = 19\frac{1}{2}$ cups of flour

Did you explain your thinking with an equation?

Name: _____ Date: _____


Brian

Modeling and Solving Multiplicative Comparison Word Problems: Mixed Unknown

1 Use the standard algorithm to solve.

$$
\begin{array}{r}
287 \\
31\overline{)\,8{,}897} \\
-\;6{,}200 \\
\hline
2{,}697 \\
-\;2{,}480 \\
\hline
217 \\
-\;217 \\
\hline
0
\end{array}
$$

2 Use the standard algorithm to solve.

$$
\begin{array}{r}
{\scriptstyle 1\;5} \\
{\scriptstyle 3} \\
217 \\
\times\quad 85 \\
\hline
1{,}085 \\
+\;17{,}360 \\
\hline
18{,}445
\end{array}
$$

3 A baby cheetah is $\frac{11}{12}$ foot long. An adult cheetah is 5 times as long as the baby cheetah. How long is the adult cheetah?

Write an equation and solve.

$\frac{11}{12} \times 5 = \frac{55}{12} = 4\frac{7}{12}$ feet

4 A rhino horn is $1\frac{2}{3}$ feet long. An elephant tusk is 4 times as long as the rhino horn. How long is the elephant tusk?

Write an equation and solve.

$1\frac{2}{3} \times 4 = 6\frac{2}{3}$ feet

5 Brian is making bread. The recipe he is using calls for $\frac{1}{2}$ jar of sesame seeds. Brian had 1 whole jar of sesame seeds yesterday, but he used $\frac{4}{6}$ of the jar to make muffins. Are there enough sesame seeds left for the bread recipe? Explain your thinking.

No

Possible explanation:

Brian has $\frac{1}{3}$ of a jar left, and that is less than $\frac{1}{2}$ jar, so he does not have enough.

Did you explain your thinking?

Name: _____ Date: _____


Leilah

Using Visual Models to Find Fractional Parts of Whole Numbers

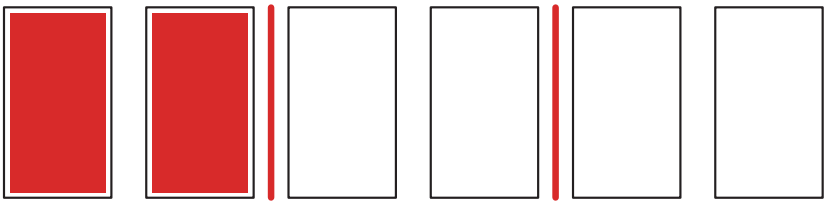
1. A race is 5,000 meters long. How long is the race in kilometers?

   5 km

2. Write an expression to represent "multiply the sum of 11 and 14 by 6."

   (11 + 14) × 6

3. Use the model to find $\frac{1}{3}$ of 6. ***Possible answer:***



$\frac{1}{3} \times 6 =$ **2**

Students may also partition each rectangle into 3 equal parts and shade 1 part of each rectangle.

4. Solve.

$\frac{1}{6} \times 18 =$ **3**

$\frac{1}{5} \times 20 =$ **4**

$\frac{1}{3} \times 3 =$ **1**

$\frac{1}{4} \times 8 =$ **2**

$\frac{1}{2} \times 10 =$ **5**

$\frac{1}{9} \times 9 =$ **1**

5. Leilah made 8 tarts for a bake sale.

   a) She put $\frac{1}{2}$ cup of blueberries in each tart. Draw a model and write a multiplication equation to show how many cups of blueberries she used in all.

8 × $\frac{1}{2}$ = 4 cups of blueberries

   b) Leilah sold $\frac{1}{2}$ of her tarts at the bake sale. Draw a model and write a multiplication equation to show how many tarts she sold.

$\frac{1}{2}$ × 8 = 4 tarts

Name: _____ Date: _____


Vivi

Using Visual Models to Find Non-Unit Fractional Parts of Whole Numbers

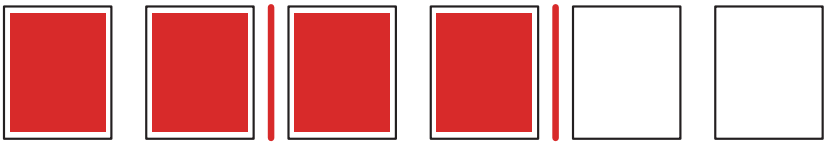
1 If $\frac{2}{3} \times 6 = n$, is n greater than or less than 6? Explain your thinking.

less

Possible answer:

When multiplying a whole number by a fraction less than 1, the product is less than the whole number.

2 Vivi is making 6 picture frames as gifts for her family. She will put stickers on $\frac{2}{3}$ of the picture frames. Use the model to represent the situation and complete the equation.



$\frac{2}{3} \times 6 =$ ***4***

Students may also partition each rectangle into 3 equal parts and shade 2 parts of each rectangle.

3 Circle the expressions that could be used to find the product of $\frac{2}{3} \times 6$.

$(\frac{1}{3} \times 6) \times 2$ $(\frac{1}{3} \times 2) \times 6$ $2 \times 3 \times 6$ $(2 \times 6) \times \frac{1}{3}$

4 Solve.

$\frac{1}{2} \times 14 =$ ***7*** $\frac{3}{5} \times 20 =$ ***12*** $\frac{2}{5} \times 5 =$ ***2***

$\frac{2}{4} \times 8 =$ ***4*** $\frac{5}{6} \times 18 =$ ***15*** $\frac{6}{7} \times 7 =$ ***6***

5 A student says, "When you multiply a fraction by a whole number, if the whole number is the same as the denominator of the fraction, the product will be the numerator of the fraction. For example, $\frac{3}{4} \times 4 = 3$." Do you agree? Explain your thinking.

Possible answer:

I agree. For example, in $\frac{3}{4} \times 4 = 3$, if you think of the equivalent expression $3 \times \frac{1}{4} \times 4$, then $\frac{1}{4}$ of 4 is 1. The denominator and the whole number cancel each other out to make 1 whole, which leaves $3 \times 1 = 3$, and the product is the same as the numerator of the fraction.

Name: _____ Date: _____

Modeling and Solving Word Problems Involving Fractions

1 Use the standard algorithm to solve.

$$\begin{array}{r} 136 \\ 43\overline{)\,5{,}848} \\ -\ 4{,}300 \\ \hline 1{,}548 \\ -\ 1{,}290 \\ \hline 258 \\ -\ 258 \\ \hline 0 \end{array}$$

2 Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 1\ 1\ 3} \\ 425 \\ \times\ \ 37 \\ \hline 2{,}975 \\ +\ 12{,}750 \\ \hline 15{,}725 \end{array}$$

3 Naomi collected 8 bags of trash at 3 parks.

a) At the first park, she collected $1\frac{3}{8}$ bags of trash. At the second park, she collected 3 times as much trash as she did at the first park. How many bags of trash did Naomi collect at the second park?

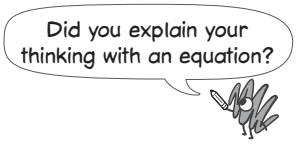
$4\frac{1}{8}$ bags of trash

b) How many bags of trash did Naomi collect at the third park?

$3\frac{7}{8}$ bags of trash

4 Aleki is helping to set up a party to celebrate after his school band concert. He needs to set up 18 tables. $\frac{1}{6}$ of these tables will be used to serve food for the party. How many tables will be used to serve food? Show your thinking with an equation.

$\frac{1}{6} \times 18 = 3$ tables



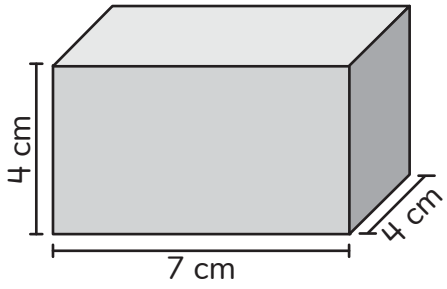
Name: _____ Date: _____


Brian

Exploring Division Types with Whole Numbers and Fractions

1. $[6 + (8 \times 3)] \div 15 =$ **2**

2. Find the volume.



112 cubic cm

3. Brian used 2 cups of flour when baking 5 batches of cookies. He used the same amount of flour in each batch. How much flour did Brian use in each batch?

$\frac{2}{5}$ cup of flour

4. There are 9 gallons of water. A fish tank can hold 10 gallons. How many fish tanks can be filled?

$\frac{9}{10}$ of a fish tank

Name: _____ Date: _____


Vivi

Dividing Unit Fractions by Whole Numbers

1 Circle the prime numbers.

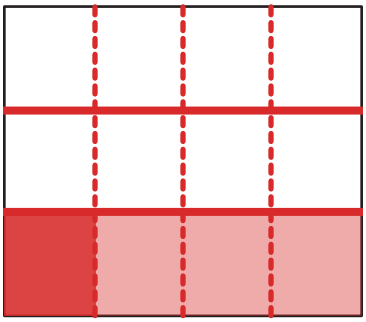
2 15 33 5

11 108 19 45

2 Find the sum.

$1\frac{3}{8} + \frac{3}{2} =$ $2\frac{7}{8}$

3 Vivi has $\frac{1}{3}$ of a jar of beads. She wants to share the beads equally between 4 necklaces. How much of a jar of beads will each necklace use? Draw a model and write an equation to represent the situation.



$\frac{1}{3} \div 4 = \frac{1}{12}$

4 Solve.

$\frac{1}{2} \div 4 = \frac{1}{8}$

$\frac{1}{3} \div 2 = \frac{1}{6}$

$\frac{1}{5} \div 5 = \frac{1}{25}$

$\frac{1}{6} \div 3 = \frac{1}{18}$

5 A student says, "When I divide a unit fraction by a whole number, I can use multiplication to find the denominator." Explain what she means. Use an example if it will help you explain.

Possible answer:

She means that you can multiply the denominator in the fraction by the whole number that you are dividing by to get the denominator in the quotient. For example, to find the quotient of $\frac{1}{2} \div 4$, you can multiply 2 × 4 to find the denominator, 8, in the quotient, $\frac{1}{8}$.

Name: _____ Date: _____


Dani

Identifying Patterns When Dividing Unit Fractions by Whole Numbers

1 Put a sign in this equation to make it true.

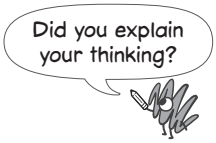
$68.25 \; \boxed{\div} \; 10 = 6.825$

2 Solve.

$\frac{5}{6} + \frac{7}{9} =$ **$1\frac{11}{18}$**

3 Circle the expression that will have the greatest quotient. Explain your thinking.

$\frac{1}{3} \div 3$ $\quad$ $\frac{1}{3} \div 5$ $\quad$ $\frac{1}{3} \div 7$



Student explanations will vary.

4 Dani is cutting another board for her project. If she has a $\frac{1}{3}$ meter board and cuts it into 2 pieces, what will be the length of each piece? Draw a model to show your thinking.

$\frac{1}{6}$ meter

Student models will vary.

5 Dani now wants to cut a $\frac{1}{2}$ meter board into 2 equal pieces. How long will each piece be?

$\frac{1}{4}$ meter

Name: _____ Date: _____

Dividing Whole Numbers by Unit Fractions


Louis Brian

1. There are 3 cups of chocolate milk. If the chocolate milk is shared equally by 4 students, how much will each student get?

$\frac{3}{4}$ cup

2. Solve. $\frac{8}{9} - \frac{3}{4} =$ $\frac{5}{36}$ $\quad\quad$ $\frac{2}{3} + \frac{3}{4} + \frac{1}{8} =$ $1\frac{13}{24}$

3. Louis has 8 pints of juice to serve with his lasagna. If each serving of juice is $\frac{1}{4}$ pint, how many servings does Louis have?

32 servings

4. Find the quotient. $8 \div \frac{1}{3} =$ 24

5. Brian has 8 pounds of flour. If he uses $\frac{1}{10}$ pound of flour for each bread roll, how many bread rolls can Brian make?

$8 \div \frac{1}{10} = 80$ bread rolls

Name: _____ Date: _____

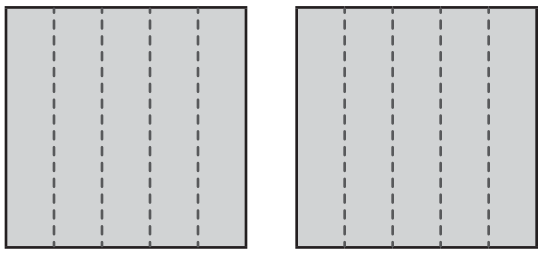
Relating Division by Unit Fractions to Multiplication by Whole Numbers

1. Round 189.771 to the nearest hundredth. **189.77**

2. Dani had $\frac{1}{3}$ of a pizza left over from a party. If 4 people share the leftover pizza equally, how much of the original pizza will each person get?

   $\frac{1}{12}$ pizza

3. If each square represents one whole, what expressions are shown in this model?



   2×5 and $2 \div \frac{1}{5}$

4. Find the quotient.

   $6 \div \frac{1}{3} =$ **18**

5. Mateo has 4 cans of blue paint. His design needs $\frac{1}{3}$ of a can for each canvas. How many canvases can he paint?

   12 canvases

Name: _____ Date: _____


Mateo

Exploring Patterns When Dividing Whole Numbers by Unit Fractions

1. Circle the expression with a greater value.

$\frac{1}{6} \times 3$ $\quad$ $\frac{1}{6} \times 4$

2. Mateo painted 5 tables. He used $4\frac{2}{3}$ cups of paint for each table. How much paint did Mateo use in all? Explain your thinking.

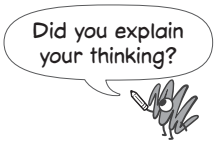
5 × $4\frac{2}{3}$ = $23\frac{1}{3}$ cups of paint

3. Which expression has a greater value? Explain your thinking.

$5 \div \frac{1}{8}$ $\quad$ $5 \div \frac{1}{4}$

Possible explanation:

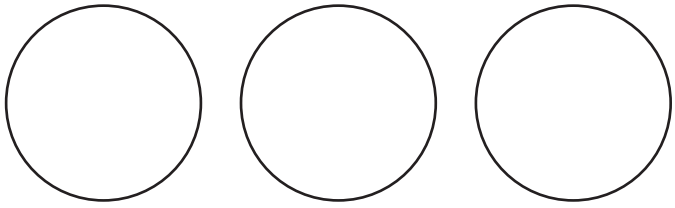
5 is being divided by a smaller number.



4. Use >, <, or = to make the statement true.

$3 \div \frac{1}{2}$ **=** 6

5. There are 3 pizzas. If each person gets $\frac{1}{3}$ of a pizza, how many people can share the pizzas?



9 people

Name: _____ Date: _____


Brian

Solving Real-World Problems with Fraction Multiplication and Division

1 Write the number 981.407 in expanded notation.

(9 × 100) + (8 × 10) + (1 × 1) + (4 × 0.1) + (7 × 0.001)
or (9 × 100) + (8 × 10) + (1 × 1) + (4 × $\frac{1}{10}$) + (7 × $\frac{1}{1{,}000}$)

2 Find the quotient.

$2 \div \frac{1}{4} =$ ***8***

$5 \div 8 =$ ***$\frac{5}{8}$***

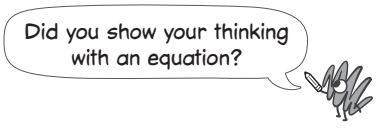
3 Complete the equation.

$6 \div \frac{1}{3} = 6 \times$ ***3***

$3 \div 4 = 3 \times$ ***2***

4 Brian has 4 cups of oatmeal. If he uses $\frac{1}{2}$ cup of oatmeal for each serving, how many servings can Brian make? Show your thinking with an equation.

4 ÷ $\frac{1}{2}$ = 8 servings



Name: _____ Date: _____


Mateo

Solving Problems with Fractions and Four Operations

1. Use >, <, or = to compare. $814.246 \; < \; 814.462$

2. The lap lane at the pool is open for 6 hours each day. If each person gets $\frac{1}{4}$ of an hour to swim laps, how many swimmers can use the lap lane each day?

   24 swimmers

3. Mateo's dog, Arturito, had $5\frac{1}{8}$ cups of water in his bowl. If he drank $1\frac{1}{2}$ cups of water, how much water remains in the bowl? Explain your thinking.

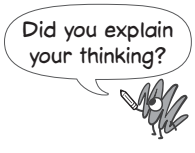
   $5\frac{1}{8} - 1\frac{1}{2}$
   $= 5\frac{1}{8} - 1\frac{4}{8}$
   $= 3\frac{5}{8}$ cups of water

4. $1\frac{3}{4} \times 4 =$ ***7***

5. Each lap in the swimming pool is 25 meters long. You want to swim a kilometer. How many laps do you need to swim in order to swim a kilometer? 35, 40, or 45 laps? Explain your thinking.

   40 laps

   Student explanations will vary.



Topic 7

Extending Multiplication and Division to Decimals

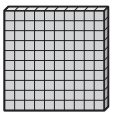
Recommended ST Math Objectives:

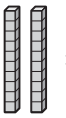
Multiplying with Decimals
Dividing with Decimals
Decimal Place Value

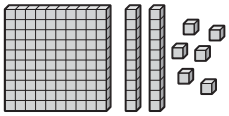
Name: Date:

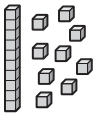
Connecting Fraction Multiplication to Decimal Multiplication

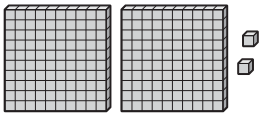
1 Represent the value of each model as a fraction (or mixed number) and as a decimal.

 = 1

 = $\frac{2}{10}$ = **0.2**

 = $1\frac{26}{100}$ = **1.26**

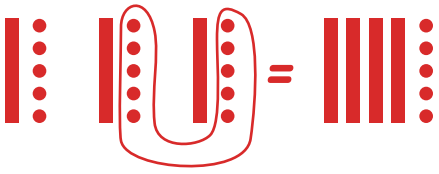
 = $\frac{19}{100}$ = **0.19**

 = $2\frac{2}{100}$ = **2.02**

2 Draw base ten blocks to model and solve each problem.

a) $3 \times 0.15 =$ **0.45**

Possible model:



b) $3 \times 0.41 =$ **1.23**

Possible model:

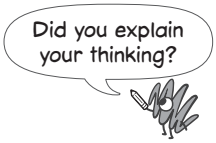
3 Multiply using hops on the number line.

$4 \times 0.4 =$ **1.6**

4 a) Will the product of 40 × 0.6 be greater than or less than 0.6? Explain your thinking.

Possible answer:

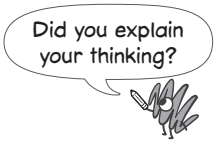
The product will be greater than 0.6 because we are making 40 copies of 0.6, which is a lot more than 0.6.



b) Will the product of 40 × 0.6 be greater than or less than 40? Explain your thinking.

Possible answer:

The product will be less than 40 because 40 copies of something that is less than 1 cannot make a total of 40.



Name: _____ Date: _____


Vivi

Discovering Place Value Patterns in Decimal Multiplication

1. Vivi brought 6 quarts of apple cider to a picnic. Her friends drank half of the apple cider. How many quarts of apple cider did Vivi's friends drink?

3 quarts

2. Circle the expression that has the greatest value.

$\frac{1}{8} \times 8$ $\frac{1}{8} \div 8$ $8 \div \frac{1}{8}$

3. Complete the pattern.

$15 \times 10 =$ **150**

$15 \times 1 =$ **15**

$15 \times 0.1 =$ **1.5**

$15 \times 0.01 =$ **0.15**

4. Is the missing factor 0.1 or 0.01?

$18 \times$ **0.01** $= 0.18$

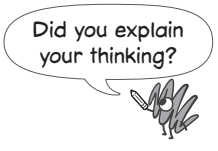
$46 \times$ **0.1** $= 4.6$

$75 \times$ **0.01** $= 0.75$

5. Vivi says that the missing factor in $35 \times \square = 0.35$ is 0.1. Do you agree or disagree with Vivi? Explain your thinking.

disagree

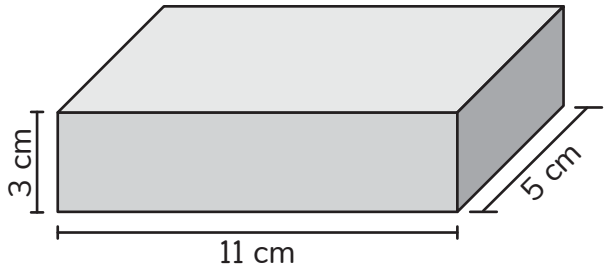
The missing factor is 0.01.



Name: Date:

Using Factoring to Multiply Decimals

1 Find the volume.



165 cubic cm

2 Solve.

$\frac{1}{3} \div 4 =$ ***1/12***

3 Circle the expressions that represent 5 × 0.7.

5 × (7 × 0.1) **5 × (7 × 0.01)** **5 × 7 hundredths** **5 × 7 tenths**

4 Factor to solve. Then, draw a model of base ten blocks to check your work.

$3 \times 0.26 =$ ***0.78***

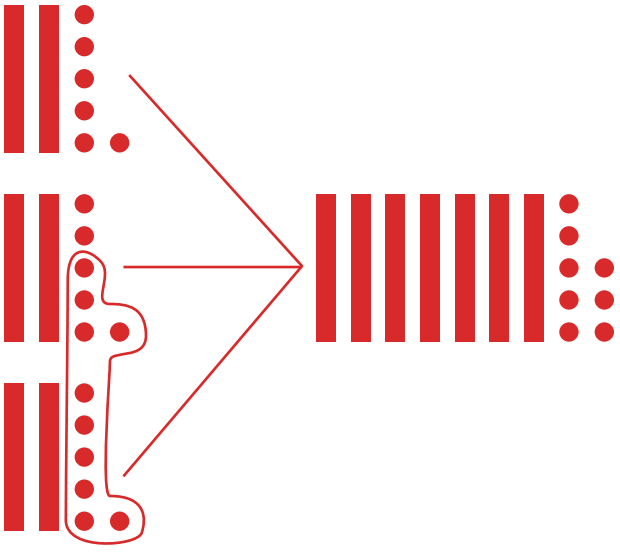
3 × (26 × 0.01)

= (3 × 26) × 0.01

= 78 × 0.01

= 0.78

Possible model:



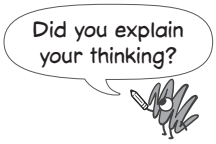
Name: _____ Date: _____

Estimating Products of Decimals and Two-Digit Whole Numbers

1 Brian baked a baguette that had a length of 3 feet. He cut the baguette into pieces that were each $\frac{1}{4}$ foot long. How many pieces did Brian cut? Explain your thinking.

12 pieces

Student explanations will vary.



2 Solve. $\frac{5}{6} - \frac{6}{8} =$ ***$\frac{1}{12}$***

3 The product of 46 × 0.72 is greater than 46. **True** **False**

Explain your thinking.

Possible explanation:

Multiplying a whole number by a number less than 1 will result in a product less than the whole number.

4 Find the product.

53 × 0.18 = ***9.54*** 37 × 0.62 = ***22.94***

Name: _____ Date: _____


Aleki

Multiplying Decimals by Two-Digit Whole Numbers to Solve Word Problems

1. Write the number 72.921 in expanded notation.

   (7 × 10) + (2 × 1) + (9 × 0.1) + (2 × 0.01) + (1 × 0.001)

   or (7 × 10) + (2 × 1) + (9 × $\frac{1}{10}$) + (2 × $\frac{1}{100}$) + (1 × $\frac{1}{1{,}000}$)

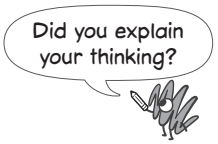
2. Solve. $9 \div \frac{1}{4} =$ ***36***

3. Is the product of 30 × 0.4 greater than or less than 30? Explain your thinking.

   less than 30

   Possible explanation:

   Multiplying a whole number by a number less than 1 will result in a product less than the whole number.



4. What is the value of the expression 9 × (5 × 0.01)?

   0.45

5. Aleki wants to buy fishing sinkers that each weigh 0.05 pounds. If he buys 25 sinkers, what is their total weight?

   1.25 pounds

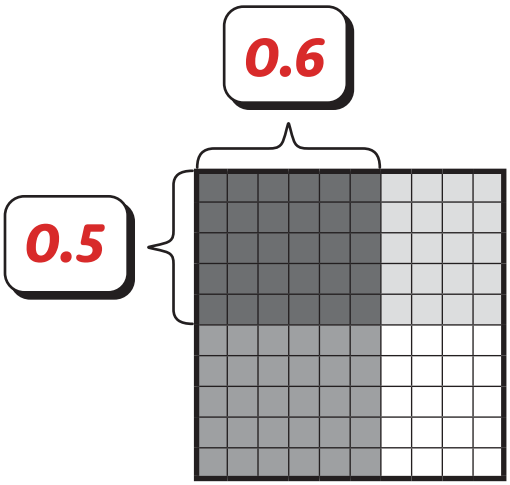
Name: Date:

Using Area Models to Multiply Tenths by Tenths

1. Solve. $0.8 \times 7 = 5.6$

2. Label the model with decimals. Then, write an equation to represent the model.

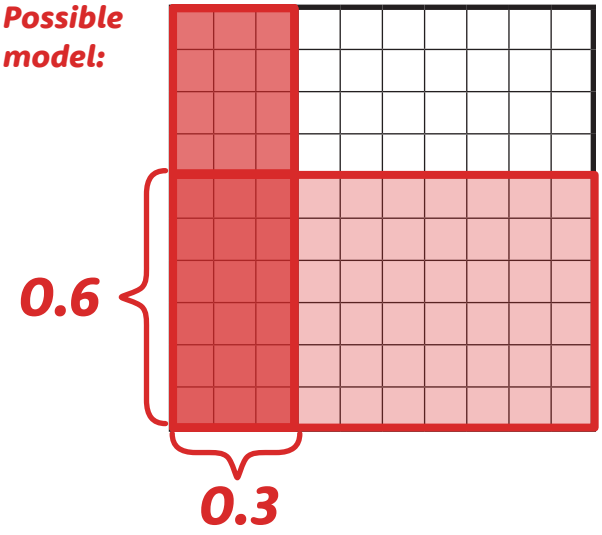
$0.5 \times 0.6 = 0.3$



3. Use the area model to find the product of 0.3 × 0.6.

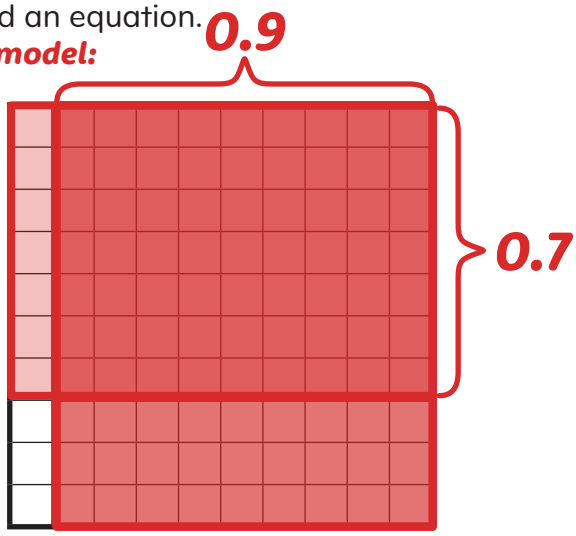
0.18

Possible model:



4. A runner has a water bottle with 0.9 liters of water. During the race, he drinks 0.7 of his water bottle. How much water does he drink during the race? Show your thinking with a model and an equation.

Possible model:



The runner drinks 0.63 liters of water.

Possible equation:

$0.9 \times 0.7 = 0.63$

Name: Date:

Exploring Strategies for Multiplying Ones and Tenths by Tenths

1 Solve.

$4 \times \frac{1}{8} =$ *$\frac{4}{8}$ or $\frac{1}{2}$*

$4 \times \frac{1}{4} =$ *1*

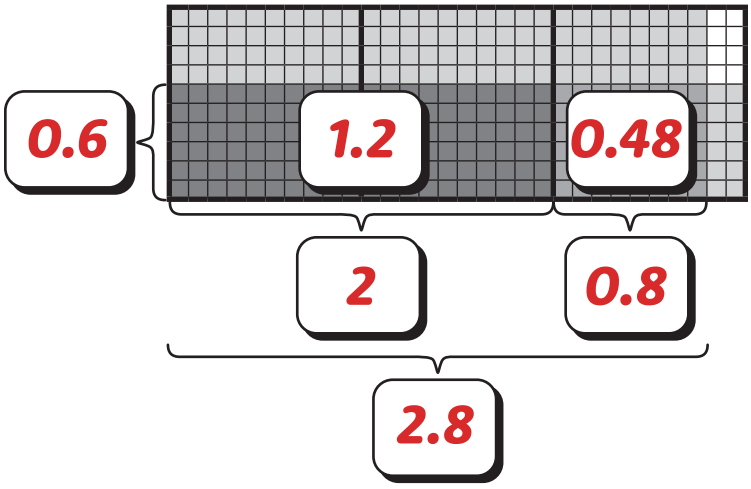
2 Use <, >, or = to compare.

$\frac{2}{3}$ *>* $\frac{2}{4}$

0.75 *=* $\frac{3}{4}$

0.6 *>* 0.06

3 Label the model to show the multiplication steps. Then, complete the equations to show the same steps using partial products.



(0.6×2.8)

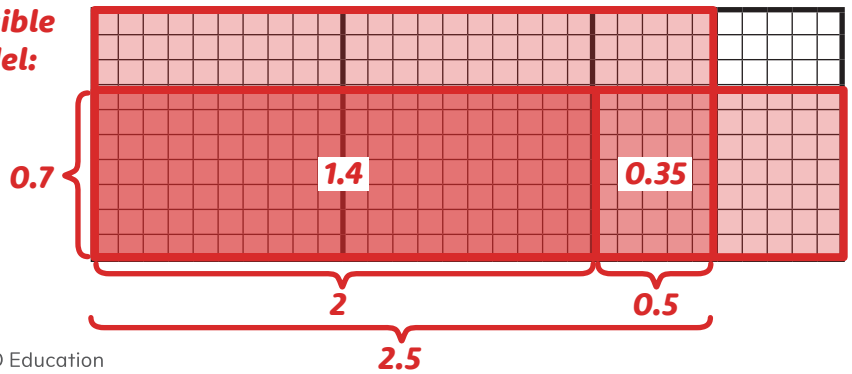
$= (0.6 \times 2) + (0.6 \times 0.8)$

$= 1.2 + 0.48$

$= 1.68$

4 A baker used 2.5 packets of yeast in a recipe. Each packet contained 0.7 ounces of yeast. How many ounces of yeast did the baker use in all? Show your thinking with a model and by factoring with equations.

Possible model:



The baker used 1.75 ounces of yeast.

0.7×2.5
$= (0.7 \times 2) + (0.7 \times 0.5)$
$= 1.4 \times 0.35$
$= 1.75$

Name: _____ Date: _____

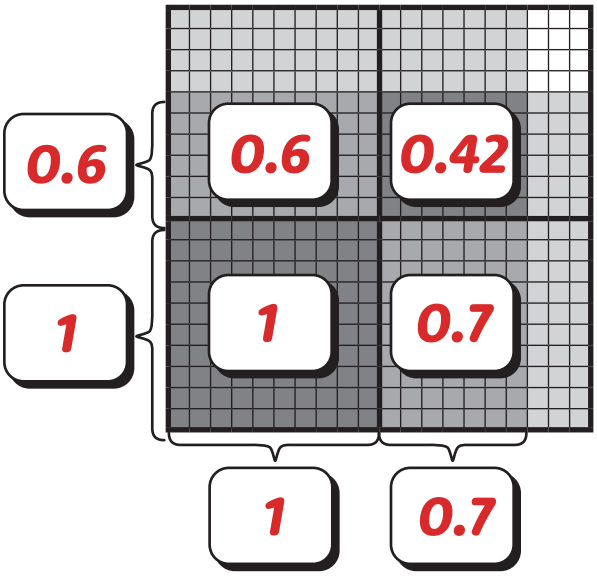
Exploring Strategies to Multiply Decimals

1 Complete the equations.

$4 \times 0.1 =$ **0.4** $30 \times 0.1 =$ **3** $12 \times$ **0.01** $= 0.12$

$6 \times 0.01 =$ **0.06** $5{,}200 \times 0.01 =$ **52** $73 \times$ **0.1** $= 7.3$

2 Label the model. Then, complete the equations to represent the partial products with equations.



(**1.6** × **1.7**)

= (**1** × **1**) + (**1** × **0.7**)

+ (**0.6** × **1**) + (**0.6** × **0.7**)

= **1** + **0.7** + **0.6** + **0.42**

= **2.72**

3 a) Estimate: 3.8 × 2.4 is about **4** × **2** = **8**.

Possible strategy:

38
× 24
32
120
160
+ 600
912

b) Solve by factoring. Show your work.
You may want to use partial products or the standard algorithm to multiply whole numbers.

3.8 × 2.4

= (38 × 0.1) × (**24** × **0.1**)

= (**38** × **24**) × (0.1 × 0.1)

= **912** × **0.01**

= **9.12**

c) Do your estimate and your answer make sense together? Explain your thinking.

Possible answer:

Yes, they make sense together because 8 and 9 are close together. The estimate of 8 helps me know that the answer is not 91.2 or 0.912.

Name: _____ Date: _____

Solving Word Problems with Decimal Multiplication

1. Solve.

$13.83 + 2.17 =$ **16** $\qquad 18.23 - 5.37 =$ **12.86**

2. Find the quotient. $3{,}936 \div 24 =$ **164**

3. A bouncy ball costs $0.87. What is the cost of 24 bouncy balls?

Estimate: **0.87** × **24** is about **1** × **24** = **24**.

Student estimates should be between 19 and 25.

Use the open area model to solve.

Possible strategy:

	20	**4**
0.8	**16**	**3.2**
0.07	**1.4**	**0.28**

0.87 × 24 = 16 + 3.2 + 1.4 + 0.28 = 20.88

24 bouncy balls cost $20.88.

4. A bread recipe uses 3.5 cups of flour for 1 batch of bread. How many cups of flour are needed to make 2.5 batches of bread?

Estimate: **3.5** × **2.5** is about **4** × **2** = **8**.

Student estimates should be between 6 and 10.

Solve. Show your thinking.

8.75 cups of flour are needed.

Possible explanation:

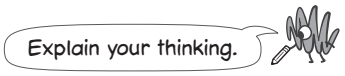
3.5 × 2.5
= (35 × 0.1) × (25 × 0.1)
= (35 × 25) × (0.1 × 0.1)
= 875 × (0.01)
= 8.75

Name: _____ Date: _____


Aleki

Solving Multistep Problems with Decimal Expressions

1 Is the product of 3 × 1.1 greater than or less than 3?



greater than 3

Possible explanation:

Multiplying a whole number by a decimal greater than 1 will result in a product greater than the whole number.

2 Complete each equation.

3.4 + 3.6 = 7

5.8 + ***4.9*** = 10.7

3 Circle the expression that is equivalent to the expression 4[3 + (2.5 × 1.6)] – 7.

12 + (2.5 × 1.6) – 7 **4[3 + (4.00)] – 7** **4[5.5 × 1.6] – 7**

4 Aleki shopped at a bookstore.

- He bought 3 paperback novels for $7.20 each.
- He used a coupon for $1.50 off the price of each novel.
- He also bought a notebook for $5.35 and a pen set for $3.75.
- Then, he used a coupon for $4.00 off the entire purchase.

Circle the expression that correctly represents the situation. Then, simplify the expression to find the cost of the entire purchase.

[3(7.20 – 1.50) + 5.35 + 3.75] – 4.00 **[3(7.20) – 1.50 + 5.35 + 3.75] – 4.00**

= [3(5.70) + 5.35 + 3.75] – 4.00
= [17.10 + 5.35 + 3.75] – 4.00
= [22.45 + 3.75] – 4.00
= 26.20 – 4.00
= 22.20

The cost of the entire purchase was $22.20.

Name: _____ Date: _____

Using Unit Square Models and Equivalent Fractions to Divide Whole Numbers with Decimal Quotients

1 Solve.

$$\begin{array}{r} 334.2 \\ -\ 128.04 \\ \hline \end{array}$$

206.16

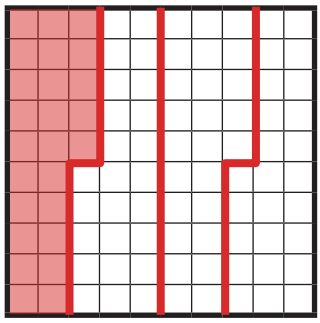
2 Write the equivalent decimal.

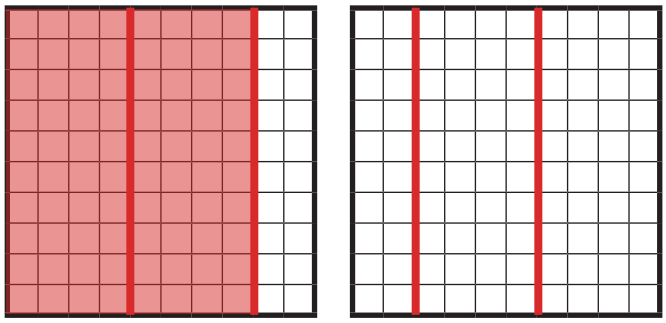
$\frac{9}{10} =$ **0.9** $\qquad \frac{27}{100} =$ **0.27**

$\frac{6}{100} =$ **0.06**

3 Model each division expression. Then, write the value of each expression as a fraction, as an equivalent fraction with 10 or 100 as the denominator, and as a decimal.

$1 \div 4$ ***Possible answers:*** $2 \div 5$





$1 \div 4 =$ **1/4** $=$ **25/100** $=$ **0.25**

$2 \div 5 =$ **2/5** $=$ **4/10** $=$ **0.4**

4 a) Complete the equations with fractions and decimals.

$3 \div 5 =$ **3/5** $=$ **6/10** $=$ **0.6**

$3 \div 4 =$ **3/4** $=$ **75/100** $=$ **0.75**

b) When you divide 2 whole numbers to get a decimal, how can you predict whether the last digit will be in the tenths place or the hundredths place?

Possible answer: If you can write an equivalent fraction with 10 as the denominator, the last digit will be in the tenths place. If you need to use 100 as the denominator to make an equivalent fraction, the last digit will be in the hundredths place.

Name: Date:

Investigating Repeating Decimal Patterns

1. Write the value of the 7 in each number.

462.79 **0.7**

384.57 **0.07**

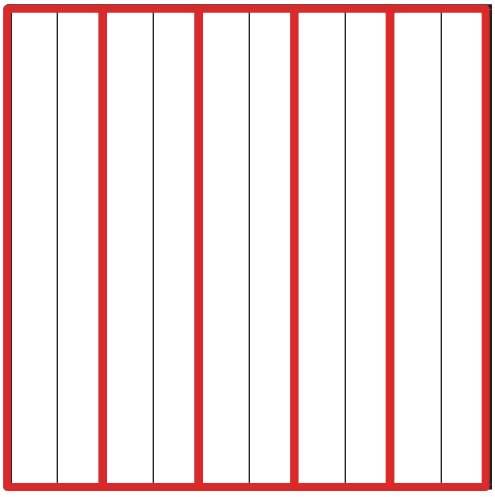
2. Complete the equations with fractions and decimals.

$3 \div 4 = \frac{3}{4} = \frac{75}{100} = 0.75$

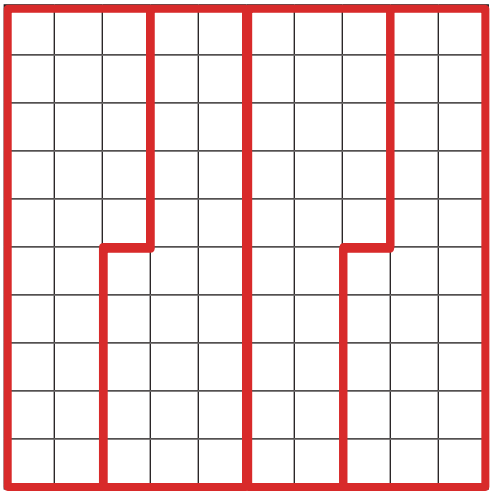
$3 \div 5 = \frac{3}{5} = \frac{6}{10} = 0.6$

3. Use the models to find the decimal quotients.

$1 \div 5 =$ **0.2**



$1 \div 4 =$ **0.25**



Name: _____ Date: _____

Using Place Value Relationships to Divide Whole Numbers with Decimal Quotients

1 Multiply.

$3.7 \times 4.2 =$ **15.54**

2 Solve.

$28.62 + 15.09 =$ **43.71**

3 Complete the equations.

$100 \div 5 =$ **20**

$10 \div 5 =$ **2**

$1.0 \div 5 =$ **0.2**

10 tenths $\div 5 =$ **2** tenths

$300 \div 4 =$ **75**

$30.0 \div 4 =$ **7.5**

$3.00 \div 4 =$ **0.75**

300 hundredths $\div 5 =$ **75** hundredths

4 Divide by thinking about each dividend with tenths or hundredths. Show your work.

$2 \div 5 =$ **0.4**

$2 \div 8 =$ **0.75**

Possible solution:

2.0 ÷ 5 = 0.4 or
20 tenths ÷ 5 = 4 tenths

2.00 ÷ 8 = 0.25 or
200 hundredths ÷ 8 = 25 hundredths

5 A pitcher holds 3 liters of water. If the water is shared equally between 5 glasses, how much water will be in each glass? Write your answer as a decimal. Show your thinking.

0.6 liters of water will be in each glass.

Possible explanation:

3 ÷ 5
= 3.0 ÷ 5
= 0.6

Name: _____ Date: _____

Using the Standard Algorithm to Divide Whole Numbers with Decimal Quotients

1 Solve.

$\frac{5}{6} + \frac{2}{3} =$ $\frac{9}{6}$ or $1\frac{3}{6}$ or $1\frac{1}{2}$

$\frac{4}{5} - \frac{1}{4} =$ $\frac{11}{20}$

2 Draw a quadrilateral with 4 equal sides and no right angles. What is the name of your shape?

rhombus

Possible answers:

3 Solve using the standard algorithm.

```
   156.5
6 ) 939.0
  - 600
    339
  - 300
     39
   - 36
      3.0
    - 3.0
      0.0
```

```
    77.04
25 ) 1,926.00
   -1,750
      176
    - 175
        1.0
      - 0.0
        1.00
      - 1.00
        0.00
```

4 During the summer, a farmer makes 2,356 ounces of blueberry jam to sell. How many 8-ounce jars can the farmer fill with blueberry jam? Show your work.

The farmer can fill 294 jars and half of another jar.

Possible strategy:

```
   294.5
8 ) 2,356.0
  - 1,600
      756
    - 720
       36
     - 32
        4.0
      - 4.0
        0.0
```

Name: ______________________ Date: __________

Using Unit Square Models and Place Value Relationships to Divide Decimals by Whole Numbers

① Simplify. $6(5 - 3) \times 2 \div 4$

$= 6(2) \times 2 \div 4$

$= 12 \times 2 \div 4$

$= 24 \div 4$

$= 6$

② Divide. $4\overline{)239}$

$$\begin{array}{r} 73.25 \\ 4\overline{)239.00} \\ -\ 280 \\ \hline 13 \\ -\ 12 \\ \hline 1.0 \\ -\ 0.8 \\ \hline 0.20 \\ -\ 0.20 \\ \hline 0.00 \end{array}$$

③ Complete the equations.

$80 \div 4 =$ **20** $8.0 \div 4 =$ **2.0** $0.8 \div 4 =$ **0.2** $0.08 \div 4 =$ **0.02**

$70 \div 2 =$ **35** $7.0 \div 2 =$ **3.5** $0.70 \div 2 =$ **0.35**

④ Use place value words to solve. Place a 0 at the end of the dividend if you need to.

$3.0 \div 5 =$ **0.6** 30 **tenths** $\div 5 =$ **6 tenths**

0.30 $\div 2 =$ **0.15** 30 **hundredths** $\div 2 =$ **15 hundredths**

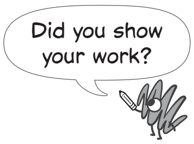
⑤ A bag contains 0.4 pounds of sunflower seeds. If 5 people share the sunflower seeds equally, how much will each person get? Show your work.

Each person will get 0.08 pounds of sunflower seeds.

Possible strategy:

0.40 ÷ 5 = 0.08

40 hundredths ÷ 5 = 8 hundredths or 0.08



Name: _____ Date: _____

Anjali

Using Decomposition Strategies to Divide Decimals by Whole Numbers

1 Anjali's class has a new challenge to read for 6 hours in 1 week. Has Anjali already met the class goal for the week?

Possible answers:

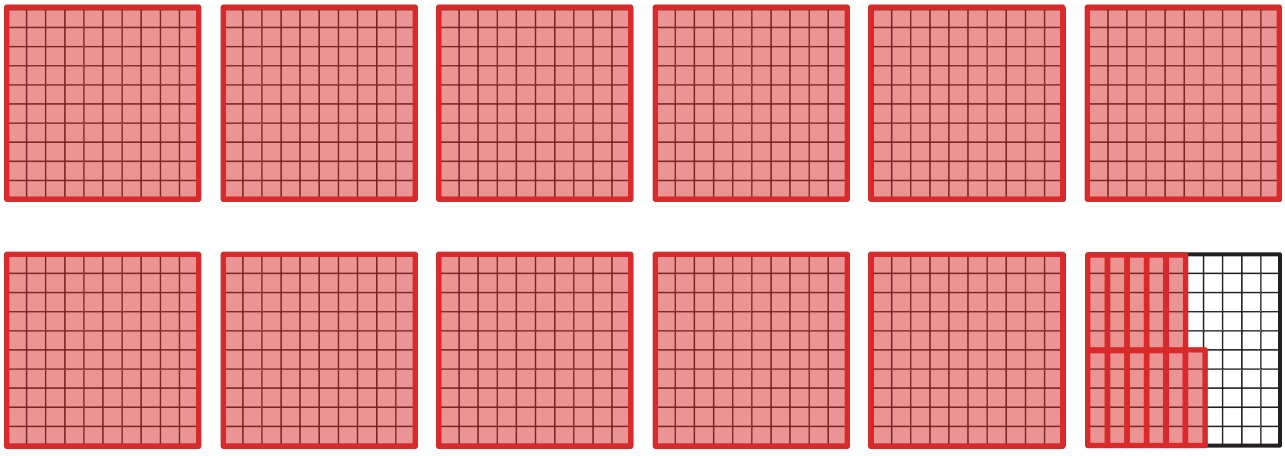
No. Anjali has done $2\frac{4}{12} + 1\frac{6}{12} + 1\frac{3}{12} = 4\frac{13}{12} = 5\frac{1}{12}$ hours of reading, so she has not met the goal.

No. Anjali has read for 4 full hours plus about 1 more hour, so she needs about 1 more hour to meet the goal.

Anjali's Reading Log (hours)	
Monday	$2\frac{1}{3}$
Tuesday	$1\frac{1}{2}$
Wednesday	$1\frac{1}{4}$

2 Model with base-10 bocks. Then shade in the model below. Use the equations with decomposition to solve.

$11.55 \div 11 =$ **1.05**



$11.55 \div 11 = ($ **11** $\div$ **11** $) + ($ **0.55** $\div$ **11** $)$

$=$ **1** $+$ **0.05**

$=$ **1.05**

Student model show 11 groups of base-10 blocks with 1 flat and 5 unit cubes in each group.

Name: _____ Date: _____

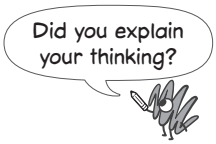

Brian

Using the Standard Algorithm to Divide Decimals by Whole Numbers

1. If Brian wants to split 7 pounds of flour equally into 20 containers, how many pounds of flour will be in each container? Explain your thinking.

$\frac{7}{20}$ pounds or 0.35 pounds

Student explanations will vary.



2. Continue the pattern.

32, 40, 48, **56**, **64**, **72**

The numbers in this pattern are multiples of **8**.

3. Divide.

$7 \overline{)547.96}$

78.28
- 490.00
57.96
- 56.00
1.96
- 1.40
0.56
- 0.56
0.00

$4 \overline{)347.80}$

86.95
- 320.0
27.8
- 24.0
3.8
- 3.6
0.20
- 0.20
0.00

4. After dinner, 4 friends decide to split their restaurant bill of $127.24 equally. How much should each friend pay? Show your work.

Each friend should pay $31.81.

Possible strategy:

$4 \overline{)127.24}$ = 31.81

- 120.00
7.24
- 4.00
3.24
- 3.20
0.04
- 0.04
0.00

Name: _____ Date: _____

Solving Decimal Division Word Problems Using Estimation

1. Use the standard algorithm to solve.

$$12 \overline{)\,37.2}$$

3.1
− 36.0
1.2
− 1.2
0

2. Use the standard algorithm to solve.

$$48 \times 37$$

336
+ 1,440
1,776

3. Find the quotient. $5.4 \div 6 =$ **0.9**

4. The school carnival is selling popcorn. Donner paid $31.80 for 12 bags of popcorn to share with his class. If each bag of popcorn costs the same amount of money, what is the price of 1 bag of popcorn? Show your thinking.

The price of 1 bag of popcorn is $2.65.

Possible explanation:

2.65
12) 31.80
− 24.00
7.80
− 7.20
0.60
− 0.60
0

5. Aleki and Donner found a metronome at the music shop for $38.92. They decided to share the metronome and to split the cost equally. How much did they each pay for the metronome?

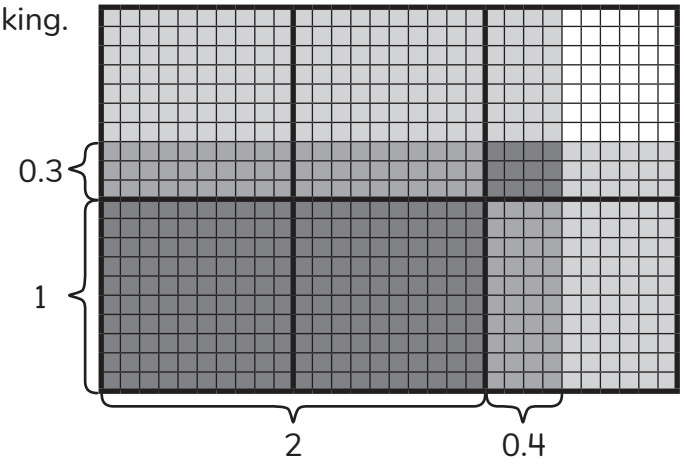
$19.46

Name: _____ Date: _____


Louis

Solving Problems with Decimal Multiplication and Division

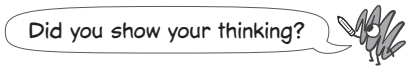
1. Use the model to multiply. Show your thinking.



3.12

Possible explanation:

1.3 × 2.4
= (1 × 2) + (1 × 0.4) + (0.3 × 2) + (0.3 × 0.4)
= 2 + 0.4 + 0.6 + 0.12
= 3.12



2. Louis uses 3 kinds of juice to make some punch for guests at a barbecue. He mixes together 1.8 liters of each type of juice to make the punch. Then, he pours the punch equally into 12 glasses. How much punch does Louis pour into each glass? Show your work.

Louis pours 0.45 liters of punch into each glass.

Possible strategy:

1.8 × 3
= (18 × 0.1) × 3
= (18 × 3) × 0.1
= 54 × 0.1
= 5.4

```
      0.45
12 ) 5.40
   - 4.80
     0.60
   - 0.60
        0
```

3. A science teacher bought 3 chemistry sets and 6 physics sets for class. She paid $52.80 for each chemistry set and $34.29 for each physics set. How much money did she spend in total? Show your thinking.

The science teacher spent $364.14 in total.

Possible explanation:

Chemistry
52.80 × 3
= (528 × 0.1) × 3
= (528 × 3) × 0.1
= 1,584 × 0.1
= 158.4

Physics
34.29 × 6
= (3,429 × 0.01) × 6
= (3,429 × 6) × 0.01
= 20,574 × 0.01
= 205.74

```
  205.74
+ 158.40
  364.14
```

Topic 8

Expanding Financial Literacy

Recommended ST Math Objectives:

Comparing with Decimals
Multiplying with Decimals
Decimal Place Value

Name: _____ Date: _____

Solving Problems Involving Sales and Property Taxes

1 Solve. $2\frac{3}{4} + 4\frac{1}{3} =$ **$7\frac{1}{12}$** $7\frac{1}{6} - 2\frac{1}{2} =$ **$4\frac{4}{6}$ or $4\frac{2}{3}$**

2 Use $<$, $>$, or $=$ to compare.

3.7 **>** $3\frac{7}{100}$ 2.46 **<** $2\frac{1}{2}$ $10\frac{1}{4}$ **=** 10.25

$5\frac{7}{12}$ **>** $5\frac{4}{10}$ $4\frac{6}{7}$ **>** $4\frac{6}{8}$ $7\frac{2}{3}$ **<** $7\frac{8}{11}$

3 Circle ALL of the words that correctly complete the sentences.

a) People pay property tax each year when they own _____.

homes **farms** cars **land** furniture

b) The government uses taxes from citizens to pay for running _____.

schools restaurants **libraries** **health care**

hotels **water treatment**

3 A baseball coach wants to buy 5 baseballs that are each $6.49 and 2 bats that are each $92.54.

a) What is the total cost of all the items?

The total cost is $217.53.

5 × $6.49 = $32.45 2 × $92.54 = $185.08

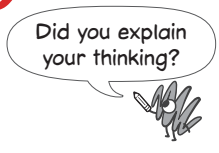
$185.08 + $32.45 = $217.53

b) The coach has $220. Does she have enough money to buy all of the items? Explain your thinking.

No, she will not have enough money.

Possible explanation:

She needs to pay sales tax, and the sales tax on $217.53 will be more than $2.47.

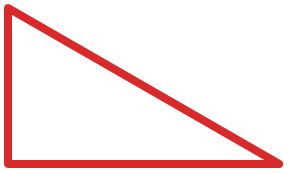


Name: Date:

Solving Problems Involving Gross and Net Income

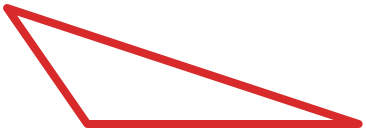
1 a) Draw a right triangle.

Possible answer:



b) Draw an obtuse triangle.

Possible answer:



2 Based on the data below, how many students practiced for less than 100 minutes?

Number of Minutes Students Read Last Week

Stem	Leaf
7	0 4 5 5 7 9
8	2 5 7
9	6
10	0 0 0 3 5 8
11	1 3 4 6 6

7|4 means 74 minutes.

10 students

3 Match each term to its definition.

gross income	the total income an employee earns before taxes and other deductions are subtracted
income tax	a tax paid on income, often deducted from an employee's paycheck
net income	the amount of money an employee actually receives from a paycheck after deductions are subtracted from gross income
payroll tax	a tax paid on income and used to fund a specific program such as Medicare or Social Security, often deducted from an employee's paycheck

4 An office worker has a monthly net income of $4,080. Each month, she has deductions of $490 for income tax, $270 for payroll tax, and $340 for health insurance. What is her monthly gross income? Show your work.

Possible strategy:

```
  1 2
 4,080
   490
   270
+  340
 5,180
```

Her monthly gross income is $5,180.

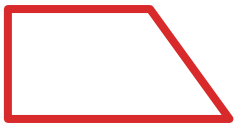
Name: Date:

Solving Real-World Problems with Decimal Operations

1. Draw a quadrilateral that has 1 pair of parallel lines and exactly 2 right angles. Then, give the name of the shape.

trapezoid

Possible answer:



2. A locker is 5'4" tall. How tall is the locker in inches?

1 foot = 12 inches

64 inches

3. a) The fifth graders are holding a movie night fundraiser. Calculate the cost of each of their expenses and then calculate their total expenses.

Item	Cost	Number	Expense
jars of popcorn	$3.27	5	**$16.35**
packs of popcorn boxes	$8.79	16	**$140.64**
printed flyers	$0.15	240	**$36.00**
packs of glow sticks	$17.73	8	**$141.84**
		Total	**$334.83**

b) The fundraiser gets $1,290 from ticket sales. What is the profit from the fundraiser? Show your work.

$955.17

1,290 – 334.83 = 955.17

c) The profit is shared equally between 3 fifth-grade classes to help them go on a field trip. How much does each fifth grade class get?

$955.17 ÷ 3 = $318.39

Each class gets $318.39.

Name: Date:

Introducing and Balancing a Budget

1 Circle the division expression that will have a quotient that is greater than 6.

$\frac{1}{4} \div 6$ $6 \div \frac{1}{4}$

2 Solve. $\frac{1}{4} \div 6 =$ *1/24* $6 \div \frac{1}{4} =$ *24*

3 A student wants to make a balanced budget. Calculate his total income. Then, use the total income to determine how much he can put into savings to make a balanced budget.

Next Month's Budget			
Income		**Expenses**	
allowance	$10	games	$20
babysitting	$40	snacks	$25
helping Mr. Martinez	$20	donation to school fundraiser	$10
		savings	***$15***
Total Income	***$70***	**Total Expenses**	***$70***

4 An artist wants to buy 4 brushes that are each $5.59 and 3 painting canvases that are each $17.18.

a) What is the total cost of all the items?

The total cost is $73.90.

4 × $5.59 = $22.36 3 × $17.18 = $51.54

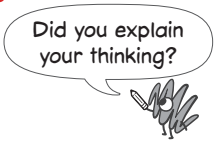
$22.36 + $51.54 = $73.90

b) The artist brought $75 to the store. Will he have enough money to buy all the items? Explain your thinking.

No, he will not have enough money.

Possible explanation:

He needs to pay sales tax, and the sales tax on $73.90 will be more than $1.10.



Name: _____ Date: _____

Comparing Advantages and Disadvantages of Payment Methods

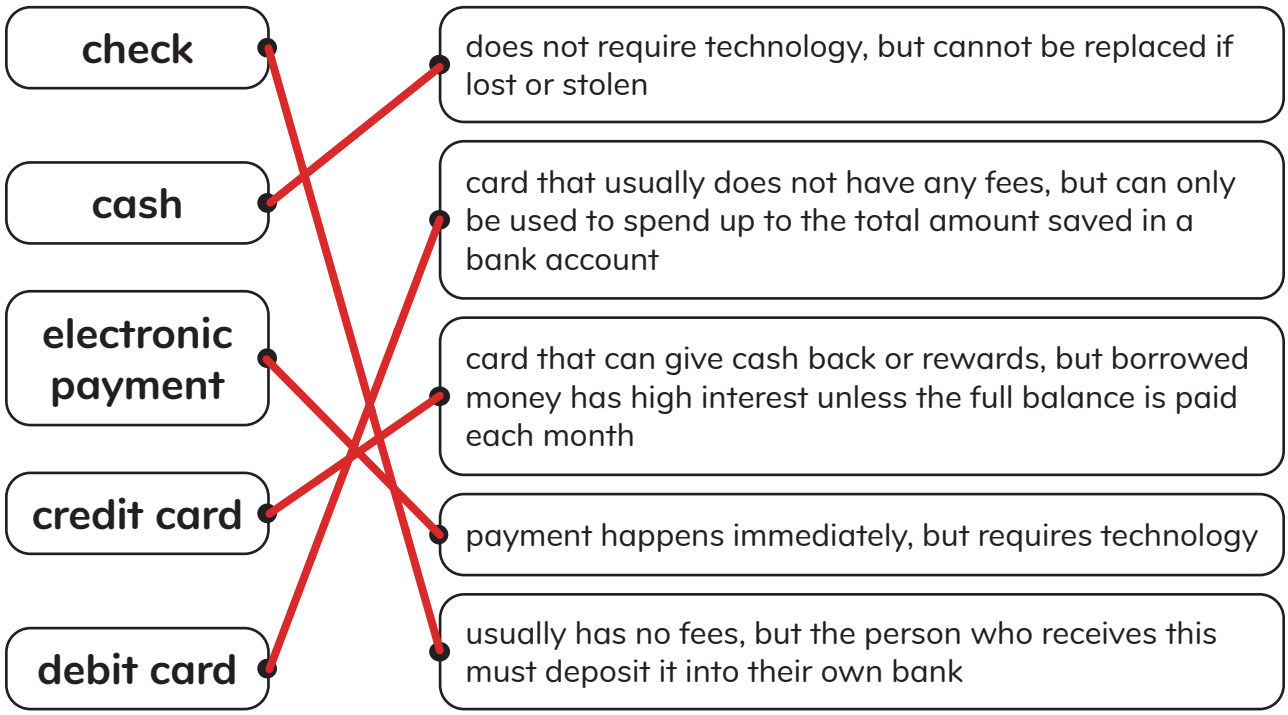
1. A rectangular prism has a volume of 48 cubic inches and a height of 8 inches. What could be the dimensions of the rectangular prism's base?

Possible answers:

2 inches by 3 inches ***1 inch by 6 inches***

2. Round 29.095 to the nearest hundredth. ***29.10***

3. Match each type of payment to its description which outline its advantages and disadvantages.



4. A delivery driver needs to make an emergency car repair that costs $1,250. She has $1,400 in the bank. What payment type should she use to pay for the repairs? Explain your thinking.

Possible answers:

She should use a credit card to pay because if she uses up most of the money in her bank account, she may not be able to pay for things like rent or groceries. The credit card will let her pay the cost off over time.

or

She should use a debit card or bank transfer to pay because she has enough money in the bank and can pay immediately with those payment types.

Name: _____ Date: _____

Solving Budget Problems When Expenses Exceed Income

1 When multiplying $4 \times \frac{2}{3}$, the product will be ~~greater than~~ **less than** 4 and ~~greater than~~ **less than** $\frac{2}{3}$.

2 Solve. $4 \times \frac{1}{3} =$ ***$\frac{4}{3}$ or $1\frac{1}{3}$*** $4 \times \frac{2}{3} =$ ***$\frac{8}{3}$ or $2\frac{2}{3}$***

3 a) Mr. Liu calculates his total income and expenses in this budget.

Next Month's Budget			
Net Income		**Expenses**	
paycheck	$3,250	rent	$1,850
photography	$250	groceries	$475
giving piano lessons	$475	utilities	$625
gift from Mom	$200	car payment	$325
		savings	$500
		activities	$350
		restaurants	$200
Total Income	***$4,175***	**Total Expenses**	***$4,325***

b) Give 3 specific examples of how Mr. Liu could change his budget to make it balanced.

Possible answer:

Mr. Liu could make the budget balanced by selling more of his photography services or by giving more piano lessons to make $150 more, by spending $150 less on activities or at restaurants, or by saving $150 less.

c) Could Mr. Liu balance his budget by paying less rent for his apartment each month? Use the terms *fixed expense* and *variable expense* to explain why or why not.

Possible answer:

Mr. Liu could not just pay less rent. It is a fixed expense, which means that it is always the same. If he does not pay all of his rent, he may get kicked out of his apartment. Instead, he should change a variable expense, like the amount he spends on activities.

Topic 9

Organizing Two-Dimensional Space

Recommended ST Math Objectives:

The Coordinate Plane
Shapes and Properties
Angles

Name: _____ Date: _____


Louis

Sorting and Classifying Triangles by Side Lengths and Angles

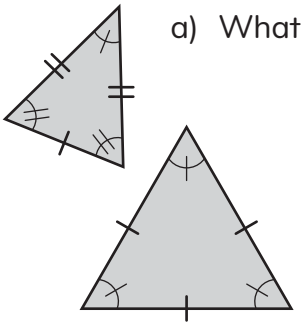
1 Solve.

$$\begin{array}{r} {\scriptstyle 2\ 4} \\ 49 \\ \times\ 35 \\ \hline 245 \\ -\ 1,470 \\ \hline 1,715 \end{array}$$

2 Draw a shape that has at least 1 acute angle and 1 obtuse angle.

Student answers will vary.

3



a) What is the same about these triangles?

Possible answer:

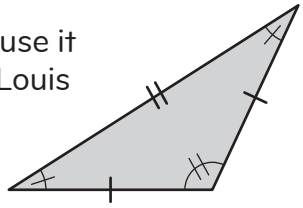
They each have 3 sides.

b) What is different about these triangles?

Possible answer:

The smaller triangle has 2 equal side lengths, and the bigger triangle has 3 equal side lengths.

4 Louis says that this triangle is an acute triangle because it has 2 acute angles. Do you agree with the way that Louis has named the triangle? Explain your thinking.



No

Possible explanation:

Its largest angle appears to be an obtuse angle, which would make this an obtuse triangle.

5 A school held its annual walkathon. There are 567 students in the school. If every student raised $35, what is the total amount of money raised?

$19,845

Name: _____ Date: _____


Donner

Classifying Triangles into Multiple Categories and Subcategories

1. Round 284.487 to the nearest whole number.

284

2. Draw 3 different shapes with at least 1 right angle.

Student answers will vary.

3. Is an equilateral triangle also an isosceles triangle? Explain your thinking.

Yes

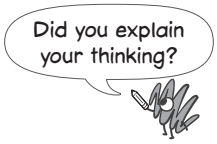
Possible explanation:

An isosceles triangle is a triangle that has at least 2 congruent sides. Since all the sides of an equilateral triangle are congruent, it is also an isosceles triangle.

4. What is the name of a triangle that has 2 sides that are equal in length and 1 obtuse angle?

obtuse isosceles

Student explanations will vary.



5. Donner takes a 0.45 mile walk around the block every day. How far does Donner walk in a 7-day week? How far does Donner walk in a 30-day month?

3.15 miles in a 7-day week

13.5 miles in a 30-day month

Name: _____ Date: _____

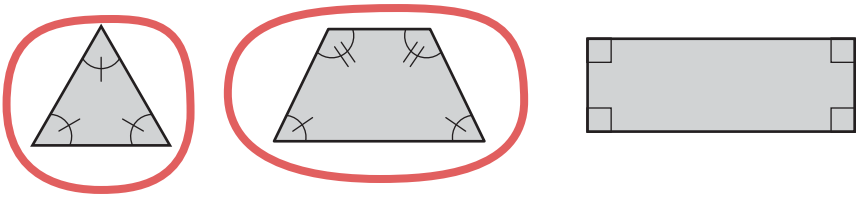

Mateo

Classifying Quadrilaterals into Multiple Categories and Subcategories

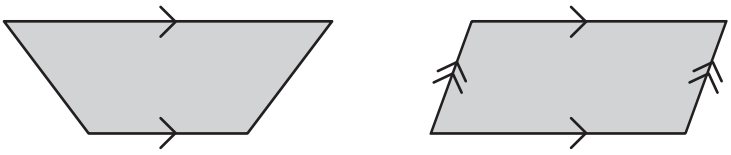
1. Mateo has 6 containers of paint left over from an art project.
If each container has $\frac{3}{4}$ cup of paint, how many cups of paint does Mateo have in all?

$4\frac{1}{2}$ cups

2. Circle the shapes that appear to have at least 1 acute angle.



3.



a) What attribute is the same about these 2 shapes?

Possible answers:

They have 4 sides and at least 1 set of parallel sides.

b) What attribute is different about these 2 shapes?

One has 2 sets of parallel sides and one has 1 set of parallel sides.

4. I am a quadrilateral with 2 sets of parallel sides. What shape might I be?

Possible answer:

rectangle

5. The art teacher ordered supplies for the school art program. He ordered 50.5 ounces of glue. He used all of the glue to fill 5 jars. If he filled each jar with the same amount of glue, how much glue did he put in each jar?

10.1 ounces of glue

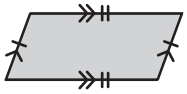
Name: _____ Date: _____

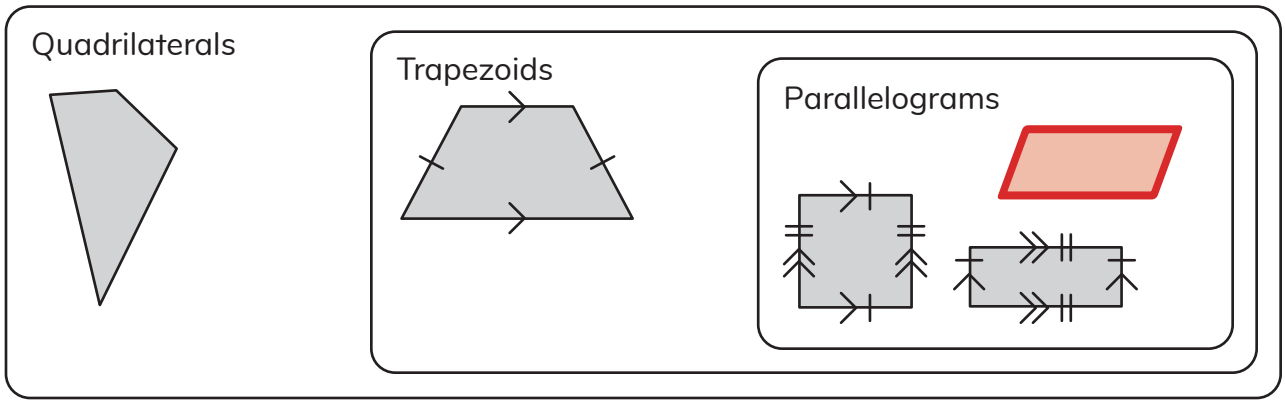
Classifying Quadrilaterals in a Hierarchy

1. Solve. $\frac{1}{8} \div 4 =$ **$\frac{1}{32}$**

2. Leilah has 21 yards of fabric. How many feet of fabric does Leilah have? Explain your thinking.

   21 × 3 = 63 feet

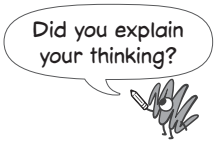
3. Draw a  in the correct category.



4. Is a square always a parallelogram? Explain your thinking.

   Yes

   Student explanations will vary.



5. Donner made 2 pounds of his famous trail mix. He sold $\frac{1}{8}$ of the trail mix to his friends. How many pounds of trail mix did Donner sell? Explain your thinking.

   $\frac{1}{8}$ × 2 = $\frac{1}{4}$ lb of trail mix

Name: _____ Date: _____

Evaluating Claims About Polygons

1. A carpenter has a monthly net income of $3,700. Each month, she has deductions of $410 for income tax, $240 for payroll tax, and $360 for health insurance. What is her monthly gross income?

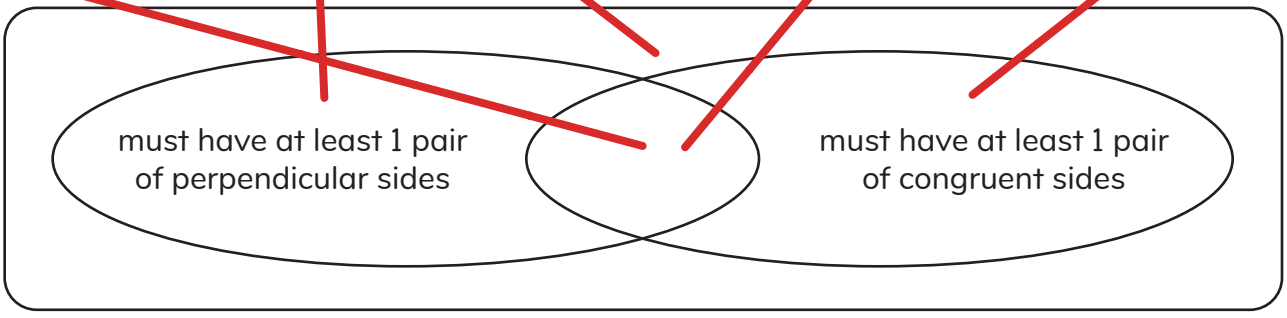
$3,700 + $410 + $240 + $360 = $4,710
Her monthly gross income is $4,710.

2. The volume of a rectangular prism is 56 cubic centimeters. Its height is 7 centimeters. What could be the dimensions of the prism's base?

Possible answers:
4 centimeters by 2 centimeters,
1 centimeter by 8 centimeters

3. Draw lines to show where each shape belongs in the diagram.

square **right triangle** **trapezoid** **rectangle** **isosceles triangle**



4. Circle the correct word to show when each statement is true.

a) An equilateral triangle is an acute triangle. **always** **sometimes** **never**

b) A parallelogram is a rhombus. **always** **sometimes** **never**

c) An equilateral triangle is an isosceles triangle. **always** **sometimes** **never**

d) A circle is a polygon. **always** **sometimes** **never**

e) A rectangle is a trapezoid. **always** **sometimes** **never**

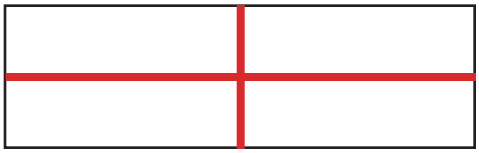
Name: Date:

Exploring the First Quadrant in the Coordinate Plane

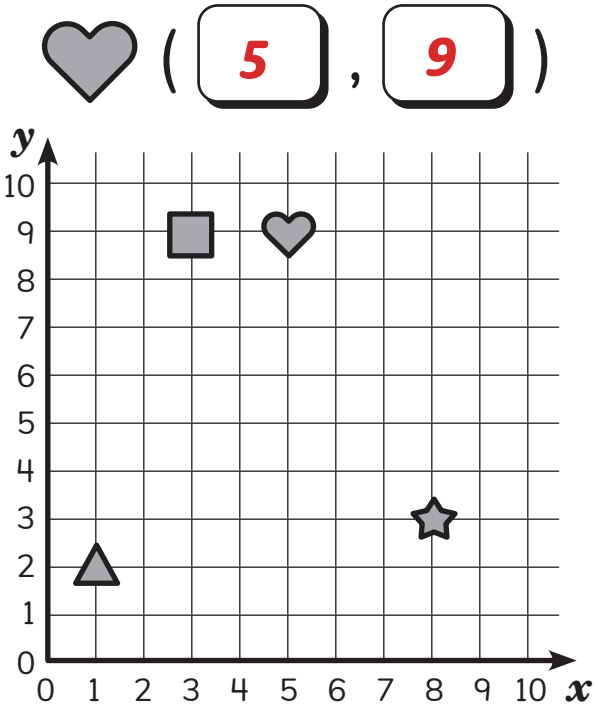
1. Draw a quadrilateral that has at least 1 acute angle.

Student answers will vary.

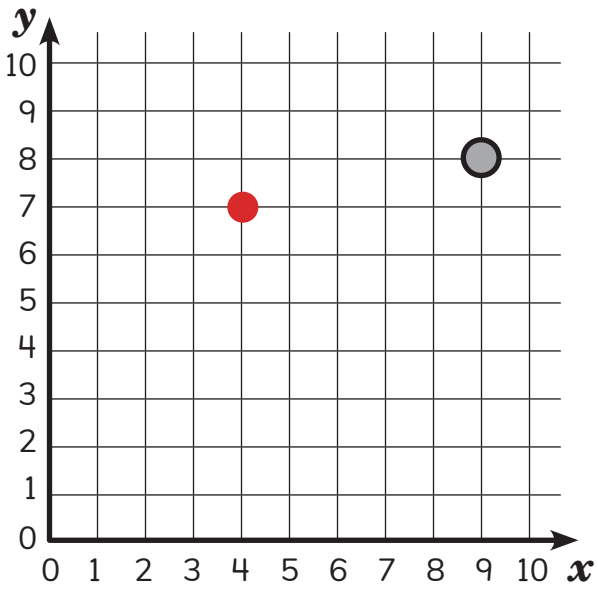
2. Draw 2 lines of symmetry.



3. The ordered pair for the triangle is (1, 2). What is the ordered pair for the heart?



4. The dot is located at (9, 8). Draw another dot at (4, 7).



5. A model train has 15 train cars that are all the same length. The train is 36 inches long. What is the length of each train car?

2.4 inches

Name: _____ Date: _____


Hannah

Representing Polygons on the Coordinate Plane

1 Solve.

$3{,}038 \div 62 =$ **49**

2 Hannah grew a pumpkin that weighed 15 pounds for the state fair contest. The winning pumpkin weighed 12 times as much as Hannah's pumpkin. How many pounds did the winning pumpkin weigh?

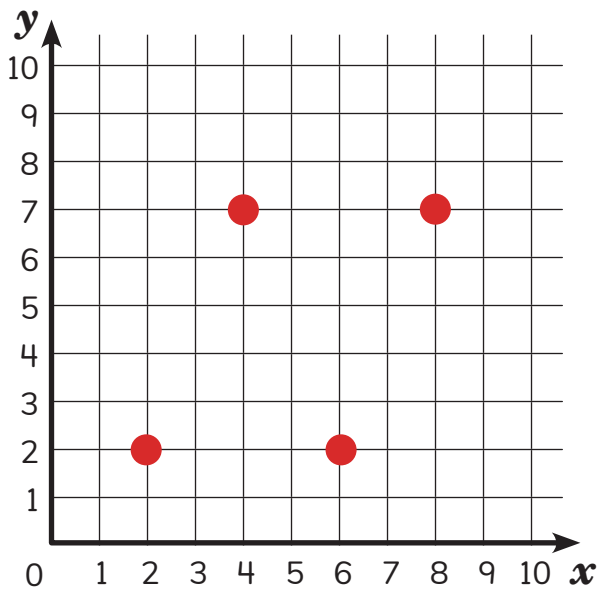
180 pounds

3 a) Plot the following points on the coordinate plane:
(2, 2), (6, 2), (4, 7), (8, 7)

b) What is the name of the quadrilateral you drew on the coordinate plane?

Possible answers:

parallelogram, quadrilateral



4 A fish tank at the aquarium is in the shape of a rectangular prism. Its volume is 320 cubic feet. The length of the fish tank is 10 feet and its width is 8 feet. What is the height of the fish tank?

4 feet

Name: Date:

Plotting Tables of Values on the Coordinate Plane

1 A board is 4'8" long.
How long is the board in inches?

1 foot = 12 inches

56 inches

2 Simplify.

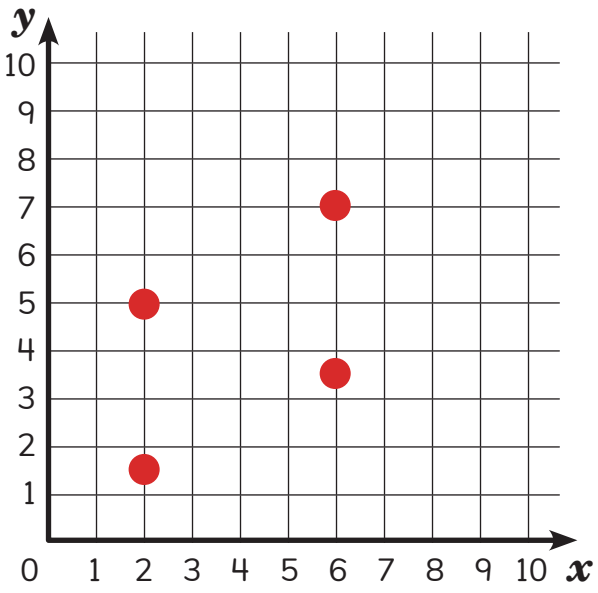
$9(6 + 2) - (4 + 8 \div 2)$

$= 9(8) - (4 + 4)$

$= 72 - 8$

$= 64$

3 a) Graph the points.
(6, 3.5), (2, 1.5), (6, 7), (2, 5)

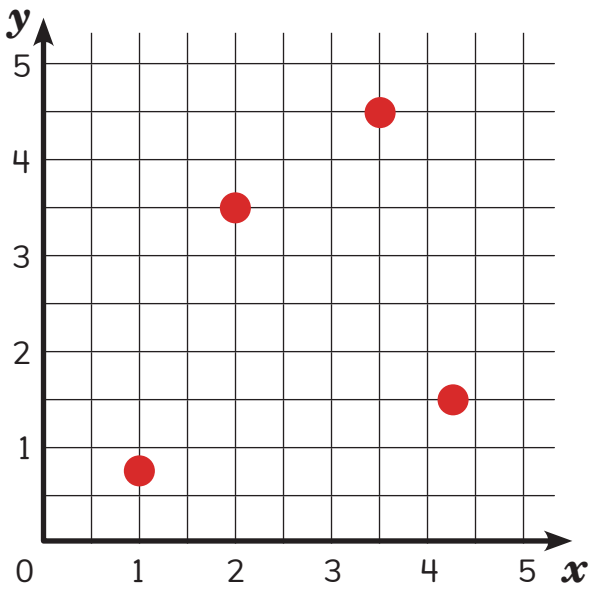


b) If the points are connected to form a polygon, what does the shape appear to be?

parallelogram

4 Graph the points shown in the table.

x	2	$3\frac{1}{2}$	1	$4\frac{1}{4}$
y	$3\frac{1}{2}$	$4\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$



5 Is this statement always, sometimes, or never true?

Parallelograms have 4 right angles.

The statement is sometimes true.

Explain your thinking with examples or counterexamples.

Possible explanation:

Parallelograms sometimes have 4 right angles, such as when they are rectangles or squares, but parallelograms need only to have 2 pairs of parallel sides, which does not require right angles.

Students may also draw example shapes to explain.

Topic 10

Exploring Relationships in Data

Recommended ST Math Objectives:

Using Data and Graphs
Patterns and Relationships
Converting Measurements

Name: _____ Date: _____


Aleki

Exploring Variables

1. Find the value of the expression. $8 + [(9 - 4) \times (2 + 9)] - 2$

61

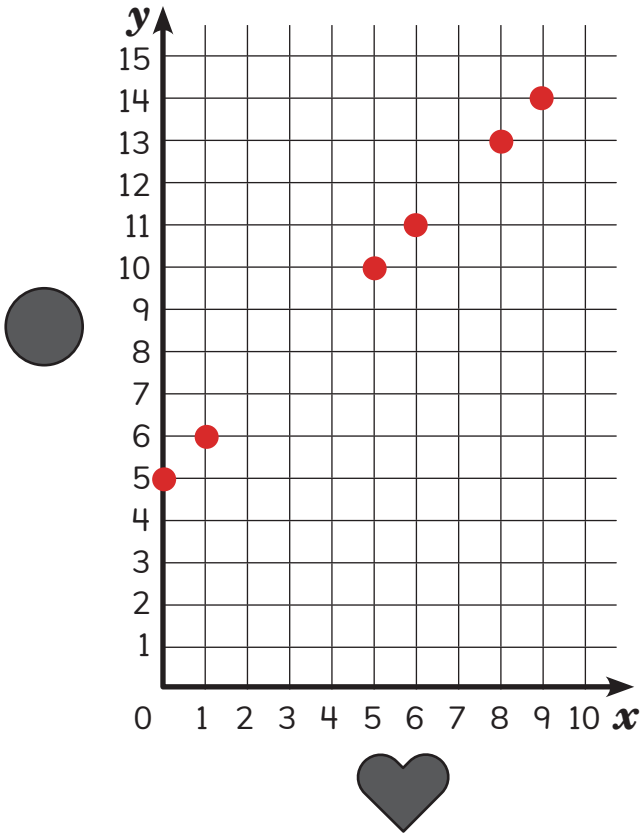
2. Circle the prime numbers. **25** **80** **31** **73** **68** **2** **9**

3. a) Complete the table.

♥ + 5 = ●

♥	●
8	**13**
0	**5**
1	6
6	**11**
9	14
5	**10**

b) Graph the values from the table.



4. Tickets for Aleki's band concert were sold for $12 each. A total of $2,208 was collected from these ticket sales. How many tickets were sold for the concert? Show your thinking.

184 tickets

Possible explanation:

2,208 ÷ 12 = 184

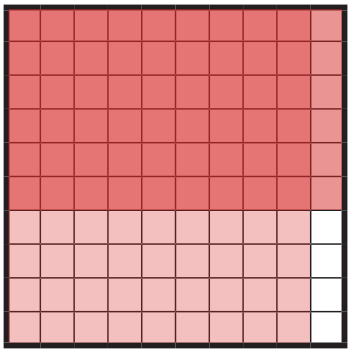
Name: _____ Date: _____


Anjali

Graphing Additive Relationships with Input–Output Tables

1 This model shows 1 whole. Shade the model to represent $0.9 \times 0.6 = 0.54$.

Possible answer:



2 Circle the word form of the expression.

$(5 \times 10) + (4 \times 1) + (7 \times 0.1) + (9 \times 0.001)$

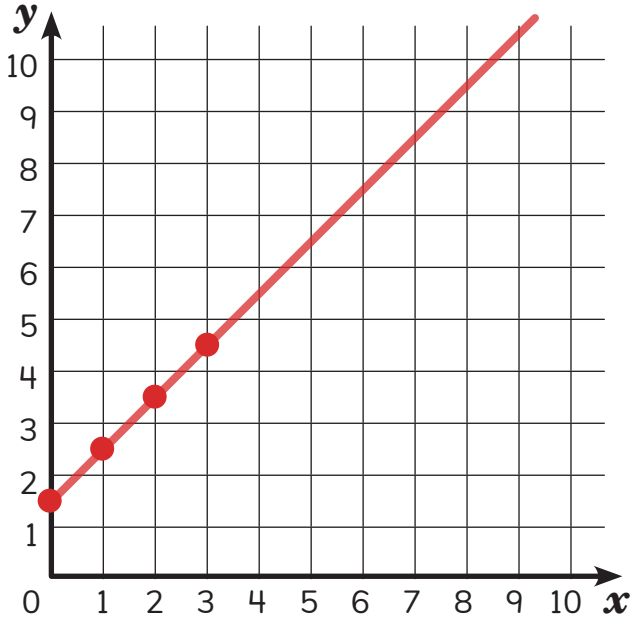
- fifty-four and seventy-nine hundredths
- **fifty-four and seven hundred nine thousandths**
- fifty-four and seven hundred nine
- fifty-four and seventy-nine thousandths

3 a) Complete the table.

$y = x + 1.5$

x	y
0	***1.5***
1	***2.5***
2	***3.5***
3	***4.5***

b) Graph the values from the table.



The table and graph should include two additional points found on the line.

4 While cleaning her room, Anjali found 10 cents on her desk, 97 cents under her bed, and 3 dollars and 5 cents in her closet. What was the total amount of money Anjali found? Show your thinking.

$4.12

Possible explanation:

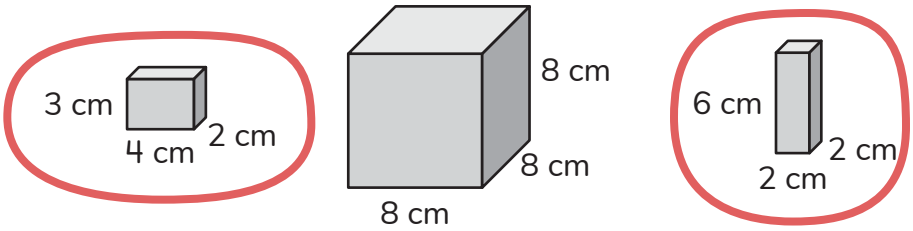
0.10 + 0.97 + 3.05 = 4.12

Name: _____ Date: _____


Brian

Graphing Multiplicative Relationships with Input–Output Tables

1 Circle the rectangles that have a volume of 24 cubic centimeters.



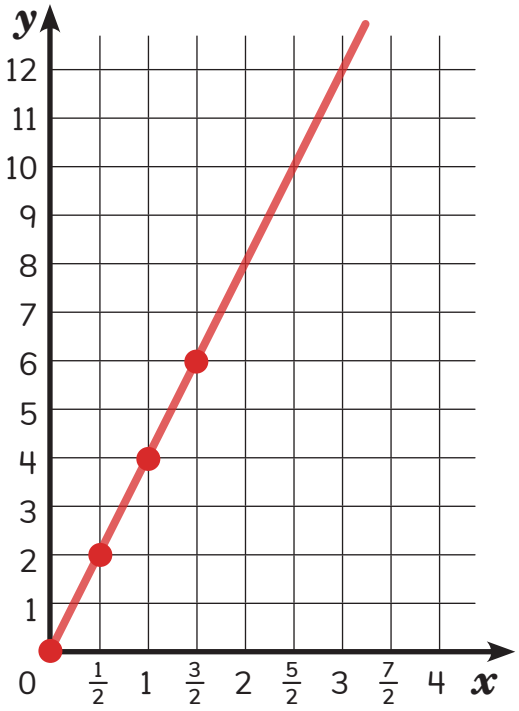
2 Find the quotient. $\frac{1}{3} \div 5$ ***1/15***

3 a) Complete the table.

$4x = y$

Input x	Output y
0	***0***
$\frac{1}{2}$	***2***
1	***4***
$\frac{3}{2}$	***6***

b) Graph the values from the table.



The table and graph should include two additional points found on the line.

4 Brian baked 8.5 batches of muffins for his school. Each batch of muffins used 1.5 cups of flour. How many total cups of flour did Brian use? Explain your thinking.

12.75 cups of flour

Possible explanation:

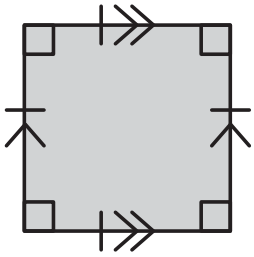
8.5 × 1.5 = 12.75

Name: _____ Date: _____


Mateo

Identifying Independent and Dependent Variables

1 Circle all of the names that can be used to describe the shape.



square
rectangle
rhombus
trapezoid
parallelogram

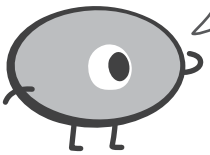
2 Find the value of the expression.

$3(26 + 18) + 4(3)$

144

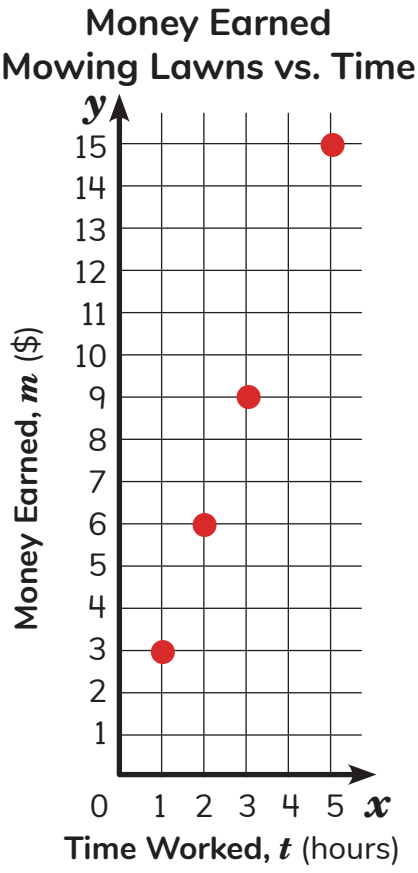
3 Complete the table and graph the points.

I make $3 for every hour I mow lawns. To figure out my earnings, I am using the equation $m = 3t$, where t is the time in hours and m is the amount of money in dollars.



Money Earned Mowing Lawns

Time Worked, t (hours)	Money Earned, m ($)
1	**3**
2	**6**
3	9
5	15



5 Mateo used a full 2-liter bottle of dog shampoo to fill 2 containers.

- He put 0.485 liters of shampoo in the first container.
- He put 0.65 liters of shampoo in the second container.

How many liters of shampoo remain in the 2-liter bottle? Show your thinking.

0.865 liters remain in the bottle.

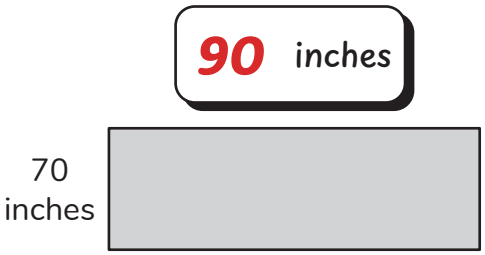
Possible explanation:

0.485 + 0.65 = 1.135 **2 – 1.135 = 0.865**

Name: Date:

Identifying Additive and Multiplicative Relationships in Scatterplots

1 Find the length of the rectangle.



P = 320 inches

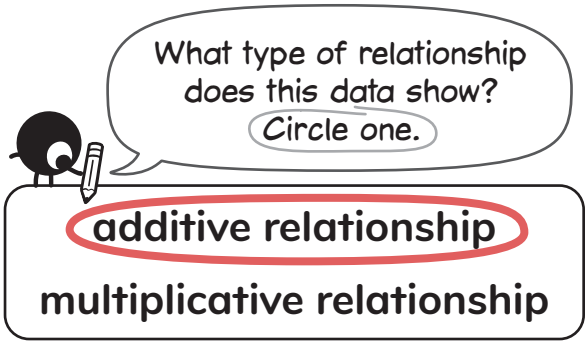
2 Solve.

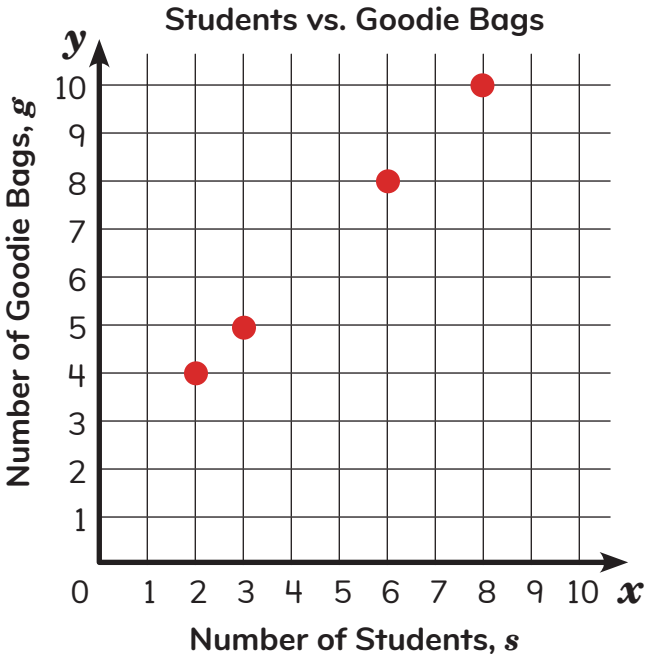
$$\frac{16}{25} - \frac{22}{50} = \frac{10}{50}$$

or $\frac{1}{5}$

3 Plot the data in the scatterplot.

Number of Students, s	2	3	6	8
Number of Goodie Bags, g	4	5	8	10





4 There are 7 glasses of lemonade. Each glass has 0.4 liters of lemonade.
How many milliliters of lemonade are in all 7 glasses combined? Show your thinking.

1 liter (L) = 1,000 milliliters (mL)

2,800 mL of lemonade

Possible explanation:

0.4 × 1,000 = 400 mL
400 × 7 = 2,800 mL

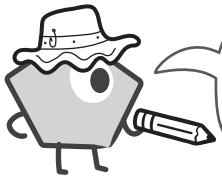
Name: _____ Date: _____


Vivi

Graphing Relationships from Written Descriptions

1 Solve. $46.8 - 7.08 =$ ***39.72***

2



I bought a new hat!
Circle the tax that I paid as a part of the total cost of the hat.

income tax **sales tax** **payroll tax** **property tax**

3 During a card tournament, 3 rounds are played every hour.

a) Create a graph to show the total number of rounds that are played each hour. Label the title and each axis on the graph.

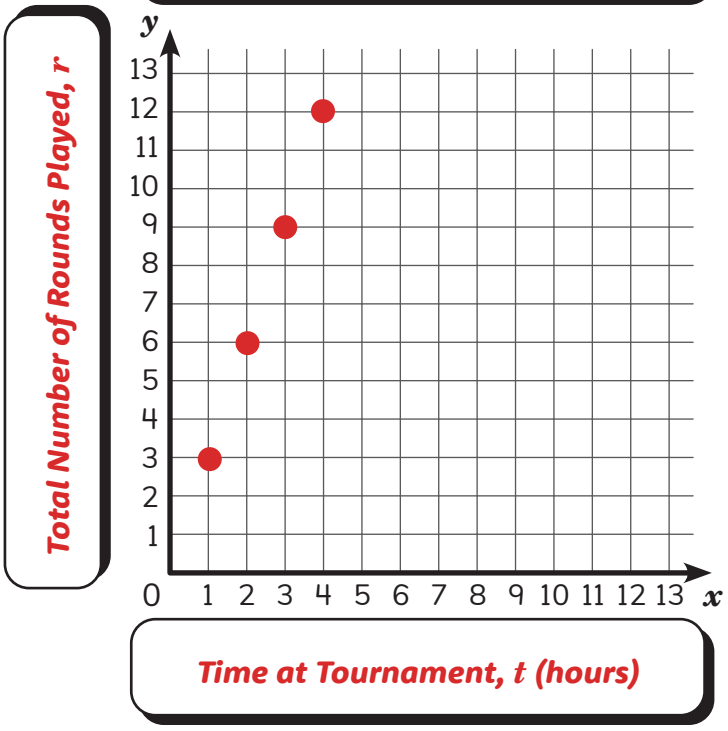
b) Circle the type of relationship shown in the data on the graph.

additive relationship

multiplicative relationship

Possible answer:

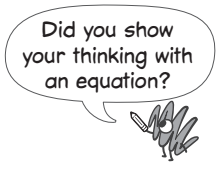
Total Number of Rounds Played During Card Tournament vs. Time



4 Vivi made 35 necklaces. She sold $\frac{4}{5}$ of the necklaces at the market. How many necklaces did Vivi sell? Show your thinking with an equation.

Possible explanation:

$\frac{4}{8} \times 35 = 28$ ***necklaces***



Name: Date:

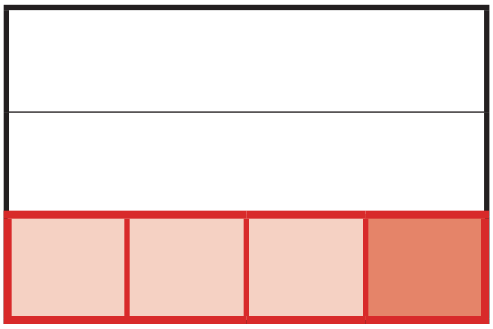
Analyzing Correlations in Real-World Scatterplots

1 Use the standard algorithm to solve.

$$\begin{array}{r} {\scriptstyle 1\,2}\;{\scriptstyle 3} \\ 127 \\ \times\quad 53 \\ \hline 381 \\ +\ 6,350 \\ \hline 6,731 \end{array}$$

2 Use the model to represent the quotient of $\frac{1}{3} \div 4$.

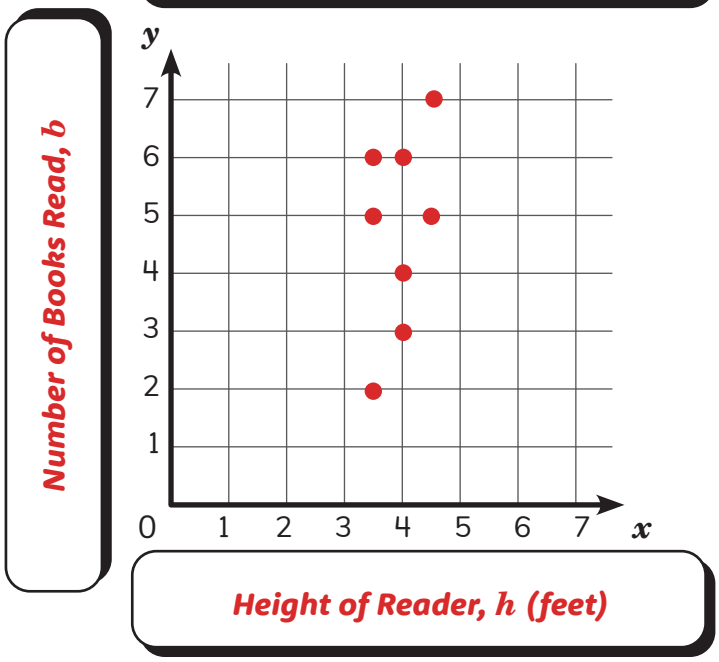
Possible answer:



3 Label the title and each axis. Graph the data from the table.

Height of Reader, h (feet)	Number of Books Read, b
3.5	6
4	3
3.5	5
4.5	7
4	6
4.5	5
3.5	2
4	4

Possible answer:
Height vs. Books Read

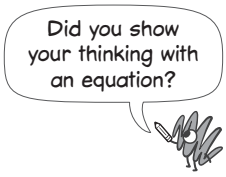


4 There are 3 pies. Each pie is cut into equal slices. Each slice is $\frac{1}{6}$ of a pie. How many slices are there? Show your thinking with an equation.

18 slices

Possible explanation:

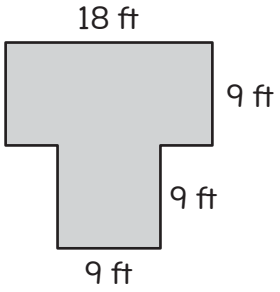
$3 \div \frac{1}{6} = 18$



Name: Date:

Graphing Data in Scatterplots with Broken Axes

1 Find the area of the figure.



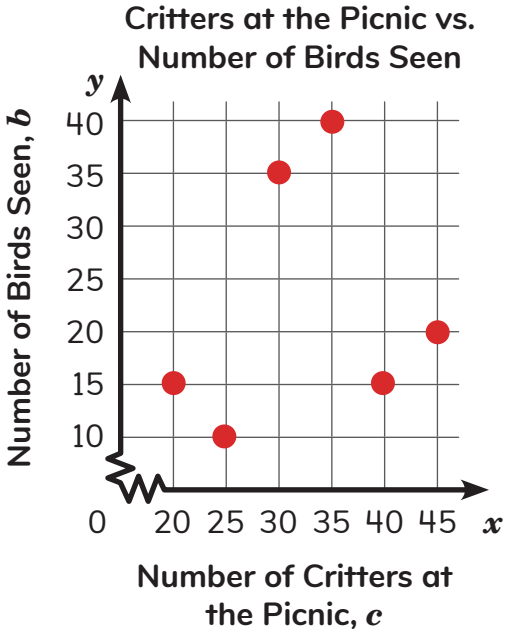
$A =$ **243 sq. ft**

2 Use the standard algorithm to solve.

$$\begin{array}{r} 46 \\ 40\overline{)1{,}840} \\ -\ 1{,}600 \\ \hline 240 \\ -\ 240 \\ \hline 0 \end{array}$$

3 a) Graph the data from the table.

Number of Critters at the Picnic, c	Number of Birds Seen, b
20	15
25	10
30	35
35	40
40	15
45	20



b) Does the graph show a correlation between variables or no correlation between variables? Explain your thinking.

The graph shows no correlation between variables.

Possible explanation:
The points on the graph do not show a clear pattern.

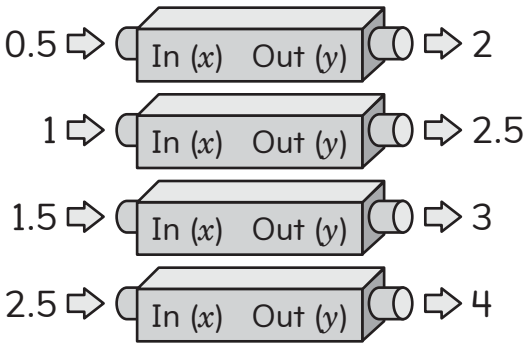
4 The critters used a total of 2.4 pounds of ground beef to make 8 equal-sized hamburgers. How much ground beef was used for each hamburger?

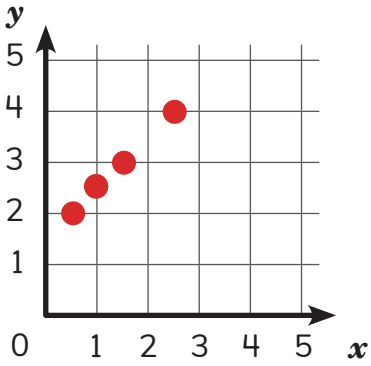
0.3 pounds

Name: Date:

Analyzing Data in Frequency Tables and Bar Graphs

1 Create a graph to represent the ordered pairs.

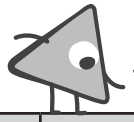




2 Find the value of 1.5×5.3.

7.95

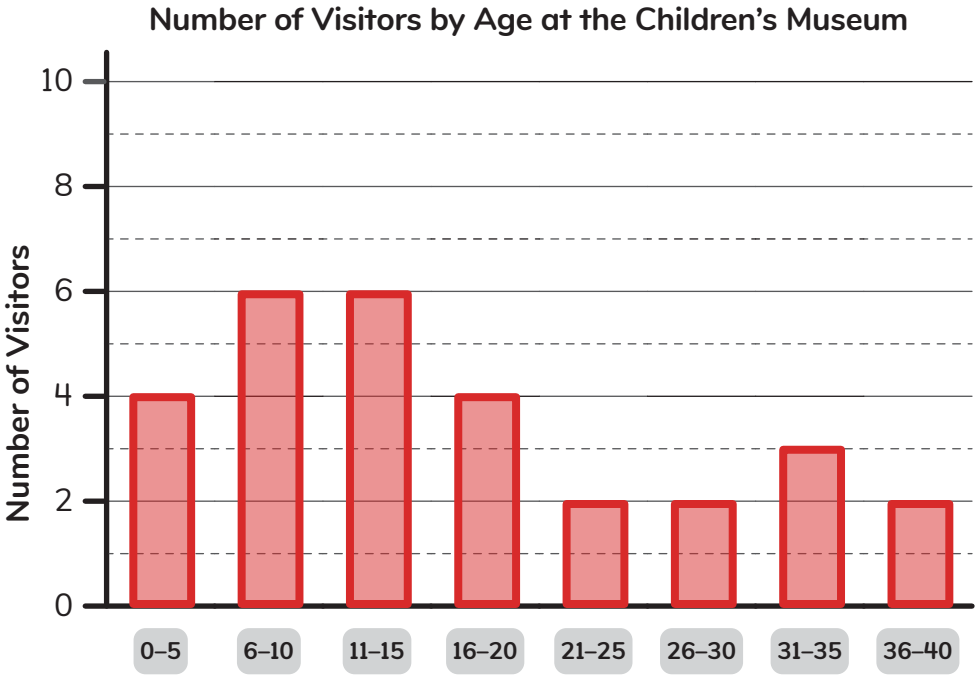
3



Use the data to complete the frequency table. Then, use your frequency table to create a bar graph.

5, 13, 7, 2, 11, 27, 40, 24, 13, 31, 9, 18, 0, 6, 21, 8, 14, 10, 33, 19, 12, 36, 18, 15, 3, 17, 35, 28, 10

Ages (years)	Number of Visitors
0–5	4
6–10	6
11–15	6
16–20	4
21–25	2
26–30	2
31–35	3
36–40	2



a) What is the difference between the number of visitors who were younger than 16 and the number of visitors who were 16 and older?

3 visitors

b) How many visitors were younger than 21 years old?

20 visitors

Name: Date:

Analyzing Data in Stem-and-Leaf Plots and Dot Plots

1 Solve.

$$\frac{2}{5} + \frac{3}{12} + \frac{1}{20} = \frac{45}{60}$$

or $\frac{9}{12}$ or $\frac{3}{4}$

2 Circle the expression with the greatest value.

$6 \times (2 + 5) + 8$

$6 \times 2 + 5 + 8$

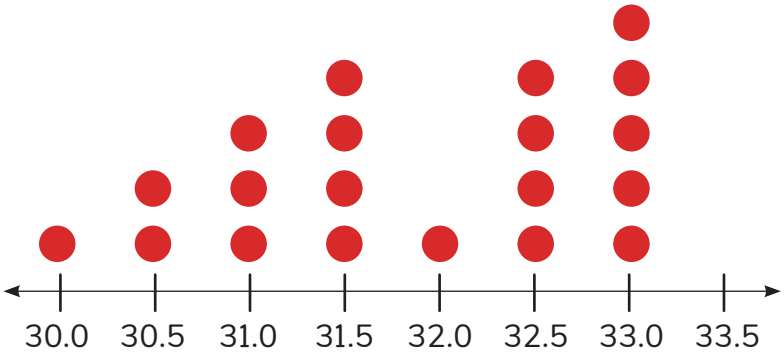
$6 \times (2 + 5 + 8)$

3 Use the data in the stem-and-leaf plot to create a dot plot.

Timed Practice Runs of Skateboarders

Stem	Leaf
30	0 0 5
31	0 0 0 5 5 5 5
32	0 5 5 5 5
33	0 0 0 0 0

30|5 means 30.5 seconds.



Skateboarders' Practice Run Times

a) What is the difference between the shortest practice run time and the longest practice run time?

3 seconds

b) What fraction of the practice runs lasted more than 30 seconds?

$\frac{18}{20}$ or $\frac{9}{10}$

4 A rectangular sign is 4.33 feet tall and 6.5 feet wide.
What is the perimeter of the sign in feet? Show your thinking.

21.66 feet

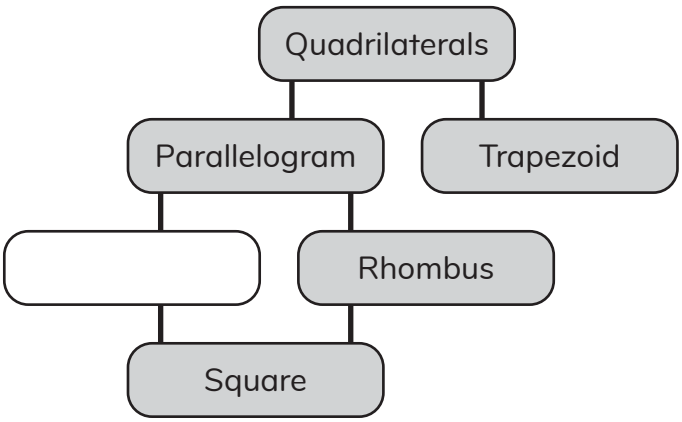
Possible explanation:

$(2 \times 4.33) + (2 \times 6.5)$
$= 8.66 + 13$
$= 21.66$

Name: Date:

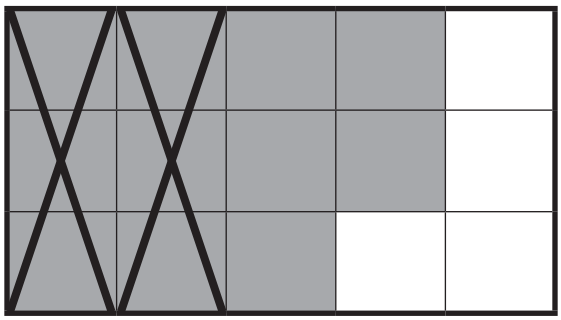
Analyzing Data in Multiple Representations

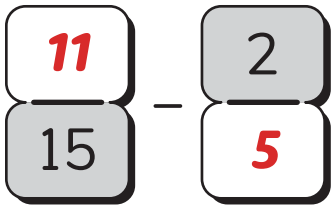
1 Circle the name of the shape that is missing from the diagram.



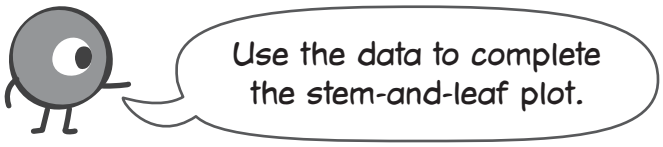
Hexagon Rectangle
Polygon Triangle

2 Fill in the missing numbers to create an expression to represent the model.





3



25, 33, 15, 34, 10, 21, 14, 42, 10, 26, 19, 18, 40, 15, 22, 34, 13, 16, 19, 36, 28, 16, 13, 17, 48, 37

Number of Items Donated By Class for a Year-End Charity Drive

Stem	Leaf
1	0 0 3 3 4 5 5 6 6 7 8 9 9
2	1 2 5 6 8
3	3 4 4 6 7
4	0 2 8

3|4 means 34 items.

a) What is the difference between the greatest and least number of items donated?

38 items

b) How many classes donated more than 20 items?

13 classes

ST Math Texas

MIND EDUCATION