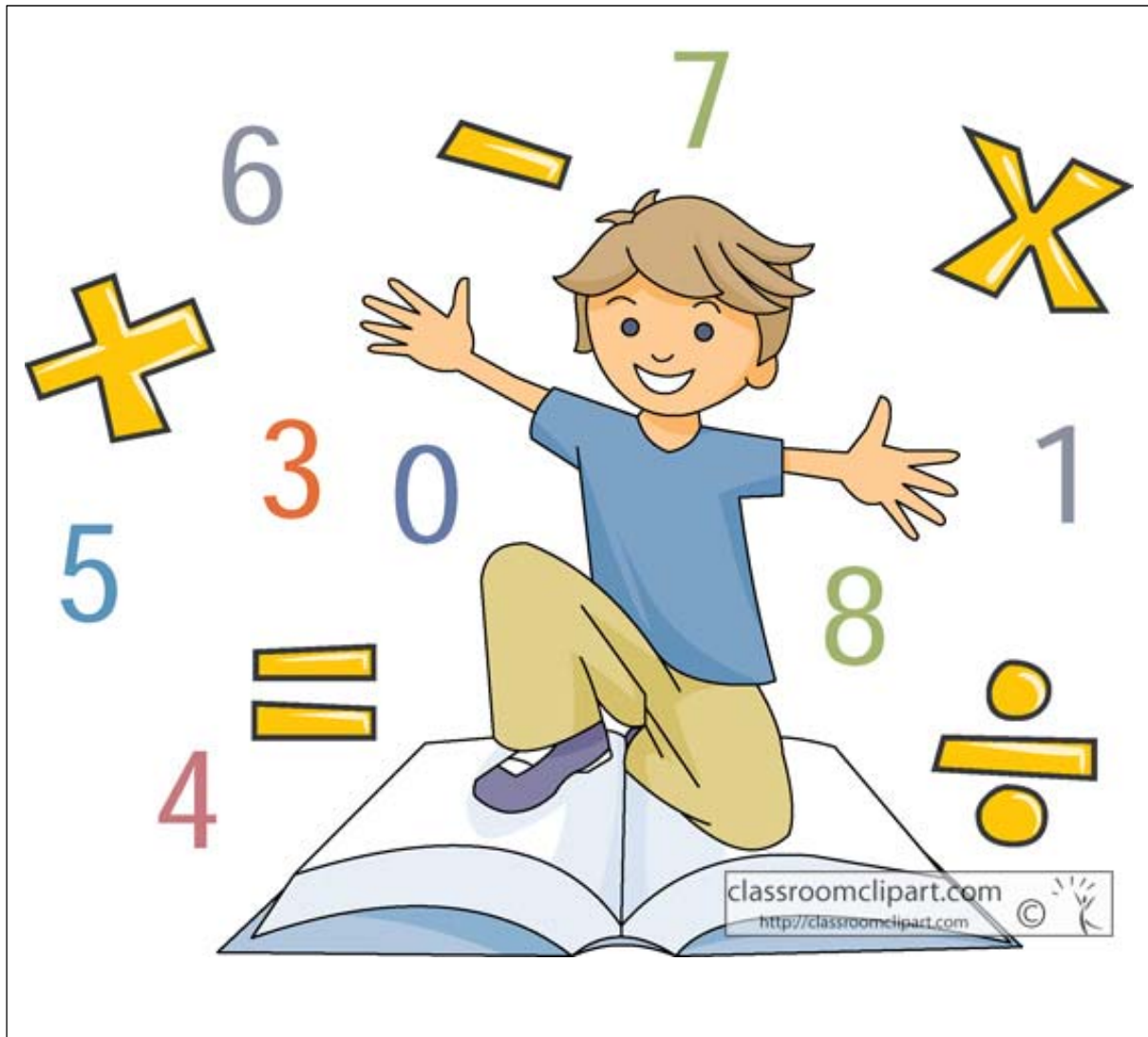


5th Grade

Summer Math Packet



Name _____

Dear incoming 5th grade students,

We are very excited to have you as students next year. In order to help you be better prepared for 5th grade math, we have prepared a math packet for you to complete over the summer. Please use the packet as follows:

- 1. The first ten pages are a re-teaching guide (with answers) designed to help you understand the lesson. Keep these pages as a future reference guide.*
- 2. The second ten pages are practice pages for you to complete. You will turn these pages into your teacher on the first day of school. Please show your work whenever you can. If you do your work on a separate sheet of paper, please attach those papers to the back of this packet when you turn it in.*
- 3. Practice, practice, practice your multiplication skills!!!*

Have a great summer.

See you in August,

Mrs. Asparuhov and Mrs. Tuel

Name _____

The Distributive Property

You can use the Distributive Property to multiply mentally.

Example A. Evaluate 7×53 .

$$7 \times 53$$

Break 53 apart into $50 + 3$.

$$7 \times (50 + 3)$$

Then distribute the 7 to each part.

$$(7 \times 50) + (7 \times 3)$$

Multiply.

$$350 + 21$$

Add the products.

$$371$$

Example B. Evaluate $5(42) - 5(2)$. Remember $5(42)$ means 5×42 .

Use the Distributive Property in reverse.

$$5(42) - 5(2)$$

Join 42 and 2 using the minus sign.

$$5(42 - 2)$$

Subtract.

$$5 \times 40$$

Multiply the difference by 5.

$$200$$

Find each missing number.

1. $8 \times (30 + 2) = (8 \times \underline{30}) + (8 \times 2)$ 2. $(6 \times \underline{37}) - (6 \times 7) = 6 \times (37 - 7)$

3. $8(28) = 8(20) + 8(\underline{8})$ 4. $3(22) + 3(4) = 3(\underline{20}) + 3(6)$

Use the Distributive Property and mental math to evaluate.

5. $6(24) = \underline{144}$ 6. $4(13) - 4(3) = \underline{40}$

7. $7(24 + 6) = \underline{210}$ 8. $2(72) = \underline{144}$

9. $9(12) + 9(3) = \underline{135}$ 10. $5(24 - 3) = \underline{105}$

11. **Number Sense** What are two other ways to write $9(46)$?

$9(40) + 9(6); 9(40 + 6)$

Using Variables to Write Expressions

A variable represents a quantity that can change. To use a variable to write an algebraic expression, you need to decide which operation is appropriate. To help you, some words and phrases are listed below.

Word phrase	Variable	Operation	Algebraic Expression
ten more than a number b	b	Addition	$b + 10$
the sum of 8 and a number c	c		$8 + c$
five less than a number d	d	Subtraction	$d - 5$
15 decreased by a number e	e		$15 - e$
the product of 8 and a number f	f	Multiplication	$8f$
19 times a number g	g		$19g$
the quotient of a number h divided by 2	h	Division	$h \div 2$
a number i divided into 50	i		$50 \div i$

Write each algebraic expression.

- a number m **divided by** 6 $m \div 6$
- the **sum** of 4 and a number n $4 + n$ 3. 4 **times** a number p $4p$
- a number n **divided into** 7 $7 \div n$ 5. 3 **less than** a number r $r - 3$
- a fewer grapes than 12 $12 - a$ 7. q sandwiches at \$8 each $8q$
- Each fourth grader has 5 notebooks. Write an algebraic expression to represent the number of notebooks the entire class has.

Identify the operation. **Multiplication** Write the expression. $5s$

- Writing to Explain** Write an algebraic expression to represent the situation below. Explain how the expression relates to the situation.

Some monkeys share 7 bananas equally among themselves.

$7 \div m$; The words “share” and “equally” show that the operation is division. The 7 refers to the bananas. The variable, m , refers to the number of monkeys equally sharing the bananas.

Using Patterns to Divide

You can use basic facts and patterns to divide mentally.

Using basic facts

What is $140 \div 70$?

Think: $140 \div 70$ is the same as 14 tens $\div 7$ tens.

$$14 \div 7 = 2$$

$$\text{So, } 140 \div 70 = 2.$$

Using patterns

What is $4,200 \div 70$?

$4,200 \div 70$ is the same as $420 \div 7$.

Think: $42 \div 7 = 6$, so $420 \div 7 = 60$.

$$\text{So, } 4,200 \div 70 = 60.$$

Find each quotient. Use mental math.

1. $210 \div 70 =$ **3**

2. $360 \div 30 =$ **12**

3. $400 \div 80 =$ **5**

4. $1,200 \div 60 =$ **20**

5. $4,000 \div 40 =$ **100**

6. $4,800 \div 80 =$ **60**

7. $2,700 \div 30 =$ **90**

8. $3,500 \div 50 =$ **70**

9. **Number Sense** How is dividing 140 by 20 the same as dividing 1,400 by 200?

Sample answer: $140 \div 20 = 7$ and

$1,400 \div 200 = 7$. Both problems use

the same basic fact that $14 \div 2 = 7$.

10. **Writing to Explain** Explain how you can use mental math to determine that $28,000 \div 70 = 400$.

You know that $28 \div 7 = 4$. Using basic

facts and patterns, you also know that

$2,800 \div 70 = 40$ and $28,000 \div 70 = 400$.

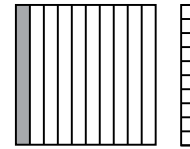
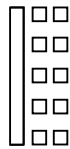
Connecting Decimal and Whole Number Numeration

Whole number place values and decimal place values are shown below. Each place value to the left is ten times as much as the place value to its right.

Thousands	Hundreds	Tens	Ones	Decimal	Tenths	Hundredths	Thousandths
1,000	100	10	1	.	$0.1 = \frac{1}{10}$	$0.01 = \frac{1}{100}$	$0.001 = \frac{1}{1,000}$

For example, 1 ten is equal to 10 ones.

In 1 tenth, there are 10 hundredths.



Write the place value for the underlined digit. Then write the total value of the underlined digit.

1. 348.605

place value: Tenths

total value: 0.6

2. 2,348.56

place value: Thousands

total value: 2,000

3. 449.654

place value: Thousandths

total value: 0.004

4. 348.56

place value: Tens

total value: 40

5. **Number Sense** Does 6 have a greater value in 13.6 or in 83.06? Explain.

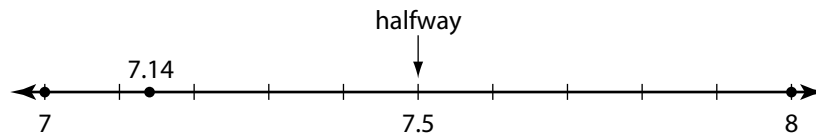
The 6 in 13.6 has a greater value because it is equal to 6 tenths. The 6 in 83.06 equals 6 hundredths and 6 hundredths is less than 6 tenths.

6. **Writing to Explain** Cassie ran one lap around the indoor track in 32.09 seconds. She ran a second lap in 32.1 seconds. Did it take more or less time for Cassie to run the second lap? Explain.

It took more time; Sample answer: One tenth is equal to 10 hundredths which is larger than 9 hundredths.

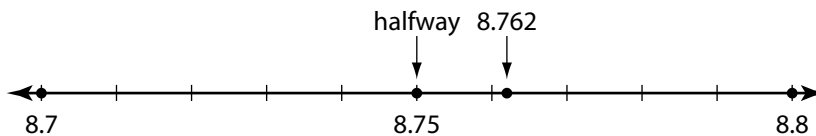
Rounding Decimals

You can use the number line below to help you round 7.14 to the nearest whole number. Is 7.14 closer to 7 or 8?



7.14 is less than halfway to 8. So, 7.14 is closer to 7.

A number line can help you round 8.762 to the nearest tenth. Is 8.762 closer to 8.7 or 8.8?



8.762 is more than halfway to 8.8. So, 8.762 is closer to 8.8.

Round each number to the place of the underlined digit.

1. 0.7234

0.7

2. 4.526

5

3. 3.8629

3.863

4. 25.147

25.1

For 5 and 6, use the table at the right.

5. Round the number of inches of precipitation in Tallahassee to the nearest tenth.

44.5 inches

Inches of Precipitation in 2007

Daytona	45.02
Tallahassee	44.47
Orlando	38.49

6. Round the number of inches of precipitation in Orlando to the nearest whole number.

38 inches

7. **Number Sense** Marc earned \$8.76 per hour working at the library. Round his wage to the nearest ten cents.

\$8.80

Name _____

Estimating Quotients with 2-Digit Divisors

You can use compatible numbers to estimate a quotient.

Estimate $228 \div 19$.

Step 1: Find compatible numbers for 228 and 19.

Think: 20 can be divided evenly by 2.

200 is close to 228 and 20 is close to 19.

200 and 20 are compatible numbers.

Step 2: Divide. Use patterns to help you, if possible.

Think: $200 \div 20$ is the same as
 $20 \text{ tens} \div 2 \text{ tens}$.

$$20 \div 2 = 10$$

$$\text{So, } 200 \div 20 = 10.$$

Estimate each quotient using compatible numbers. **Sample answers are given.**

1. $540 \div 91$ 6

2. $2,777 \div 74$ 40

3. $29,952 \div 98$ 300

4. $288 \div 37$ 7

5. $1,784 \div 32$ 60

6. $6,127 \div 32$ 200

At Cambridge Elementary School, fourth-grade students are saving money for a summer trip to a theme park.

7. The amount Aubrey has saved is about how many times as great as the amount Joe has saved?

About 2 times

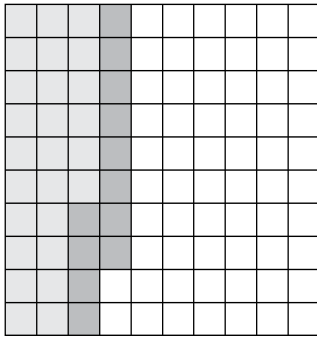
Student	Amount Saved
Rebecca	\$110
Joe	\$ 92
Ken	\$225
Atiyah	\$ 53
Aubrey	\$189

Name _____

Modeling Addition and Subtraction of Decimals

Adding decimals using a hundredths grid:

Add $0.26 + 0.12$.



Step 1: Shade 26 squares to show 0.26.

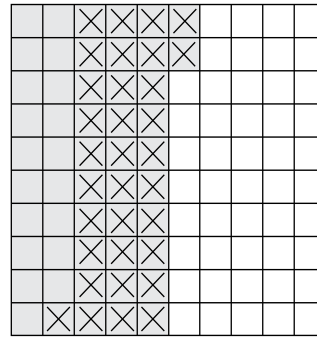
Step 2: Use a different color. Shade 12 squares to show 0.12.

Step 3: Count all the squares that are shaded. How many hundredths are shaded in all? Write the decimal for the total shaded squares: 0.38.

So, $0.26 + 0.12 = 0.38$.

Subtracting decimals using a hundredths grid:

Subtract $0.52 - 0.33$.



Step 1: Shade 52 squares to show 0.52.

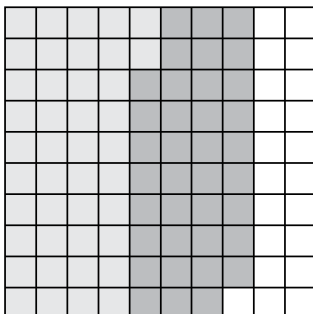
Step 2: Cross out 33 squares to show 0.33.

Step 3: Count the squares that are shaded but not crossed out. Write the decimal: 0.19.

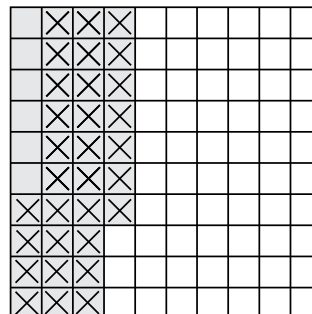
So, $0.52 - 0.33 = 0.19$.

Add or subtract. You may use hundredths grids to help.

1. $0.42 + 0.37 = \underline{0.79}$



2. $0.37 - 0.31 = \underline{0.06}$



Relating Division to Multiplication of Fractions

How can you divide by a fraction?

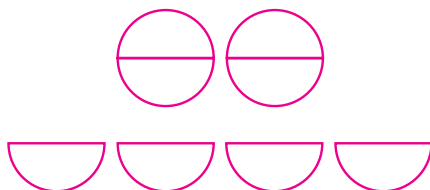
Dividing a whole number by a fraction

$2 \div \frac{1}{3}$	Think: How can I divide two into one-thirds?
<ol style="list-style-type: none"> 1. Two is the sum of one plus one. 2. Each one is the sum of three one-thirds. 3. Count the number of one-thirds. <p>Check To divide a whole number by a fraction, multiply the whole number by the reciprocal of the fraction.</p>	$2 = 1 + 1$ <div style="text-align: center;"> $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ </div> <p>6</p> $2 \div \frac{1}{3} = 2 \times \frac{3}{1} = \frac{2}{1} \times \frac{3}{1} = \frac{6}{1} = 6$

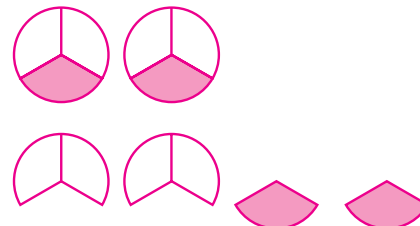
$3 \div \frac{3}{4}$	Think: How can I divide three into three-fourths?
<ol style="list-style-type: none"> 1. Three is the sum of one plus one plus one. 2. Each one is the sum of one three-fourths and one one-fourth. 3. Count the number of three-fourths. <p>Check Multiply the whole number by the reciprocal of the fraction.</p>	$3 = 1 + 1 + 1$ <div style="text-align: center;"> $\frac{3}{4} + \frac{1}{4} + \frac{3}{4} + \frac{1}{4} + \frac{3}{4} + \frac{1}{4}$ $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4}$ </div> <p>4</p> $3 \div \frac{3}{4} = 3 \times \frac{4}{3} = \frac{3}{1} \times \frac{4}{3} = \frac{12}{3} = 4$

Draw a picture that shows each division and write the answer.

1. $2 \div \frac{1}{2}$ **4** _____



2. $2 \div \frac{2}{3}$ **3** _____



Name _____

Multiplying Fractions and Whole Numbers

You can find the product of a fraction and a whole number.

Francesco needs $\frac{2}{3}$ yard of fabric to sew a shirt. How many yards of fabric will Francesco need to sew 6 shirts?

Step 1: Multiply the numerator by the whole number.

$$2 \times 6 = 12$$

Step 2: Place the product over the denominator. Simplify if possible.

$$\frac{12}{3} = 4 \text{ yards of fabric}$$

Remember: In word problems, “of” often means “multiply.”

Example: $\frac{3}{5}$ of 15 = $\frac{3}{5} \times 15$

In **1** through **4**, find each product. Simplify if possible.

1. $\frac{2}{3} \times 30 = \underline{20}$

2. $\frac{3}{4}$ of 28 = 21

3. $\frac{7}{8} \times 32 = \underline{28}$

4. $\frac{3}{7}$ of 35 = 15

For Exercises **5** through **7**, use the table to the right.

5. What is $\frac{2}{7}$ the speed of a cheetah? 20 mi/h

6. What is $\frac{1}{5}$ the speed of a lion? 10 mi/h

7. What is $\frac{1}{5}$ the speed of a rabbit? 7 mi/h

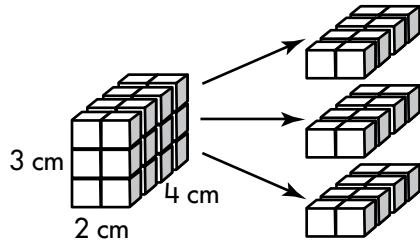
Animal	Speed (in mi/h)
Lion	50
Cheetah	70
Rabbit	35

Volume

Volume is a measure of the space inside a solid figure. It is measured in cubic units. A **cubic unit** is the volume of a cube which has edges that are 1 unit.

How to find the volume of a rectangular prism:

Counting unit cubes



Count the cubes in each layer: 8 cubes.

Multiply by the number of layers.

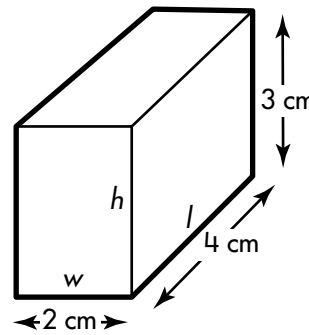
$$8 \text{ cubes} \times 3 = 24 \text{ cubes}$$

The volume of each cube is 1 cm^3 .

The volume of the prism is 24 cm^3 .

Using a formula

You know the length, l , the width, w , and the height, h . Calculate the volume, V , using the formula $V = l \times w \times h$.

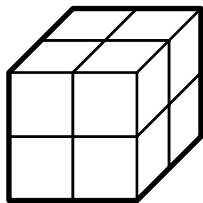


$$V = 2 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm}$$

$$V = 24 \text{ cm}^3$$

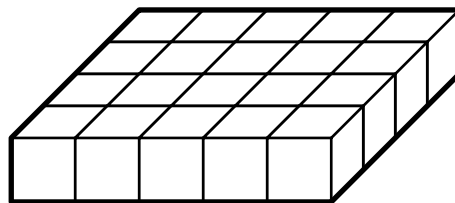
Find the volume of each rectangular prism.

1.



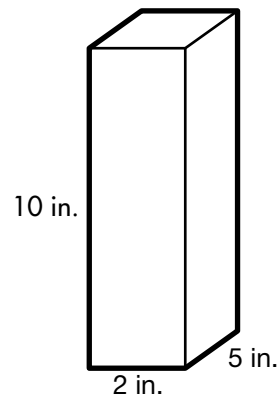
8 units³

2.



20 units³

3.



100 in³

Name _____

The Distributive Property

Find each missing number.

1. $8 \times (30 + 2) = (8 \times \underline{\hspace{2cm}}) + (8 \times 2)$ 2. $8(94) = 8(\underline{\hspace{2cm}}) + 8(4)$

3. $5(45 + 5) = 5(\underline{\hspace{2cm}})$ 4. $9(42) - 9(4) = 9(30) + 9(\underline{\hspace{2cm}})$

Use the Distributive Property and mental math to evaluate.

5. $3(58 - 8)$ _____

6. $7(31 + 19)$ _____

7. $9(72)$ _____

8. $4(26) - 4(16)$ _____

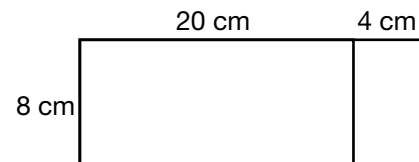
9. $8(41) + 8(5)$ _____

10. $5(22 - 5)$ _____

11. Describe the mental math steps you would use to find $7(42)$.

12. **Number Sense** Use mental math to evaluate the expression $6(31) + 6(4) - 6(15)$.

13. **Geometry** Write an expression for the area of this rectangle. Evaluate your expression to find the area.



14. **Algebra** Which expression is equal to $12m + 12n$?

- A $12mn$
- B $12m + n$
- C $12m - 12n$
- D $12(m + n)$

Name _____

Using Variables to Write Expressions

Write each algebraic expression.

1. 4 more than a number b _____
2. twice a number a _____
3. 20 less than a number c _____
4. the product of 5 and a number d _____
5. 30 divided by a number f _____
6. the sum of a number e and 3 _____
7. 9 more stripes than a number h _____
8. 14 fewer hats than five times a number i _____
9. Chad has \$80. He buys a book. Which expression shows how much money Chad has left?

A $s + 80$
B $80 - s$
C $80s$
D $s \div 80$
10. A coffee shop has booths and counter seating. Each booth can seat 4 people. Another 20 people can sit at the counter. Which expression shows how many customers can be seated in the coffee shop?

A $20b - 4$ **B** $20b + 4$ **C** $4b - 20$ **D** $4b + 20$
11. Sofia bought some flats of daisies. Each flat holds 9 daisies. Sofia has planted 10 daisies. Is $9x + 10$ a reasonable way to represent the number of daisies that Sofia has left to plant? Explain your answer.

Name _____

Using Patterns to Divide

In 1 through 4, find each quotient. Use mental math.

1. $160 \div 40 = 16 \text{ tens} \div 4 \text{ tens} =$ _____

2. $6,300 \div 70 = 630 \text{ tens} \div 7 \text{ tens} =$ _____

3. $140 \div 70 = 14 \text{ tens} \div 7 \text{ tens} =$ _____

4. $3,700 \div 10 = 370 \text{ tens} \div 1 \text{ ten} =$ _____

Use mental math to answer the following questions.

5. If the cans are divided evenly among the shelves, how many cans are on each shelf?

Supermarket Storage	
Cans for sale	1,200
Shelves of cans	10
Rows per shelf	6

6. If the cans are divided evenly among the rows on each shelf, how many cans are in each row?

7. **Estimation** Suppose there are 387 balls in the gym. If each bin can hold 48 balls, estimate the number of bins that will be needed to hold all the balls.

8. **Algebra** If $300,000 \div h = 6$, what is the value of h ?

A 50 **B** 500 **C** 5,000 **D** 50,000

9. Solve the equation $n \times 50 = 5,000$. Explain your solution.

Name _____

Connecting Decimal and Whole Number Numeration

Write the place value for the underlined digit.

1. 5,009.941

2. 456.96

3. 3,116.852

4. 2,440.504

5. 599.04

6. 387.569

7. 698.07

8. 4,456.87

9. 986.54

10. Which decimal has the same digit in the hundredths place and the hundreds place?

A 145.54

C 965.439

B 783.38

D 5,486.649

11. Donna bought 4.356 pounds of cheese. What is the value of each of the digits in 4.356?

12. Which is equal to 30 hundredths?

A 3 thousandths C 3 tens

B 3 tenths D 3 thousands

13. Bill's average speed in the bicycle race was 29.215 miles per hour. What is the place value of the 1 in that number?

14. Kathy has 2 tenths of a dollar. Tom has 10 hundredths of a dollar. Is Kathy's amount or is Tom's amount more?

Name _____

Rounding Decimals

Round each number to the place of the underlined digit.

1. 17.23 _____

2. 569.1 _____

3. 2.1785 _____

4. 26.062 _____

5. **Reasoning** Name two different numbers that round to 9.2 when rounded to the nearest tenth.

In early 2007, a U.S. dollar was equivalent to about 0.51 British pounds and about 1.17 Canadian dollars. Round each country's U.S. dollar equivalent to the nearest tenth of a dollar.

6. Britain _____

7. Canada _____

In 2007, the price of wheat was \$10.03 per bushel. The price of soybeans was \$11.93 per bushel. Round the price per bushel of wheat and soybeans to the nearest whole dollar.

8. wheat _____

9. soybeans _____

10. **Number Sense** Which number rounds to 600 when rounded to the nearest whole number?

A 600.83

B 599.1

C 600.5

D 599.72

11. Write a definition of rounding in your own words.

Name _____

Estimating Quotients with 2-Digit Divisors

In 1 through 4, estimate the quotients using compatible numbers.

1. $198 \div 41 =$ _____

2. $202 \div 52 =$ _____

3. $1,745 \div 63 =$ _____

4. $7,810 \div 22 =$ _____

5. **Reasoning** How do you know that 8,100 and 90 are NOT the best compatible numbers to use when estimating the quotient of $9,269 \div 88$?

6. Suppose there are 18 children at Georgi's party. Georgi's dad has 59 balloons and hands them out to the children. Estimate the number of balloons each child will receive.

7. At a department store, a package of 8 t-shirts costs \$38. Estimate how much each t-shirt costs.

8. **Number Sense** Which is the closest estimate for $1,219 \div 44$?

A 3

B 13

C 30

D 300

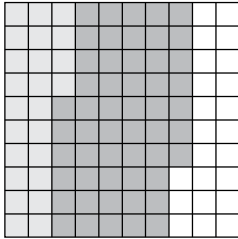
9. Explain how to estimate $425 \div 8$.

Name _____

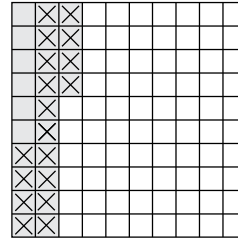
Modeling Addition and Subtraction of Decimals

Add or subtract. Use hundredths grids if necessary.

1. $0.24 + 0.53 =$ _____



2. $0.24 - 0.18 =$ _____



3. $0.88 + 0.25 =$ _____

4. $2.36 + 0.85 =$ _____

5. $0.61 - 0.47 =$ _____

6. $1.20 - 0.53 =$ _____

7. $2.20 - 1.97 =$ _____

8. $0.52 + 0.89 =$ _____

9. **Number Sense** Is the difference of $2.45 - 1.54$ less than or greater than 1? _____

10. A jar of oregano holds 0.9 ounce. A jar of cayenne pepper holds 0.75 ounce. How much more does a jar of oregano hold? _____

11. Add: $1.75 + 1.29$

A 2.04

B 2.94

C 3.04

D 3.14

12. Explain how to use hundredths grids to find $1.86 - 0.75$.

Name _____

Relating Division to Multiplication of Fractions

In **1** and **2**, use the picture to find each quotient.



1. How many thirds are in 1?

2. How many thirds are in 7?

In **3** and **4**, draw a picture to find each quotient.

3. $3 \div \frac{1}{2}$

4. $4 \div \frac{1}{8}$

In **5** and **6**, use multiplication to find each quotient.

5. $6 \div \frac{1}{3}$

6. $5 \div \frac{1}{10}$

7. Julie bought 3 yards of cloth to make holiday napkin rings. If she needs $\frac{3}{4}$ of a yard to make each ring, how many rings can she make?

8. When you divide a whole number by a fraction with a numerator of 1, explain how you can find the quotient.

Name _____

Multiplying Fractions and Whole Numbers

Find each product.

1. $\frac{1}{2}$ of 96 = _____
2. $\frac{3}{7}$ of 28 = _____
3. $\frac{3}{4} \times 36 =$ _____
4. $45 \times \frac{4}{9} =$ _____
5. $56 \times \frac{7}{8} =$ _____
6. $42 \times \frac{3}{7} =$ _____
7. $\frac{1}{2}$ of 76 = _____
8. $\frac{3}{8}$ of 56 = _____
9. $\frac{1}{10} \times 200 =$ _____
10. $84 \times \frac{1}{4} =$ _____
11. $64 \times \frac{5}{8} =$ _____
12. $20 \times \frac{11}{20} =$ _____
13. $\frac{3}{8}$ of 48 = _____
14. $\frac{1}{6}$ of 66 = _____
15. $\frac{4}{5} \times 30 =$ _____
16. $42 \times \frac{3}{6} =$ _____
17. $72 \times \frac{5}{8} =$ _____
18. $18 \times \frac{1}{3} =$ _____
19. $\frac{5}{6} \times 66 =$ _____
20. $\frac{11}{12} \times 72 =$ _____
21. $\frac{6}{7} \times 35 =$ _____

22. Complete the table by writing the product of each expression in the box below it. Use a pattern to find each product. Explain the pattern.

$\frac{1}{2} \times 64$	$\frac{1}{4} \times 64$	$\frac{1}{8} \times 64$	$\frac{1}{16} \times 64$

23. **Reasoning** If $\frac{1}{3}$ of 1 is $\frac{1}{3}$, what is $\frac{1}{3}$ of 2, 3, and 4? _____

24. Which is $\frac{1}{3}$ of 225?

A 75 **B** 113 **C** 150 **D** 450

25. Explain why $\frac{1}{4}$ of 4 equals one whole.

Name _____

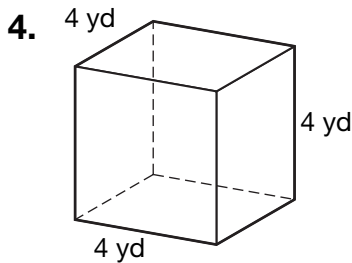
Volume

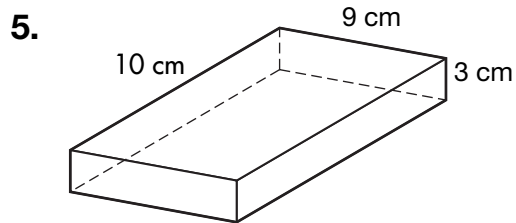
Find the volume of each rectangular prism.

1. base area 36 in^2 , height 5 in.

2. base area 52 cm^2 , height 10 cm

3. base area 44 m^2 , height 6 m



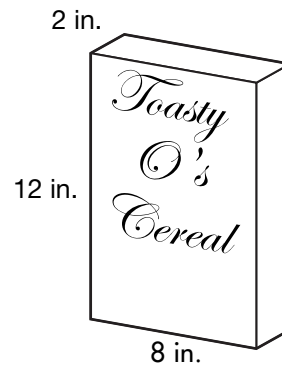


6. **Algebra** What is the height of a solid with a volume of 150 m^3 and base area of 50 m^2 ?

Michael bought some cereal at the grocery store.

7. What is the base area of the box?

8. What is the volume of the box?



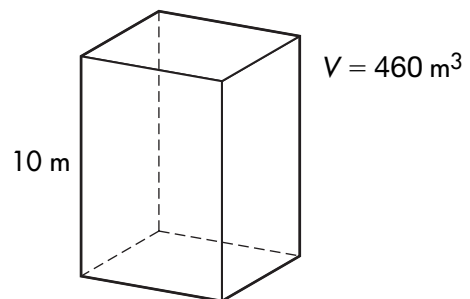
9. What is the base area of this figure?

A 4.6 m^2

C 460 m^2

B 46 m^2

D $4,600 \text{ m}^2$



10. Explain how you would find the base area of a rectangular prism if you know the volume and the height.
