Name _____

Step-Up 1
Reteaching

The Distributive Property

You can use the Distributive Property to multiply mentally.

Example A. Evaluate 7×53.

7×53

Break 53 apart into $50 + 3$. $7 \times (50 + 3)$

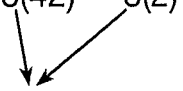
Then distribute the 7 to each part. $(7 \times 50) + (7 \times 3)$

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. 5×40

Multiply the difference by 5. 200

Find each missing number.

1. $8 \times (30 + 2) = (8 \times$ _____ $) + (8 \times 2)$

2. $(6 \times$ _____ $) - (6 \times 7) = 6 \times (37 - 7)$

3. $8(28) = 8(20) + 8($ _____ $)$

4. $3(22) + 3(4) = 3($ _____ $) + 3(6)$

Use the Distributive Property and mental math to evaluate.

5. $6(24)$ _____

6. $4(13) - 4(3)$ _____

7. $7(24 + 6)$ _____

8. $2(72)$ _____

9. $9(12) + 9(3)$ _____

10. $5(24 - 3)$ _____

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

_____

Name _____

Step-Up 1
Practice

The Distributive Property

Find each missing number.

1. $8 \times (30 + 2) = (8 \times$ _____ $) + (8 \times 2)$

2. $8(94) = 8($_____$) + 8(4)$

3. $5(45 + 5) = 5($_____$)$

4. $9(42) - 9(4) = 9(30) + 9($_____$)$

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).

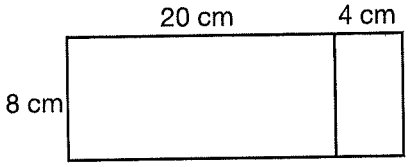
_____

_____

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 _____

Step-Up 2
Reteaching

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.

1. a number *m* **divided by** 6 _____

2. the **sum** of 4 and a number *n* _____

3. 4 **times** a number *p* _____

4. a number *n* **divided into** 7 _____

5. 3 **less than** a number *r* _____

6. *a* fewer grapes than 12 _____

7. *q* sandwiches at $8 each _____

8. Each fourth grader has 5 notebooks. Write an algebraic expression to represent the number of notebooks the entire class has.

Identify the operation. _____ Write the expression. _____

9. **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.

_____

_____

Name _____

Step-Up 2
Practice

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 _____

Step-Up 3
Reteaching

Using Patterns to Divide

You can use basic facts and patterns to divide mentally.

Using basic facts

What is 140 ÷ 70?

Think: **140** ÷ **70** is the same as **14** tens ÷ 7 tens.

14 ÷ 7 = 2

So, 140 ÷ 70 = 2.

Using patterns

What is 4,200 ÷ 70?

4,200 ÷ 70 is the same as 420 ÷ 7.

Think: 42 ÷ 7 = 6, so 420 ÷ 7 = 60.

So, 4,200 ÷ 70 = 60.

Find each quotient. Use mental math.

1. 210 ÷ 70 = _____

2. 360 ÷ 30 = _____

3. 400 ÷ 80 = _____

4. 1,200 ÷ 60 = _____

5. 4,000 ÷ 40 = _____

6. 4,800 ÷ 80 = _____

7. 2,700 ÷ 30 = _____

8. 3,500 ÷ 50 = _____

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

_____

_____

_____

10. Writing to Explain Explain how you can use mental math to determine that 28,000 ÷ 70 = 400.

_____

_____

_____

Name _____

Step-Up 3
Practice

Using Patterns to Divide

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

1. 160 ÷ 40 = 16 tens ÷ 4 tens = _____

2. 6,300 ÷ 70 = 630 tens ÷ 7 tens = _____

3. 140 ÷ 70 = 14 tens ÷ 7 tens = _____

4. 3,700 ÷ 10 = 370 tens ÷ 1 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 ÷ 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 _____

Step-Up 4
Reteaching

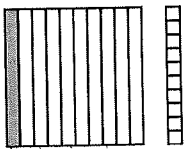
Connecting Decimal and Whole Number Numeration

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.<u>6</u>05
place value: _____

total value: _____

2. <u>2</u>,348.56
place value: _____

total value: _____

3. 449.65<u>4</u>
place value: _____

total value: _____

4. 3<u>4</u>8.56
place value: _____

total value: _____

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

_____

_____

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.

_____

Name _____

Step-Up 4
Practice

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?

_____

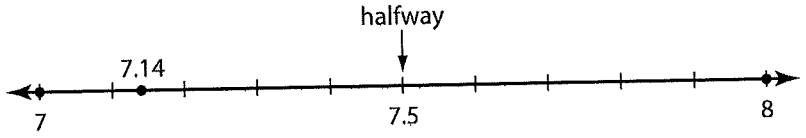
_____

Name _____

Step-Up 5
Reteaching

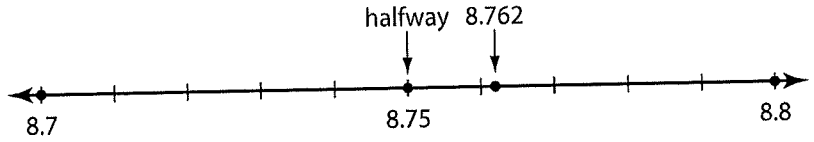
Rounding Decimals

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.<u>7</u>234

_____

2. <u>4</u>.526

_____

3. 3.86<u>2</u>9

_____

4. 25.<u>1</u>47

_____

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

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

_____

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.

_____

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

_____

Name _____

Step-Up 5
Practice

Rounding Decimals

Round each number to the place of the underlined digit.

1. 17.<u>2</u>3 _____

2. 56<u>9</u>.1 _____

3. 2.17<u>8</u>5 _____

4. 26.<u>0</u>62 _____

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 _____

Step-Up 6
Reteaching

Estimating Quotients with 2-Digit Divisors

You can use compatible numbers to estimate a quotient.

Estimate 228 ÷ 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 ÷ 20 is the same as
20 tens ÷ 2 tens.

20 ÷ 2 = 10
So, 200 ÷ 20 = 10.

Estimate each quotient using compatible numbers.

1. 540 ÷ 91 _____

2. 2,777 ÷ 74 _____

3. 29,952 ÷ 98 _____

4. 288 ÷ 37 _____

5. 1,784 ÷ 32 _____

6. 6,127 ÷ 32 _____

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

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

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

_____

_____

Name _____

Step-Up 6
Practice

Estimating Quotients with 2-Digit Divisors

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

1. 198 ÷ 41 = _____

2. 202 ÷ 52 = _____

3. 1,745 ÷ 63 = _____

4. 7,810 ÷ 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 ÷ 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 ÷ 44?

A 3 **B** 13 **C** 30 **D** 300

9. Explain how to estimate 425 ÷ 8.

_____

_____

_____

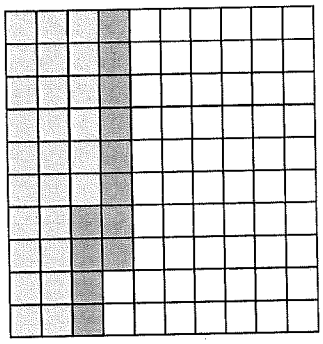
Name _____

Step-Up 7
Reteaching

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.

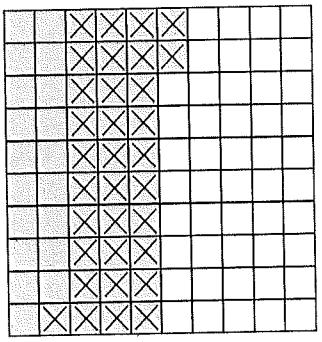
Step 2: Use a different color. Shade 12 squares to show 0.12.

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.

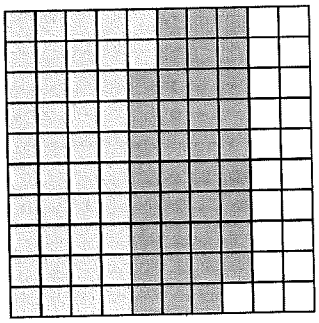
Step 2: Cross out 33 squares to show 0.33.

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

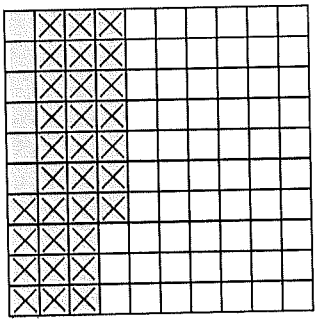
So, 0.52 − 0.33 = 0.19.

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

1. 0.42 + 0.37 = _____



2. 0.37 − 0.31 = _____



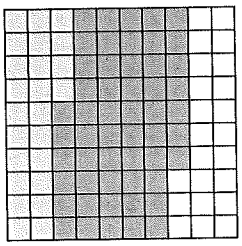
Name _____

Step-Up 7
Practice

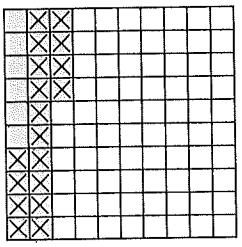
Modeling Addition and Subtraction of Decimals

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 _____

Step-Up 8
Reteaching

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?
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. **Check** To divide a whole number by a fraction, multiply the whole number by the reciprocal of the fraction.	**2** = **1** + **1** $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ + $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ **6** $2 \div \frac{1}{3} = 2 \times \frac{3}{1} = \frac{2}{1} \times \frac{3}{1} = \frac{6}{1} = 6$

$3 \div \frac{3}{4}$	Think: How can I divide three into three-fourths?
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. **Check** Multiply the whole number by the reciprocal of the fraction.	**3** = **1** + **1** + **1** $\frac{3}{4} + \frac{1}{4}$ + $\frac{3}{4} + \frac{1}{4}$ + $\frac{3}{4} + \frac{1}{4}$ $\frac{3}{4} + \frac{3}{4} + \frac{3}{4}$ + $\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ $\frac{3}{4} + \frac{3}{4} + \frac{3}{4}$ + $\frac{3}{4}$ **4** $3 \div \frac{3}{4} = 3 \times \frac{4}{3} = \frac{3}{1} \times \frac{4}{3} = \frac{12}{3} = 4$

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

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

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

Name _____

Step-Up 8
Practice

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 _____

Step-Up 9
Reteaching

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.

$\frac{12}{3} = 4$ 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. $\frac{2}{3} \times 30 =$ _____

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

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

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

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

5. What is $\frac{2}{7}$ the speed of a cheetah? _____

6. What is $\frac{1}{5}$ the speed of a lion? _____

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

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

Name _____

Step-Up 9
Practice

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 _____

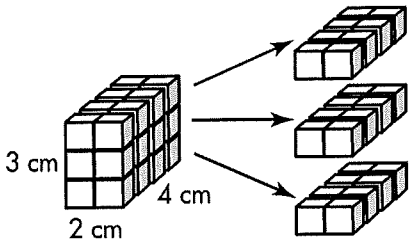
Step-Up 10
Reteaching

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.

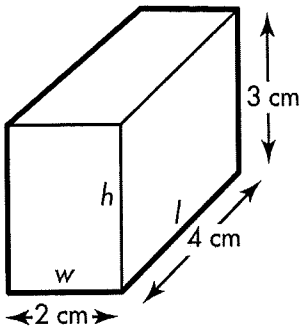
8 cubes $\times$ 3 = 24 cubes

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 $V = l \times w \times h$.

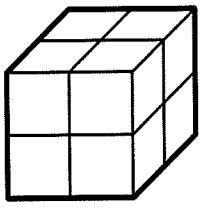


V = 2 cm $\times$ 4 cm $\times$ 3 cm

V = 24 cm^3

Find the volume of each rectangular prism.

1.



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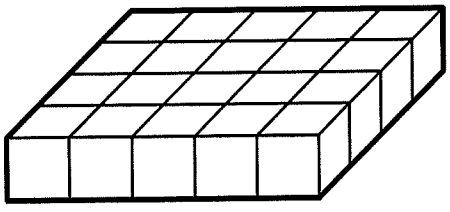
2.



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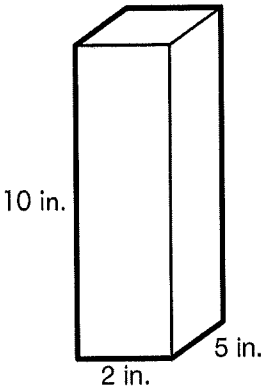
3.



_____

Name _____

Step-Up 10
Practice

Volume

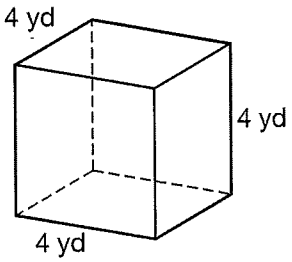
Find the volume of each rectangular prism.

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 _____

4.



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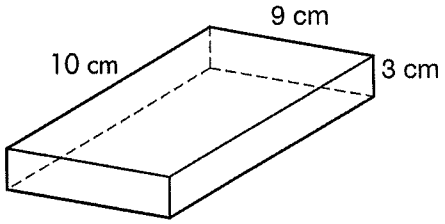
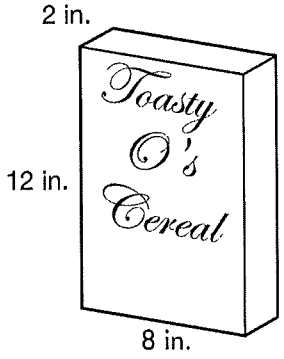
5.



_____

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.



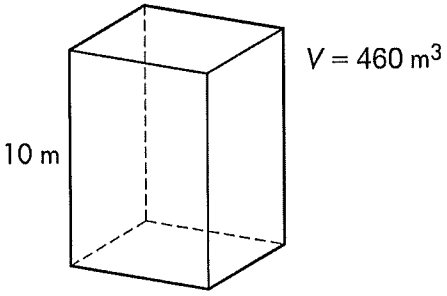
7. What is the base area of the box?

_____

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 m^2

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

_____