

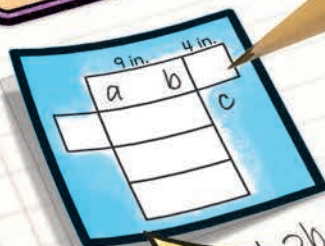
Interactive Notebooks

Grade
6

MATH



Surface Area
the SUM of the areas of each face



SA = $2bc + 2a$
Number of Faces

6

Surface Area

$$A = 150 \text{ in.}^2$$

Name of Shape

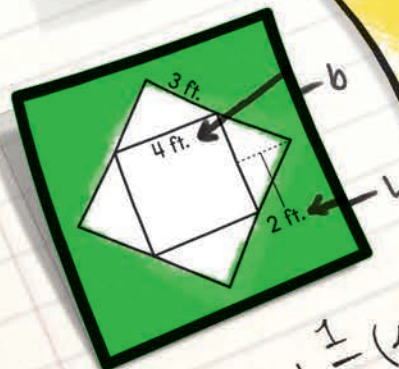
cube

Show Your Work

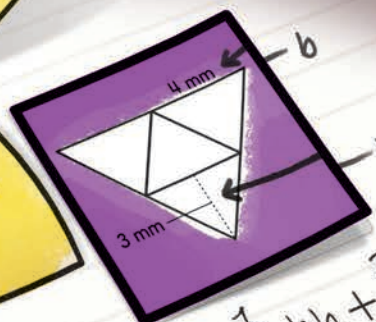
$$= 5^2 \times 6$$

$$= 25 \times 6$$

$$= 150$$



$$A = b^2 + \frac{1}{2}(4bl)$$



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

- Ideal for organizing information and applying learning
- Perfect for addressing the needs of individual learners
- Includes step-by-step instructions for each page
- Great for introducing new math topics

Multi-Digit Division

Introduction

Write $6\overline{)96}$ and $8\overline{)216}$ on the board. Have students work with partners to solve each problem. Discuss the various strategies that were used to solve each problem.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Multi-Digit Division pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Partial Quotient* and *Area Models* flaps. Apply glue to the gray glue section of the *Area Models* flap and place the *Partial Quotient* flap on top of it so that the left flaps align. Apply glue to the back of the left section of the flap book and attach it to the top left side of the page.
4. On each flap, show step-by-step examples of how to use each strategy for multi-digit division. Under the *Area Models* flap, note any helpful information about each strategy.
5. Cut out the *Standard Algorithm* flap book. Cut on the solid lines to create five flaps. Apply glue to the back of the left section and attach it the top right side of the page.
6. Under each flap, write a description of the step. (Step 1: Rewrite the problem if necessary. Step 2: Divide the first part of the dividend by a one-digit number. Step 3: Write the product under the first part of the dividend. Step 4: Subtract the product. Step 5: Drop down the next part of the dividend and repeat the process until the quotient is found.)
7. Solve the example problem. If desired, color code the flaps and each step of the process to match.
8. Cut out the *Practice* piece and glue it to the bottom left side of the page.
9. Use the standard algorithm to solve each problem on the right side of the page.

Multi-Digit Division

Partial Quotient

$$\begin{array}{r}
 84 \overline{) 64,008} \\
 \underline{- 42,000} \quad 500 \\
 22,008 \\
 \underline{- 16,800} \quad 200 \\
 5,208 \\
 \underline{- 4,200} \quad 50 \\
 1,008 \\
 \underline{- 1,008} \quad 12 \\
 0
 \end{array}$$

Standard Algorithm

$$\begin{array}{r}
 64,008 \div 84 \\
 \underline{762} \\
 84 \overline{) 64,008} \\
 \underline{- 588} \\
 520 \\
 \underline{- 504} \\
 168 \\
 \underline{- 168} \\
 0
 \end{array}$$

Steps

Step 1

Step 2

Step 3

Step 4

Step 5

Practice

1. $777 \div 21$	1. $21 \overline{) 777}$	2. $13 \overline{) 1,209}$
2. $1,209 \div 13$	$\underline{- 63}$	$\underline{- 117}$
3. $2,158 \div 26$	$\underline{147}$	$\underline{39}$
4. $3,822 \div 21$	$\underline{- 147}$	$\underline{- 39}$
	$\underline{0}$	$\underline{0}$

Reflect on Learning

To complete the left-hand page, have students use all three strategies to solve $22\overline{)7128}$ and explain which strategy they prefer and why.

Answer Key:

1. 37; 2. 93; 3. 83; 4. 182

Multi-Digit Division

Practice

1. $777 \div 21$

2. $1,209 \div 13$

3. $2,158 \div 26$

4. $3,822 \div 21$

Standard
Algorithm

$64,008 \div 84$

Step 1

Step 2

Step 3

Step 4

Step 5

Partial Quotient

Solving Division Problems

$$\begin{array}{r} 84 \overline{) 64,008} \\ \underline{000} \\ 000 \\ \underline{000} \\ 000 \\ \underline{000} \\ 000 \end{array}$$

Area Models

$64,008 \div 84$



84

glue

Adding and Subtracting Decimals

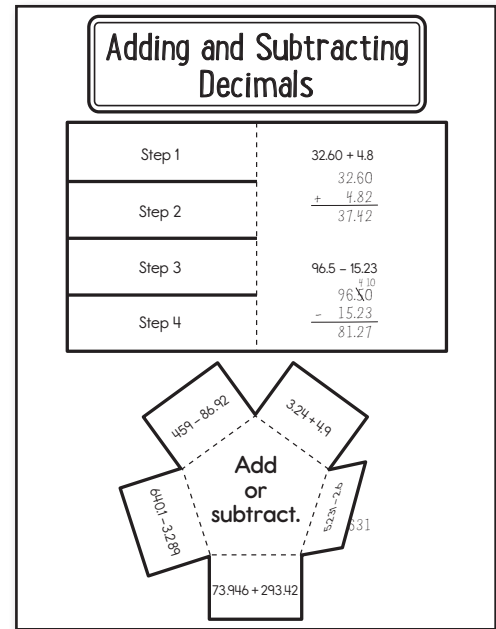
Introduction

Review adding multi-digit numbers by aligning digits with regard to place value. Write $234 + 46$ on the board in a vertical format with the first digit of each number aligned. Ask students why an addition problem cannot be solved in this way. Have students work with partners to explain and share ideas with the class.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Adding and Subtracting Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the rectangular flap book. Cut on the solid lines to create four flaps. Apply glue to the back of the right section and attach it below the title.
4. Under each flap, write a description of the step. (1. Line up decimals vertically. 2. Add a zero to the end (after the decimal) if necessary. 3. Beginning with the lowest place value, add or subtract from right to left. 4. Bring down the decimal.)
5. Solve the example problem. If desired, color code the flaps and each step of the process to match.
6. Cut out the *Add or* flap book. Apply glue to the back of the pentagon-shaped center section and attach it to the bottom of the page.
7. Solve each problem and write the sum or difference under the flap.



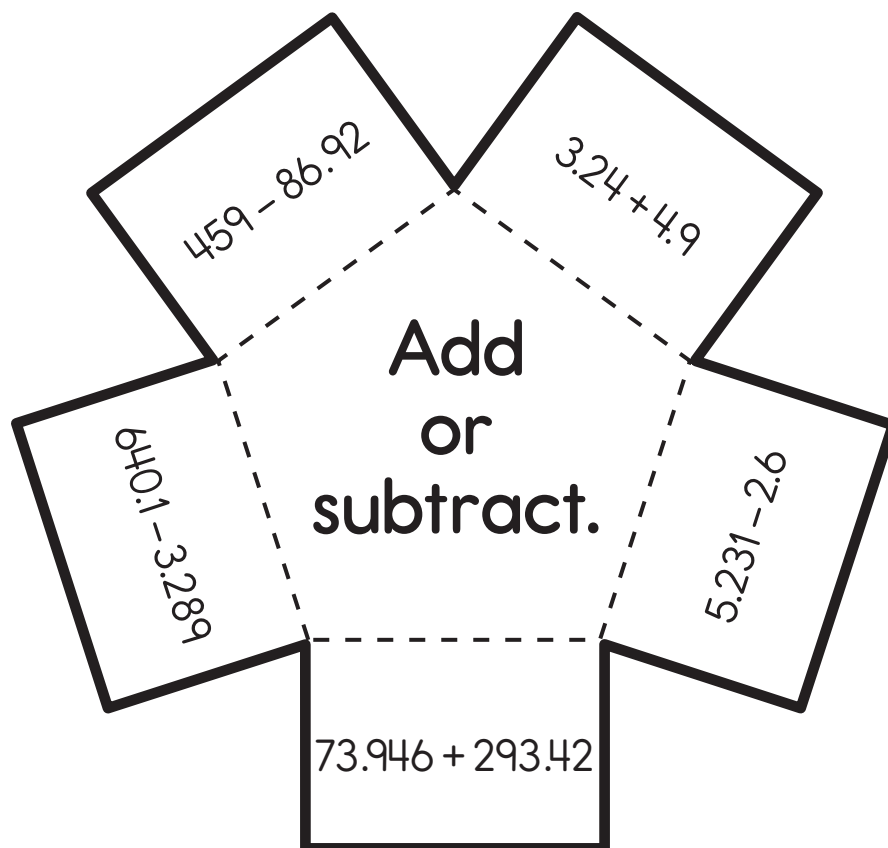
Reflect on Learning

To complete the left-hand page, have students create two decimal numbers using the digits from their birthdays and other common numbers such as a lunch number or phone number. Then, they should use the numbers they create to model both an addition and subtraction problem using the four steps.

Answer Key

Clockwise from top right: 8.14; 2.631; 367.366; 636.811; 372.08

Adding and Subtracting Decimals



Step 1	32.60 + 4.8
Step 2	
Step 3	96.5 - 15.23
Step 4	

Multiplying and Dividing Decimals

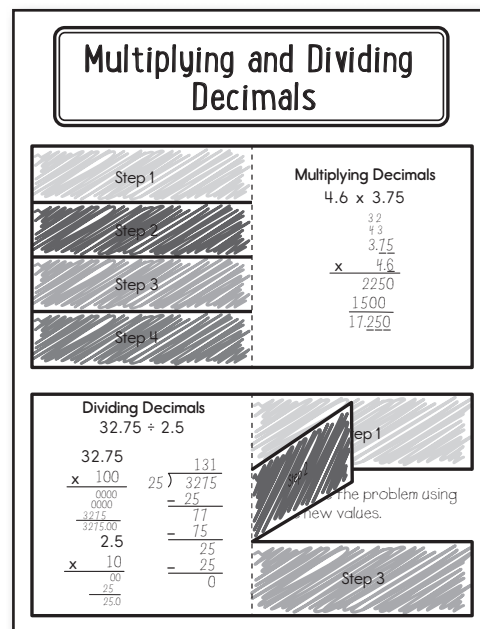
Introduction

Review the standard algorithm for multiplying multi-digit numbers by writing 35×76 on the board. Students should solve the problem and then explain how they solved it. Then, review the parts of a division problem by writing $15 \div 3 = 5$ on the board. Students should label the numbers in the problem with *dividend*, *divisor*, and *quotient*.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Multiplying and Dividing Decimals pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Multiplying Decimals* flap book. Cut on the solid lines to create four flaps. Apply glue to the back of the right section and attach it below the title.
4. Under each flap, write a description of the step. (1. Line up the last digit of each number vertically. 2. Use the standard algorithm to multiply the numbers. 3. Count to find the total number of digits after the decimals in the problem. 4. Count from right to left the same number of places to add a decimal to the product.)
5. Color each flap a different color. Then, solve the example problem and color code each step of the process to match the flaps.
3. Cut out the *Dividing Decimals* flap book. Cut on the solid lines to create three flaps. Apply glue to the back of the left section and attach it to the bottom of the page.
4. Under each flap, write a description of the step. (1. Multiply both the divisor and dividend by a power of 10 to remove the decimal from the divisor. 2. Rewrite the problem using the new values. 3. Find the quotient.)
5. Color each flap a different color. Then, solve the example problem and color code each step of the process to match the flaps.



Reflect on Learning

To complete the left-hand page, have students think of a real-life situation when it would be necessary to use multiplication or division of decimals. Then, they should explain each situation.

Multiplying and Dividing Decimals

Step 1	<p>Multiplying Decimals</p> <p>4.6 x 3.75</p> <p>x _____</p>
Step 2	
Step 3	
Step 4	

<p>Dividing Decimals</p> <p>32.75 ÷ 2.5</p> <p>32.75</p> <p>x _____) _____</p> <p>_____</p> <p>2.5</p> <p>x _____ = _____</p> <p>_____</p>	<p>Step 1</p>
	<p>Step 2</p>
	<p>Step 3</p>

Greatest Common Factor and Least Common Multiple

Each student will need a brass paper fastener to complete this page.

Introduction

Review factors and multiples. Explain that factors are numbers that divide evenly into a number. Have students work with partners to list the factors of 24 (1, 2, 3, 4, 6, 8, 12, 24). Then, explain that to find multiples of a number, they must multiply the number by another number. Have students work with partners to find the first five multiples of 8 (8, 16, 24, 32, 40).

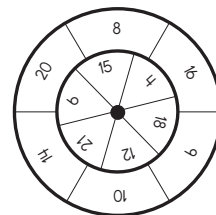
Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Greatest Common Factor and Least Common Multiple pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the rectangle with the definitions. Fold in on the dashed line to create a book. Apply glue to the back of the book and attach it to the top left the page.
4. Write *Definitions* on the front of the book. Complete the sentences in the book. (The **Greatest Common Factor** is the largest **magnitude** number that can **divide** two numbers. The **Least Common Multiple** is the **smallest** quantity that is a **multiple** of **two** or more numbers.)
5. Cut out the circles and place the smaller numbered circle on top of the large circle. Place the gray glue circle on the bottom with the gray side facing out. Push a brass paper fastener through the center of the circles to attach them. It may be helpful to create a hole in each piece separately first. Apply glue to the gray glue section. Attach it to the top right of the page. Do not press the brass paper fastener through the page. Both number circles should spin freely.
6. Cut out the four-column table and glue it to the bottom of the page.
7. Spin the number circles to create four number combinations. Write them on the table. Then, find the greatest common factor and least common multiple for each combination.

Greatest Common Factor and Least Common Multiple

Definitions

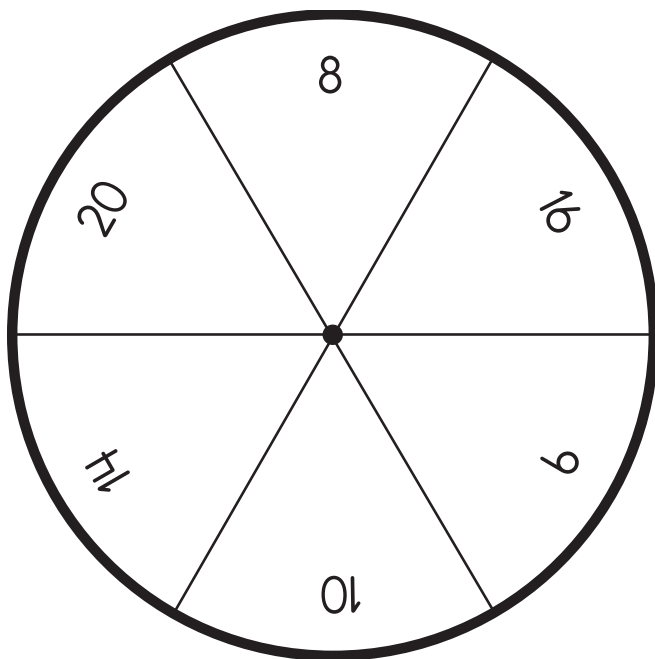
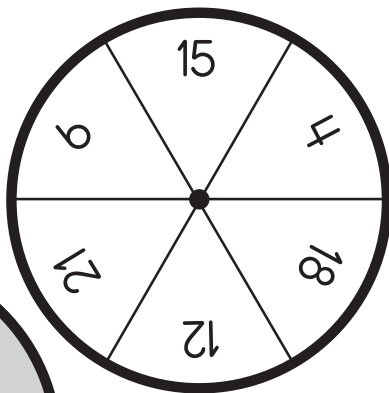


First Number	Second Number	Greatest Common Factor	Least Common Multiple
8	4	2	8
20	15	5	60
14	6	2	42
9	12	3	36

Reflect on Learning

To complete the left-hand page, find the least common multiple between your age and your grade level. Then, find the greatest common factor between your age and your math teacher's room number. Explain how you found both answers.

Greatest Common Factor and Least Common Multiple



The _____ Common
_____ is the
largest _____ number
that can _____
two numbers.

The _____ Common
_____ is the
_____ quantity that
is a _____ of
_____ or more numbers.

First Number	Second Number	Greatest Common Factor	Least Common Multiple

The Distributive Property

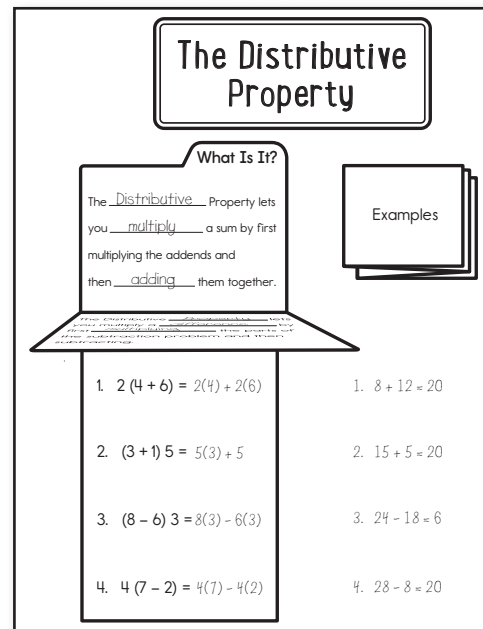
Introduction

Write $8 \times (4 + 2)$ on the board. Have students work with partners to solve the problem using order of operations. Explain that the distributive property can also be used to solve similar problems.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the The Distributive Property pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *What Is It?* mini file folder. Fold it in half on the dashed line. Apply glue to the back and attach it to the top left side of the page.
4. Complete the sentences in the mini file folder. (The **Distributive** Property lets you **multiply** a sum by first multiplying the addends and then **adding** them together. The Distributive **Property** lets you multiply a **difference** by first **multiplying** the parts of the **subtraction** problem and then subtracting.)
4. Cut out the accordion fold piece. Starting with the end that says *Examples*, fold the pieces back and forth to create an accordion with *Examples* on top. Apply glue to the back of the last flap and attach it to the top right side of the page.
5. Show how each of the examples can be rewritten to use the distributive property.
6. Cut out the numbered rectangle and glue it to the left side of the bottom of the page.
7. Rewrite each problem using the distributive property. Then, solve it. Show your work on the right side of the page.

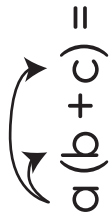


Reflect on Learning

To complete the left-hand page, have students explain why the distributive property is helpful in solving math problems.

Answer Key

1. 20; 2. 20; 3. 6; 4. 20



$$a(b + c) =$$



$$a(b - c) =$$



$$(b + c) a =$$



$$(b - c) a =$$

Examples

The Distributive Property

What Is It?

The _____ Property lets you _____ a sum by first multiplying the addends and then _____ them together.

The Distributive _____ lets you multiply a _____ by first _____ the parts of the subtraction problem and then subtracting.

1. $2(4 + 6) =$

2. $(3 + 1) 5 =$

3. $(8 - 6) 3 =$

4. $4(7 - 2) =$