Name _____

Multiply 3-Digit and 4-Digit Numbers with Regrouping

Essential Question How can you use regrouping to multiply?

Common Core **Number and Operations in Base Ten—4.NBT.B.5**

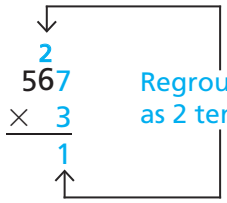
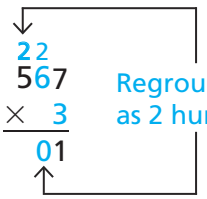
MATHEMATICAL PRACTICES
MP4, MP8

Unlock the Problem

Alley Spring, in Missouri, produces an average of 567 million gallons of water per week. How many million gallons of water do the springs produce in 3 weeks?

Multiply. 3 × 567

Estimate. 3 × _____ = _____

THINK	RECORD
STEP 1 Multiply the ones. 3 × 7 ones = _____ ones Regroup the 21 ones.	 2 567 × 3 1 Regroup the 21 ones as 2 tens and 1 one.
STEP 2 Multiply the tens. 3 × 6 tens = _____ tens Add the regrouped tens. 18 tens + 2 tens = 20 tens Regroup the 20 tens.	 22 567 × 3 01 Regroup 20 tens as 2 hundreds 0 tens.
STEP 3 Multiply the hundreds. 3 × 5 hundreds = _____ hundreds Add the regrouped hundreds. 15 hundreds + 2 hundreds = 17 hundreds	22 567 × 3 1,701 17 hundreds is the same as 1 thousand 7 hundreds.

So, Alley Spring produces _____ million gallons of water in 3 weeks.

Example

Use an estimate or an exact answer.

The table shows the prices of three vacation packages. Jake, his parents, and his sister want to choose a package.

Lakefront Vacations

	Adult	Child
Package A	$1,299	$619
Package B	$849	$699
Package C	$699	$484

A About how much would Package C cost Jake's family?

STEP 1

Estimate the cost for 2 adults.

$2 \times \$699$

↓

$2 \times \$700 =$ _____

STEP 2

Estimate the cost for 2 children.

$2 \times \$484$

↓

$2 \times \$500 =$ _____

STEP 3

Add to estimate the total cost.

$$\begin{array}{r} \square \\ + \quad \square \\ \hline \square \end{array}$$

So, Package C would cost Jake's family about $2,400.

Math Talk MATHEMATICAL PRACTICES 1

Analyze How did you use the information to know that you needed an estimate?

B Jake's family wants to compare the total costs of Packages A and C. Which plan costs more? How much more does it cost?

Package A

Adults	Children	Total Cost
$\$1{,}299$	$\$619$	
$\times \quad 2$	$\times \quad 2$	$+$

Package C

Adults	Children	Total Cost
$\$699$	$\$484$	
$\times \quad 2$	$\times \quad 2$	$+$

Subtract to compare the total costs of the packages.

$$\begin{array}{r} \$3{,}836 \\ -\ \$2{,}366 \\ \hline \square \end{array}$$

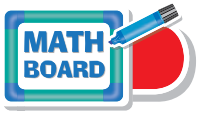
So, Package _____ would cost _____ more than Package _____.

Math Talk MATHEMATICAL PRACTICES 1

Make Sense of Problems How did you use the information to know that you needed an exact answer?

Name _____

Share and Show



1. Tell what is happening in Step 1 of the problem.

_____

_____

STEP 1	STEP 2	STEP 3	STEP 4
$\overset{2}{1,274}$	$\overset{42}{1,274}$	$\overset{1\,42}{1,274}$	$\overset{1\,42}{1,274}$
$\times \quad 6$	$\times \quad 6$	$\times \quad 6$	$\times \quad 6$
4	44	644	$7,644$

Estimate. Then find the product.

2. Estimate: _____

$$\begin{array}{r} 603 \\ \times \quad 4 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 1,935 \\ \times \quad 7 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} \$8,326 \\ \times \quad 5 \\ \hline \end{array}$$

MATHEMATICAL PRACTICES 6

Explain how you can use estimation to find how many digits the product $4 \times 1,861$ will have.

On Your Own

Estimate. Then find the product.

5. Estimate: _____

$$\begin{array}{r} \$3,316 \\ \times \quad 8 \\ \hline \end{array}$$

6. Estimate: _____

$$\begin{array}{r} \$2,900 \\ \times \quad 7 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} \$4,123 \\ \times \quad 6 \\ \hline \end{array}$$

8. GO DEEPER Mr. Jackson has $5,400 to buy supplies for the school computer lab. He buys 8 boxes of printer ink that cost $149 each and 3 printers that cost $1,017 each. How much money will Mr. Jackson have left after he buys the printer ink and printers?

_____

Practice: Copy and Solve **Compare. Write <, >, or =.**

9. $5 \times 352 \bigcirc 4 \times 440$

10. $6 \times 8,167 \bigcirc 9,834 \times 5$

11. $3,956 \times 4 \bigcirc 5 \times 7,692$

12. $740 \times 7 \bigcirc 8 \times 658$

13. $4 \times 3,645 \bigcirc 5 \times 2,834$

14. $6,573 \times 2 \bigcirc 4,365 \times 3$

Problem Solving • Applications Real World

15. GO DEEPER Airplane tickets to Fairbanks, Alaska, will cost $958 each. Airplane tickets to Vancouver, Canada, will cost $734. How much can the four members of the Harrison family save on airfare by vacationing in Vancouver?

WRITE Math • Show Your Work

16. THINK SMARTER Philadelphia, Pennsylvania, is 2,147 miles from Salt Lake City, Utah, and 2,868 miles from Portland, Oregon. What is the difference in the round-trip distances between Philadelphia and each of the other two cities? Explain whether you need an estimate or an exact answer.

17. MATHEMATICAL PRACTICE 3 **Verify the Reasoning of Others**
Joe says that the product of a 4-digit number and a 1-digit number is always a 4-digit number. Does Joe's statement make sense? Explain.

18. THINK SMARTER What number is 150 more than the product of 5 and 4,892? Explain how you found the answer.

Name _____

Multiply 3-Digit and 4-Digit Numbers with Regrouping

Common Core

COMMON CORE STANDARD—4.NBT.5
Use place value understanding and properties of operations to perform multi-digit arithmetic.

Estimate. Then find the product.

1. Estimate: 4,000

1 2 2
1,467
× 4
5,868

2. Estimate: _____

5,339
× 6

3. Estimate: _____

$879
× 8

4. Estimate: _____

3,182
× 5

5. Estimate: _____

4,616
× 3

6. Estimate: _____

$2,854
× 9

7. Estimate: _____

7,500
× 2

8. Estimate: _____

948
× 7

Problem Solving Real World

9. Lafayette County has a population of 7,022 people. Columbia County's population is 8 times as great as Lafayette County's population. What is the population of Columbia County?

_____

10. A seafood company sold 9,125 pounds of fish last month. If 6 seafood companies sold the same amount of fish, how much fish did the 6 companies sell last month in all?

_____

11. WRITE Math Explain how finding 4 × 384 can help you find 4 × 5,384. Then find both products.

_____

_____

_____

Lesson Check (4.NBT.B.5)

1. By recycling 1 ton of paper, 6,953 gallons of water are saved. How many gallons of water are saved by recycling 4 tons of paper?

2. Esteban counted the number of steps it took him to walk to school. He counted 1,138 steps. How many steps does he take walking to and from school each day?

Spiral Review (4.NBT.A.2, 4.NBT.A.3, 4.NBT.B.4, 4.NBT.B.5)

3. A website has 13,406 people registered. What is the word form of this number?

4. In one year, the McAlister family drove their car 15,680 miles. To the nearest thousand, how many miles did they drive their car that year?

5. Connor scored 14,370 points in a game. Amy scored 1,089 fewer points than Connor. How many points did Amy score?

6. Lea buys 6 model cars that each cost $15. She also buys 4 bottles of paint that each cost $11. How much does Lea spend on model cars and paint?

FOR MORE PRACTICE GO TO THE Personal Math Trainer