

Name _____

Multiply 3-Digit and 4-Digit Numbers with Regrouping

I Can multiply whole numbers using estimation, rounding and place value.

Florida's B.E.S.T.

- Number Sense & Operations 4.NSO.2.2, 4.NSO.2.1, 4.NSO.2.5
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.6.1



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. $3 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$



THINK

STEP 1

Multiply the ones.

3×7 ones = ones

Regroup the 21 ones.

RECORD

$$\begin{array}{r} \downarrow \\ 2 \\ 567 \\ \times 3 \\ \hline 1 \end{array}$$

Regroup the 21 ones as 2 tens 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.

$$\begin{array}{r} \downarrow \\ 22 \\ 567 \\ \times 3 \\ \hline 01 \end{array}$$

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

$$\begin{array}{r} 22 \\ 567 \\ \times 3 \\ \hline 1,701 \end{array}$$

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.

Many organisms move from one place to another. This movement is called migration. The table shows how far different organisms have migrated.

Organism Migration

Organism	Miles
caribou	838
humpback whale	3,786
bat	325
monarch butterfly	1,299



A About how far will a caribou and a humpback whale travel in 2 migrations?

STEP 1

Estimate the distance for the caribou.

$$2 \times 838$$



$$2 \times 800 = \underline{\hspace{2cm}}$$

STEP 2

Estimate the distance for the humpback whale.

$$2 \times 3,786$$



$$2 \times 4,000 = \underline{\hspace{2cm}}$$

STEP 3

Add to estimate the total distance.

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

So, in 2 migrations, a caribou and a humpback whale will travel about 9,600 miles.

Math Talk

MTR 4.1 Engage in discussions on mathematical thinking.

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

B Which pair of organisms travel farther in 2 migrations: a bat and a monarch butterfly or a caribou and a humpback whale? How much farther?

Bat

Monarch butterfly

Total Distance

$$\begin{array}{r} 325 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 1,299 \\ \times 2 \\ \hline \end{array}$$

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

Caribou

Humpback whale

Total Distance

$$\begin{array}{r} 838 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3,786 \\ \times 2 \\ \hline \end{array}$$

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

Subtract to compare the total distances.

$$\begin{array}{r} 9,248 \\ - 3,248 \\ \hline \end{array}$$

Math Talk

MTR 3.1 Complete tasks with mathematical fluency.

How did you use the information to know that you needed an exact answer?

So, the _____ would migrate _____ miles farther than the _____.

Share and Show



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

STEP 1

$$\begin{array}{r} 1,2\overset{2}{7}4 \\ \times \quad \overset{6}{4} \\ \hline \end{array}$$

STEP 2

$$\begin{array}{r} 1,2\overset{42}{7}4 \\ \times \quad \quad \overset{6}{44} \\ \hline \end{array}$$

STEP 3

$$\begin{array}{r} 1\overset{142}{,}274 \\ \times \quad \quad \quad \overset{6}{644} \\ \hline \end{array}$$

STEP 4

$$\begin{array}{r} 1\overset{142}{,}274 \\ \times \quad \quad \quad \overset{6}{7,644} \\ \hline \end{array}$$

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: _____

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

Math Talk

MTR 3.1

Complete tasks with mathematical fluency.

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. Mr. Xiang 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. Xiang have left after he buys the printer ink and printers?

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

9. 5×352 ○ 4×440

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

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

12. 740×7 ○ 8×658

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

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

Problem Solving • Applications

15. 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?

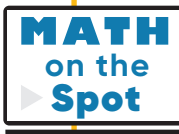
16. Philadelphia, Pennsylvania, is 2,147 miles from Salt Lake City, Utah, and 2,868 miles from Portland, Oregon. What is the difference in the round-trip distances between Philadelphia and each of the other two cities? Explain whether you need an estimate or an exact answer.

17. **MTR** Vahe says that the product of a 4-digit number and a 1-digit number is always a 4-digit number. Does Vahe's statement make sense? Explain.

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

Show the Math

Demonstrate Your Thinking



Multiply 3-Digit and 4-Digit Numbers with Regrouping

Go Online

Interactive Examples

Estimate. Then find the product.

1. Estimate: 4,000

$$\begin{array}{r} 1\ 2\ 2 \\ 1,467 \\ \times \quad 4 \\ \hline 5,868 \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 5,339 \\ \times \quad 6 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} \$879 \\ \times \quad 8 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} 3,182 \\ \times \quad 5 \\ \hline \end{array}$$

5. Estimate: _____

$$\begin{array}{r} 4,616 \\ \times \quad 3 \\ \hline \end{array}$$

6. Estimate: _____

$$\begin{array}{r} \$2,854 \\ \times \quad 9 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} 7,500 \\ \times \quad 2 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 948 \\ \times \quad 7 \\ \hline \end{array}$$

Problem Solving

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 $4 \times 5,384$. Then find both products.

Lesson Check

12. 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?
13. 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

14. A website has 13,406 people registered. What is the word form of this number?
15. In one year, the Kumar family drove their car 15,680 miles. To the nearest thousand, how many miles did they drive their car that year?

16. Atohi scored 14,370 points in a game. Elu scored 1,089 fewer points than Atohi. How many points did Elu score?
17. 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?
