

Name _____

Multiply 2-Digit Numbers with Regrouping

Common Core Number and Operations in Base Ten—4.NBT.B.5 Also 4.OA.A.3
MATHEMATICAL PRACTICES
 MP1, MP4, MP7

Essential Question How can you use regrouping to multiply a 2-digit number by a 1-digit number?

Unlock the Problem

A Thoroughbred racehorse can run at speeds of up to 60 feet per second. During practice, Celia's horse runs at a speed of 36 feet per second. How far does her horse run in 3 seconds?

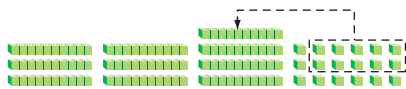
- Underline important information.
- Is there information you will not use? If so, cross out the information.

Example 1

Multiply. 3×36 Estimate. $3 \times 40 =$ _____

MODEL

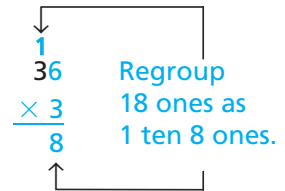
STEP 1



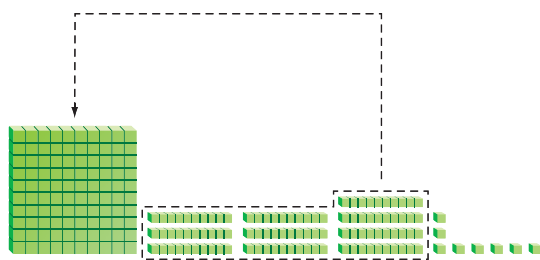
THINK

Multiply the ones.
 3×6 ones = 18 ones
 Regroup the 18 ones.

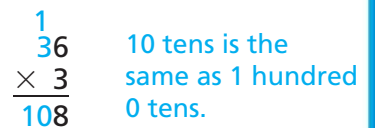
RECORD



STEP 2



Multiply the tens.
 3×3 tens = 9 tens
 Add the regrouped ten.
 9 tens + 1 ten = 10 tens



So, Celia's racehorse runs _____ feet in 3 seconds.

Since _____ is close to the estimate of _____, the answer is reasonable.



Math Talk

MATHEMATICAL PRACTICES 3

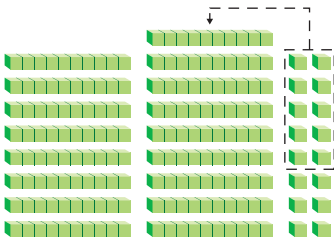
Apply Look at Step 1. How does the model support your work?

Example 2

Multiply. 8×22 Estimate. $8 \times 20 =$ _____

MODEL

STEP 1



THINK

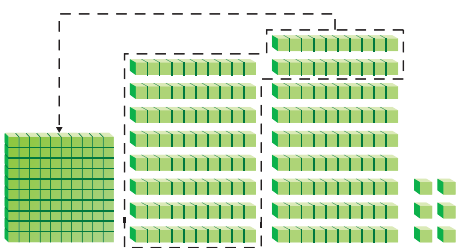
Multiply the ones.
 8×2 ones = 16 ones
 Regroup the 16 ones.

RECORD

$$\begin{array}{r} 1 \\ 22 \\ \times 8 \\ \hline 6 \end{array}$$

Regroup
16 ones as
1 ten 6 ones.

STEP 2



Multiply the tens.
 8×2 tens = 16 tens
 Add the regrouped ten.
 16 tens + 1 ten = 17 tens

$$\begin{array}{r} 1 \\ 22 \\ \times 8 \\ \hline 176 \end{array}$$

17 tens is
the same as 1
hundred 7 tens.

So, $8 \times 22 =$ _____. Since _____ is close to the estimate
of _____, it is reasonable.

Try This! Multiply. $7 \times \$68$

Estimate. $7 \times \$68$

Use partial products.

$$\begin{array}{r} \$ 68 \\ \times \quad 7 \\ \hline \end{array}$$

Use regrouping.

$$\begin{array}{r} \$ 68 \\ \times \quad 7 \\ \hline \end{array}$$

- MATHEMATICAL PRACTICE 7 Identify Relationships** Look at the partial products and regrouping methods above. How are the partial products 420 and 56 related to 476?

Name _____

Share and Show



1. Use the model to find the product.



$$2 \times 36 = \underline{\quad}$$

Estimate. Then record the product.

2. Estimate: _____

$$\begin{array}{r} 42 \\ \times 4 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 32 \\ \times 2 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} 81 \\ \times 5 \\ \hline \end{array}$$

5. Estimate: _____

$$\begin{array}{r} \$63 \\ \times 7 \\ \hline \end{array}$$

Math Talk

MATHEMATICAL PRACTICES 7

Look for Structure What are the steps for using place value and regrouping to find 3×78 ?

On Your Own

Estimate. Then record the product.

6. Estimate: _____

$$\begin{array}{r} 33 \\ \times 2 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} \$25 \\ \times 3 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 36 \\ \times 8 \\ \hline \end{array}$$

9. Estimate: _____

$$\begin{array}{r} \$94 \\ \times 5 \\ \hline \end{array}$$

Practice: Copy and Solve Estimate. Then record the product.

10. 3×82

11. 9×41

12. 6×75

13. $7 \times \$23$

14. $8 \times \$54$

MATHEMATICAL PRACTICE 7

Identify Relationships Algebra Write a rule. Find the unknown numbers.

15.

Carton	_____	1	2	3	4	5
Eggs	_____	12	24		48	

16.

Row	_____	2	3	4	5	6
Seats	_____	32	48	64		

17. **GO DEEPER** It will cost \$73 per hour to rent a sailboat and \$88 per hour to rent a ski boat. How much more will it cost to rent a ski boat than a sailboat for 4 hours?

Problem Solving • Applications



Use the table for 18–19.

18. **GO DEEPER** At the speeds shown, how much farther could a black-tailed jackrabbit run than a desert cottontail in 7 seconds?
-

19. A black-tailed jackrabbit hops about 7 feet in a single hop. How far can it hop in 5 seconds?
-

Running Speeds	
Animal	Speed (feet per second)
Black-tailed Jackrabbit	51
Desert Cottontail	22



▲ Desert Cottontail

20. **GO DEEPER** Mr. Wright bought a 3-pound bag of cat food and a 5-pound bag of dog food. There are 16 ounces in each pound. How many ounces of pet food did Mr. Wright buy?
-

21. **THINK SMARTER** The sum of two numbers is 31. The product of the two numbers is 150. What are the numbers?
-

22. **MATHEMATICAL PRACTICE 2 Use Reasoning** 6×87 is greater than 5×87 . How much greater? Explain how you know without multiplying.
-
-

WRITE *Math*
Show Your Work



23. **THINK SMARTER** Multiply 6×73 . For 23a–23d, select True or False for each statement.

23a. A reasonable estimate of the product is \$420. True False

23b. Using partial products, the products are 42 and 180. True False

23c. Using regrouping, 18 ones are regrouped as 8 tens and 1 one. True False

23d. The product is 438. True False

Name _____

Multiply 2-Digit Numbers with Regrouping



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

Estimate. Then record the product.

1. Estimate: 150 2. Estimate: _____ 3. Estimate: _____ 4. Estimate: _____

$$\begin{array}{r} 1 \\ 46 \\ \times 3 \\ \hline 138 \end{array}$$

$$\begin{array}{r} 32 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} \$55 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ \times 8 \\ \hline \end{array}$$

5. Estimate: _____ 6. Estimate: _____ 7. Estimate: _____ 8. Estimate: _____

$$\begin{array}{r} 37 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} \$18 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 95 \\ \times 8 \\ \hline \end{array}$$

Problem Solving



9. Sharon is 54 inches tall. A tree in her backyard is 5 times as tall as she is. The floor of her treehouse is at a height that is twice as tall as she is. What is the difference, in inches, between the top of the tree and the floor of the treehouse?
10. Mr. Diaz's class is taking a field trip to the science museum. There are 23 students in the class, and a student admission ticket is \$8. How much will the student tickets cost?

11. **WRITE** *Math* Compare partial products and regrouping. Describe how the methods are alike and different.

Lesson Check (4.NBT.B.5)

1. A ferryboat makes four trips to an island each day. The ferry can hold 88 people. If the ferry is full on each trip, how many passengers are carried by the ferry each day?

2. Julian counted the number of times he drove across the Seven Mile Bridge while vacationing in the Florida Keys. He crossed the bridge 34 times. How many miles in all did Julian drive crossing the bridge?

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

3. Sebastian wrote the population of his city as $300,000 + 40,000 + 60 + 7$. Write the population of Sebastian's city in standard form.

4. A plane flew 2,190 kilometers from Chicago to Flagstaff. Another plane flew 2,910 kilometers from Chicago to Oakland. How much farther did the plane that flew to Oakland fly than the plane that flew to Flagstaff?

5. Tori buys 27 packages of miniature racing cars. Each package contains 5 cars. About how many miniature racing cars does Tori buy?

6. Use the Distributive Property to write an expression equivalent to $5 \times (3 + 4)$.

