


Name _____

Multiply by 2-Digit Numbers**Essential Question** How do you multiply by 2-digit numbers?

UNLOCK the Problem

REAL WORLD

A tiger can eat as much as 40 pounds of food at a time but it may go for several days without eating anything. Suppose a Siberian tiger in the wild eats an average of 18 pounds of food per day. How much food will the tiger eat in 28 days if he eats that amount each day?


 Use place value and regrouping.
STEP 1 Estimate: 28×18 Think: $30 \times 20 =$ _____**STEP 2** Multiply by the ones.

$$\begin{array}{r} 28 \\ \times 18 \\ \hline \end{array}$$
 $28 \times 8 \text{ ones} =$ _____ ones

STEP 3 Multiply by the tens.

$$\begin{array}{r} 28 \\ \times 18 \\ \hline \end{array}$$
 $28 \times 1 \text{ ten} =$ _____ tens, or _____ ones

STEP 4 Add the partial products.

$$\begin{array}{r} 28 \\ \times 18 \\ \hline \leftarrow 28 \times 8 \\ + \leftarrow 28 \times 10 \\ \hline \end{array}$$

So, on average, a Siberian tiger may eat _____ pounds of food in 28 days.


Remember

Use patterns of zeros to find the product of multiples of 10.

$$3 \times 4 = 12$$

$$3 \times 40 = 120$$

$$30 \times 40 = 1,200$$

$$3 \times 400 = 1,200$$

$$300 \times 40 = 12,000$$

Example

A Siberian tiger sleeps as much as 18 hours a day, or 126 hours per week. About how many hours does a tiger sleep in a year? There are 52 weeks in one year.

STEP 1 Estimate: 126×52

Think: $100 \times 50 =$ _____

STEP 2 Multiply by the ones.

$$\begin{array}{r} 126 \\ \times 52 \\ \hline \end{array}$$

_____ 126×2 ones = _____ ones

STEP 3 Multiply by the tens.

$$\begin{array}{r} 126 \\ \times 52 \\ \hline \end{array}$$

_____ 126×5 tens = _____ tens, or _____ ones

STEP 4 Add the partial products.

$$\begin{array}{r} 126 \\ \times 52 \\ \hline \end{array}$$

← 126×2

← 126×50

+

So, a Siberian tiger sleeps about _____ hours in one year.

Math Talk **MATHEMATICAL PRACTICES**
Are there different numbers you could have used in Step 1 to find an estimate that is closer to the actual answer? **Explain.**



Name _____

Share and Show

Complete to find the product.

1.

| | | | |
|-------|---|---|---|
| | | 6 | 4 |
| | x | 4 | 3 |
| <hr/> | | | |
| | | | |
| | | | |
| <hr/> | | | |
| | | | |
| | | | |
| <hr/> | | | |
| | | | |
| | | | |

 ← $64 \times$ _____
← $64 \times$ _____

2.

| | | | | |
|-------|---|---|---|---|
| | | 5 | 7 | 1 |
| | x | | 3 | 8 |
| <hr/> | | | | |
| | | | | |
| | | | | |
| <hr/> | | | | |
| | | | | |
| | | | | |
| <hr/> | | | | |
| | | | | |
| | | | | |

 ← $571 \times$ _____
← $571 \times$ _____

Estimate. Then find the product.

3. Estimate: _____

$$\begin{array}{r} 24 \\ \times 15 \\ \hline \end{array}$$

 4. Estimate: _____

$$\begin{array}{r} 37 \\ \times 63 \\ \hline \end{array}$$

 5. Estimate: _____

$$\begin{array}{r} 384 \\ \times 45 \\ \hline \end{array}$$

On Your Own

Estimate. Then find the product.

6. Estimate: _____

$$\begin{array}{r} 28 \\ \times 22 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} 93 \\ \times 76 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 295 \\ \times 51 \\ \hline \end{array}$$

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

9. 54×31

10. 42×26

11. 38×64

12. 63×16

13. 204×41

14. 534×25

15. 722×39

16. 957×43

Problem Solving REAL WORLD

Use the table for 17–20.

17. How much sleep does a jaguar get in 1 year?

18. In 1 year, how many more hours of sleep does a giant armadillo get than a platypus?

19. **H.O.T.** Owl monkeys sleep during the day, waking about 15 minutes after sundown to find food. At midnight, they rest for an hour or two, then continue to feed until sunrise. They live about 27 years. How many hours of sleep does an owl monkey that lives 27 years get in its lifetime?

20. Three-toed sloths move very slowly, using as little energy as possible. They sleep, eat, and even give birth upside down. A baby sloth may cling to its mother for as much as 36 weeks after being born. How much of that time is the sloth asleep?

21. **Test Prep** A sloth’s maximum speed on the ground is 15 feet in 1 minute. Even though it would be unlikely for a sloth to stay in motion for more than a few moments, how far would a sloth travel in 45 minutes at that speed?
(A) 60 feet
(B) 270 feet
(C) 675 feet
(D) 6,750 feet



| Animal Sleep Amounts | |
|----------------------|-------------------------------|
| Animal | Amount (usual hours per week) |
| Jaguar | 77 |
| Giant Armadillo | 127 |
| Owl Monkey | 119 |
| Platypus | 98 |
| Three-Toed Sloth | 101 |

SHOW YOUR WORK