

Chapter 6
Lesson 4

Multiplying by Tens, Hundreds, and Thousands

You will need

- base ten blocks

GOAL

Calculate products with multiples of tens, hundreds, or thousands using mental math.

Ami is creating problems that can be solved using multiplication. She uses the following facts about the wing beats of two insects.

Communication Tip

You can use the symbol "s" to represent seconds. For example, you can write "5 s" instead of "five seconds."



Dragonfly
30 wing beats in 1 s



Bee
200 wing beats in 1 s

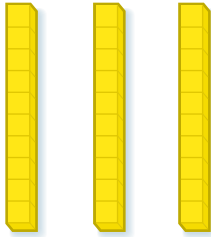


How many times does each insect beat its wings in 20 s?



Ami's Strategy

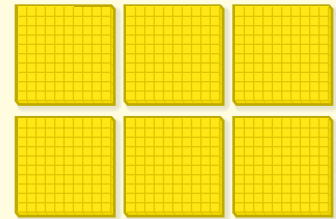
I can describe the number of times a dragonfly beats its wings in 20 s as 20×30 .



- A. Why can Ami think of 20×30 as 20×3 tens?
- B. How many tens is 20×3 tens? How many times does a dragonfly beat its wings in 20 s?
- C. Use your answer for Part B to complete $20 \times 30 = \square$.
- D. Describe the number of times a bee beats its wings in 20 s as $\square \times \square$ hundreds.
- E. Write an equation for the number of times a bee beats its wings in 20 s. How many times does the bee beat its wings in 20 s?

Reflecting

- F. How can you calculate 20×30 using this 2-by-3 array of hundreds?



- G. A gnat beats its wings about 1000 times a second. What does $2 \times 1000 = 2000$ describe about a gnat's wing beats?



- H. All the calculations of wing beats involved **multiples** of tens, hundreds, or thousands. How are the following calculations involving tens, hundreds, or thousands related to 2×3 ?

$$2 \times 30 \quad 2 \times 300 \quad 2 \times 3000 \quad 20 \times 30$$

multiples

The products found by multiplying a whole number by other whole numbers

For example, when you multiply 10 by the numbers 1, 2, 3, and 4, you get the multiples 10, 20, 30, and 40.

Checking

1. Some dragonflies beat their wings about 40 times in 1 s. How many times does one of these dragonflies beat its wings in 20 s?

2. Calculate.

a) 20×70

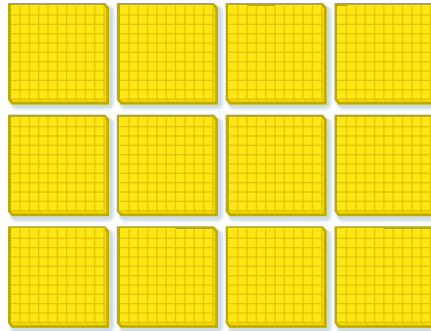
b) 7×300

c) 6×1000

d) 2000×4

Practising

3. How does this array show that $30 \times 40 = 3 \times 4$ hundreds?



Communication Tip

You can use the symbol "min" to represent minutes. For example, you can write "5 min" instead of "five minutes."

4. Sketch an array to show each calculation.

a) 2×600

b) 2×6000

5. Multiply. Explain your strategy.

a) 40×80

c) 6×2000

b) 90×90

d) 5×700

6. A butterfly beat its wings about 50 times a minute. How many times does it beat its wings in 50 min?





7. Which products equal 3000?
- A. 6×500 C. 60×50
 B. 30×10 D. 30×100
8. A bank teller has 50 \$20 bills. What is the total value of the bills?
9. What is the missing number in each equation?
- a) $20 \times 30 = \square \times 60$
 b) $60 \times 80 = 40 \times \square$
 c) $20 \times 60 = 30 \times \square$
 d) $40 \times \square = 20 \times 80$
10. Which product is greatest? How do you know?
- A. 30×50 C. 7×1000
 B. 40×200 D. 2×3000
11. Explain how you know that each equation is true.
- a) $50 \times 60 = 100 \times 30$
 b) $50 \times 60 = 1000 \times 3$
12. Create a problem that can be solved by multiplying 60×50 .
13. What is the missing number in each equation?
- a) $7 \times m = 4900$ c) $p \times 6000 = 54\ 000$
 b) $80 \times n = 2400$ d) $60 \times q = 3600$
14. About how many words can Jason expect to type in one hour?



15. How is multiplying by 4 hundreds or 4 thousands like multiplying by 4?