Using Mental Math to Multiply

You can also use patterns to multiply mentally.

Fact: 6 × 8 = **48**

60 × 8 = **48**0	6 × 80 = **48**0
600 × 8 = **4,8**00	60 × 80 = **4,8**00
6,000 × 8 = **48,**000	600 × 80 = **48,**000
60,000 × 8 = **48**0,000	6,000 × 80 = **48**0,000

Pattern: Notice that the product is always the digits 48 followed by the total number of zeros that are in the factors.

Find 30 × 3 × 50.

Use the Commutative and Associative Properties of Multiplication to regroup.

(30 × 50) × 3

1,500 × 3 = 4,500

Commutative Property of Multiplication	Associative Property of Multiplication
You can multiply factors in any order. 15 × 9 = 9 × 15	You can change the grouping of factors. (8 × 20) × 5 = 8 × (20 × 5)

Find each product. Use patterns and properties to compute mentally.

1. 80 × 90 = _____   **2.** 40 × 800 = _____

3. 5 × 10 × 20 = _____   **4.** 4 × 30 × 25 = _____

5. You know that 6 × 7 = 42. How can you find 60 × 700?

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Using Mental Math to Multiply

Use mental math to find each product.

1. $150 \times 20 =$

2. $0 \times 50 \times 800 =$

3. $500 \times 40 =$

_____

_____

_____

4. $120 \times 50 =$

5. $60 \times 70 \times 1 =$

6. $9,000 \times 80 =$

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7. $100 \times 10 \times 1 =$

8. $1,800 \times 20 \times 0 =$

9. $30 \times 20 =$

_____

_____

_____

10. $1,400 \times 2,000 =$

11. $7,000 \times 50 \times 1 =$

12. $1,000 \times 200 \times 30 =$

_____

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_____

13. A googol is a large number that is the digit one followed by one hundred zeros. If you multiply a googol by 100, how many zeros will that product have?

_____

14. Gregorios drives 200 miles per day for 10 days. How many miles did he drive in all?

_____

15. If $a \times b \times c = 0$, and a and b are integers greater than 10, what must c equal?

A 0 **B** 1 **C** 2 **D** 10

16. SungHee empties her piggy bank and finds that she has 200 quarters, 150 dimes, and 300 pennies. How much money does she have? Explain.

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