

## Multiplying Two-Digit by One-Digit

Break the two-digit number into tens and ones, multiply each piece separately, then add. This is the distributive property in action.

**Break-Apart Method:**  $3 \times 16$

1. Split:  $16 = 10 + 6$ .
2. Multiply each piece:  $3 \times 10 = 30$ ,  $3 \times 6 = 18$ .
3. Add the parts:  $30 + 18 = 48$ .

### Key Concepts

1. Split the two-digit number into **tens** and **ones**:  $34 = 30 + 4$ .
2. Multiply the single digit by *each* piece separately.
3. Add the two partial products to get the final answer.
4. This is the *distributive property*:  $a(b + c) = ab + ac$ . You are turning one harder multiplication into two easier ones.

### Worked Examples

①  $3 \times 16$

 Split 16 into  $10 + 6$ . Multiply each piece by 3:  $3 \times 10 = 30$  and  $3 \times 6 = 18$ . Add the partial products:  $30 + 18 = 48$ . So  $3 \times 16 = 48$ . The break-apart turned a harder fact into two easy ones.

 **Answer:** 48

②  $5 \times 34$

 Split 34 into  $30 + 4$ . Multiply:  $5 \times 30 = 150$  (because  $5 \times 3 = 15$ , add a zero) and  $5 \times 4 = 20$ . Add:  $150 + 20 = 170$ . So  $5 \times 34 = 170$ . The tens piece always uses the multiples-of-10 trick from the last lesson.

 **Answer:** 170

③  $7 \times 28$

 Split 28 into  $20 + 8$ . Multiply:  $7 \times 20 = 140$  and  $7 \times 8 = 56$ . Add:  $140 + 56 = 196$ . So  $7 \times 28 = 196$ . Always double-check the addition step — partial products often have carries.

 **Answer:** 196

### Practice Problems

Find each product. Use the break-apart method.

1.  $2 \times 14$  \_\_\_\_\_

4.  $5 \times 13$  \_\_\_\_\_

2.  $3 \times 25$  \_\_\_\_\_

5.  $6 \times 24$  \_\_\_\_\_

3.  $4 \times 18$  \_\_\_\_\_

6.  $7 \times 15$  \_\_\_\_\_

7.  $8 \times 12$  \_\_\_\_\_

8.  $3 \times 36$  \_\_\_\_\_

9.  $4 \times 27$  \_\_\_\_\_

10.  $6 \times 19$  \_\_\_\_\_

11.  $9 \times 14$  \_\_\_\_\_

12.  $5 \times 48$  \_\_\_\_\_

**Study Tips**

-  Always split the two-digit number into *tens and ones*, never into other pieces. The tens piece becomes a simple multiples-of-10 problem.
-  Stack your work neatly: write the partial products one above the other before you add. Lining up the digits prevents addition mistakes.
-  For a sanity check, estimate first.  $7 \times 28$  is close to  $7 \times 30 = 210$ , so a final answer near 200 should feel right.

**Word Problems**

1. A box of markers has 24 markers. The teacher buys 6 boxes. How many markers does she have?

Answer: \_\_\_\_\_

2. There are 18 students in a class. Each student brings 4 pencils. How many pencils in all?

Answer: \_\_\_\_\_

**Answer Key — with Friendly Explanations****Practice Problems**

1.  $2 \times 14 = 2 \times 10 + 2 \times 4 = 20 + 8.$

 **Answer:** 28

2.  $3 \times 25 = 3 \times 20 + 3 \times 5 = 60 + 15.$

 **Answer:** 75

3.  $4 \times 18 = 4 \times 10 + 4 \times 8 = 40 + 32.$

 **Answer:** 72

4.  $5 \times 13 = 5 \times 10 + 5 \times 3 = 50 + 15.$

 **Answer:** 65

5.  $6 \times 24 = 6 \times 20 + 6 \times 4 = 120 + 24.$

 **Answer:** 144

6.  $7 \times 15 = 7 \times 10 + 7 \times 5 = 70 + 35.$

 **Answer:** 105

7.  $8 \times 12 = 8 \times 10 + 8 \times 2 = 80 + 16.$

 **Answer:** 96

8.  $3 \times 36 = 3 \times 30 + 3 \times 6 = 90 + 18.$

 **Answer:** 108

9.  $4 \times 27 = 4 \times 20 + 4 \times 7 = 80 + 28.$

 **Answer:** 108

10.  $6 \times 19 = 6 \times 10 + 6 \times 9 = 60 + 54.$

 **Answer:** 114

11.  $9 \times 14 = 9 \times 10 + 9 \times 4 = 90 + 36.$

 **Answer:** 126

12.  $5 \times 48 = 5 \times 40 + 5 \times 8 = 200 + 40.$

 **Answer:** 240**Word Problems**

1.  $6 \times 24 = 120 + 24 = 144$  markers.

 **Answer:** 144 *markers*

2.  $4 \times 18 = 40 + 32 = 72$  pencils.

 **Answer:** 72 *pencils*

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