

# Finding Missing Factors

NCTM Standards 1, 2, 4, 6, 7, 8, 9, 10

**Complete the multiplication puzzles.**

**Rule I:** Only 0, 1, 2, 4, 8, or 16 can go in the green hexagons.

**Rule II:** The number in the orange hexagon must be the sum of the numbers in the green hexagons.

0	1	2	4	8	16
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**1**  $4 \times \text{8} = \square$   
 $4 \times \text{1} = \square$   
 $4 \times \text{0} = \square$   


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 $4 \times \text{9} = \square$

**2**  $7 \times \text{4} = \square$   
 $7 \times \square = \square$   
 $7 \times \square = \square$   


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 $7 \times \square = 42$

**3**  $9 \times \text{4} = \square$   
 $9 \times \square = \square$   
 $9 \times \square = \square$   


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 $9 \times \text{5} = \square$

**4**  $4 \times \square = \square$   
 $4 \times \text{2} = \square$   
 $4 \times \square = \square$   


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 $4 \times \text{10} = \square$

**5**  $3 \times \text{2} = 6$   
 $3 \times \square = \square$   
 $3 \times \square = \square$   


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 $3 \times \text{3} = 9$

**6**  $7 \times \square = \square$   
 $7 \times \square = \square$   
 $7 \times \square = \square$   


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 $7 \times \text{7} = \square$

**7**  $3 \times \square = \square$   
 $3 \times \square = \square$   
 $3 \times \square = \square$   
 $3 \times \square = \square$   


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 $3 \times \text{12} = \square$

**8**  $5 \times \square = \square$   
 $5 \times \square = \square$   
 $5 \times \square = \square$   
 $5 \times \square = \square$   


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 $5 \times \square = 55$

**9**  $6 \times \square = \square$   
 $6 \times \square = \square$   
 $6 \times \square = \square$   
 $6 \times \square = \square$   


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 $6 \times \square = 42$

Again, use 0, 1, 2, 4, 8, or 16 to build the missing factor in the orange hexagon.

0	1	2	4	8	16
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10  $\square \times \text{hexagon} = \square$   
 $\square \times \text{hexagon} = \square$   
 $\square \times \text{hexagon} = \square$   


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 $6 \times \text{hexagon} = \boxed{54}$

11  $\boxed{8} \times \text{hexagon} = \square$   
 $\square \times \text{hexagon} = \square$   
 $\square \times \text{hexagon} = \square$   


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 $8 \times \text{hexagon} = \boxed{56}$

12  $\square \times \text{hexagon} = \square$   
 $\square \times \text{hexagon} = \square$   
 $\square \times \text{hexagon} = \square$   


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 $3 \times \text{hexagon} = \boxed{18}$

13  $4 \times \text{hexagon} = \boxed{32}$

14  $5 \times \text{hexagon} = \boxed{35}$

15  $3 \times \text{hexagon} = \boxed{42}$

**16 Challenge** Lu is doing work on her house. She's tearing down the wall that separates the kitchen from the dining room. The width of each room is 12 feet. The new room will be a long rectangular space. The old kitchen floor had an area of 144 square feet, and the old dining room floor had an area of 120 square feet. What is the length of the new joined room?

