 Name _____ Date _____

Challenge

Factor Fill-In

You can use basic facts and patterns of zeros to help you multiply. Here's your chance to prove it. One factor is missing below. Fill it in fast!

$2 \times 900 = 3 \times$ _____

To solve, first find the product on the left. Use basic facts and patterns of zeros.
Think: $2 \times 9 = 18$, $2 \times 90 = 180$, and $2 \times 900 = 1{,}800$.

The equal sign tells you that the product on the right has to be equal to the product on the left. In this case the product is 1,800.

Think: $3 \times ? = 18$. Then, $3 \times 6 = 18$, $3 \times 60 = 180$, and $3 \times 600 = 1{,}800$.

So, $2 \times 900 = 3 \times 600$.

Find the missing factor.

1. $3 \times 800 =$ _____ $\times 600$
2. $2 \times 3{,}000 = 6 \times$ _____
3. $4 \times$ _____ $= 2 \times 8{,}000$
4. _____ $\times 100 = 4 \times 200$
5. $8 \times 70{,}000 = 7 \times$ _____
6. $9 \times$ _____ $= 6 \times 6{,}000$
7. _____ $\times 30 = 6 \times 20$
8. $6 \times 50{,}000 = 3 \times$ _____

9. **Analyze** Try $4 \times 600 = 80 \times$ _____. Hint: In this example, the number of zeros in the product is the same as the number of zeros in the factors.

10. **Explore It** Construct three function tables for the rule $5 \times a = b$. In the first table, input some multiples of 10. In the second table, input some multiples of 100. In the third table, input some multiples of 1,000.

3–2 Name _____ Date _____

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$2 \times 900 = 3 \times$ 600

To solve, first find the product on the left. Use basic facts and patterns of zeros.
Think: $2 \times 9 = 18$, $2 \times 90 = 180$, and $2 \times 900 = 1{,}800$.

The equal sign tells you that the product on the right has to be equal to the product on the left. In this case the product is 1,800.

Think: $3 \times ? = 18$. Then, $3 \times 6 = 18$, $3 \times 60 = 180$, and $3 \times 600 = 1{,}800$.

So, $2 \times 900 = 3 \times 600$.

Find the missing factor.

1. $3 \times 800 =$ 4 $\times 600$
2. $2 \times 3{,}000 = 6 \times$ 1,000
3. $4 \times$ 4,000 $= 2 \times 8{,}000$
4. 8 $\times 100 = 4 \times 200$
5. $8 \times 70{,}000 = 7 \times$ 80,000
6. $9 \times$ 4,000 $= 6 \times 6{,}000$
7. 4 $\times 30 = 6 \times 20$
8. $6 \times 50{,}000 = 3 \times$ 100,000

9. **Analyze** Try $4 \times 600 = 80 \times$ 30. Hint: In this example, the number of zeros in the product is the same as the number of zeros in the factors.

10. **Explore It** Construct three function tables for the rule $5 \times a = b$. In the first table, input some multiples of 10. In the second table, input some multiples of 100. In the third table, input some multiples of 1,000.

Check students' tables.