

Dennis the Menace is thinking of two numbers. Their greatest common factor is 6.  
Their least common multiple is 36. One of the numbers is **12**.  
What is the other number?

Objectiv: TSWBAT multiply and divide by powers  
of 10

## Investigation: Multiplying by 10, 100, and 1,000

1. Multiply.

a.  $2.6 \times 10 = 26$

$2.6 \times 100 = 260$

$2.6 \times 1,000 = 2,600$

b.  $0.45 \times 10 = 4.5$

$0.45 \times 100 = 45$

$0.45 \times 1,000 = 450$

2. **Patterns** What pattern do you notice in the products? (*Hint*: Think about the direction the decimal point moves and the number of decimal places in the answer.)

**1****EXAMPLE****Multiplying by 10, 100, or 1,000**

Use mental math to find each product.

**a.**

$$\begin{aligned} 0.875 \times 100 &= 0.875 \\ &= 87.5 \end{aligned}$$

← To multiply a decimal by 100, move the decimal point 2 places to the right.

**b.**

$$\begin{aligned} 0.41 \times 1,000 &= 0.410 \\ &= 410 \end{aligned}$$

← To multiply a decimal by 1,000, move the decimal point 3 places to the right.

1a. Use mental math to find the product of  $100(3.42)$ .

- a.  0.0342
- b.  3,420
- c.  34.20
- d.  342

$$3.42 \times 100$$

$$342$$

1b. Use mental math to find the product of  $0.235 \times 10$ .

- a.  0.0235
- b.  2.35
- c.  23.5
- d.  235

$$0.235 \times 10$$

$$2.35$$

1c. Use mental math to find the product of  $55.2 \cdot 1,000$ .

- a.  0.0552
- b.  55,200
- c.  5,520
- d.  552,000

$$55.2 \times 1000$$

$$55,200$$

To divide a number by 10, 100, or 1,000, you can move the decimal point to the left. You may need to insert zeros.

**Dividing by 10  
moves the  
point 1 place  
to the left.**

$$5,700 \div 10 = 570$$

$$570 \div 10 = 57$$

$$57 \div 10 = 5.7$$

$$5,700 \div 100 = 57$$

$$570 \div 100 = 5.7$$

$$57 \div 100 = 0.57$$

**Dividing by 100  
moves the  
point 2 places  
to the left.**

**2****EXAMPLE****Dividing by 10, 100, or 1,000**

Use mental math to find the quotient  $43 \div 1,000$ .

$$43 \div 1,000 = \underset{\text{↑}}{\text{.043}} = 0.043 \quad \leftarrow \text{To divide by 1,000, move the decimal point 3 places to the left.}$$

2a. Use mental math to find the quotient of  $534.2 \div 100$ .

- a.  5.342
- b.  53,400
- c.  5,342
- d.  53.42

$$534.2 \div 100$$

2b. Use mental math to find the quotient of  $0.235 \div 10$ .

- a.  2.35
- b.  0.00235
- c.  23.5
- d.  0.0235

$$0.235 \div 10$$

2c. Use mental math to find the quotient of  $55.2 \div 1,000$ .

- a.  0.0552
- b.  55,200
- c.  552,000
- d.  0.00552

$$0.0552 \div 1000$$

2d. **Number Sense** Write a rule to divide by 10,000. Find  $7.3 \div 10,000$ .

- a.  To divide by 10,000, move the decimal point in the divisor 4 places to the left of the first digit; 0.000073.
- b.  To divide by 10,000, move the decimal point in the divisor 4 places to the left; 0.00073.

$$0.0073 \div 1000$$

$$0.0073$$

**Use mental math to find each product.**

1.  $2.7 \times 10$

\_\_\_\_\_

2.  $2.5(10)$

\_\_\_\_\_

3.  $100(0.21)$

\_\_\_\_\_

4.  $0.77 \times 100$

\_\_\_\_\_

5.  $10 \times 0.2 \times 1$

\_\_\_\_\_

6.  $5 \times 0.2 \times 100$

\_\_\_\_\_

7.  $2.64 \times 100$

\_\_\_\_\_

8.  $7.5 \cdot 1,000$

\_\_\_\_\_

9.  $0.5 \times 2 \times 20$

\_\_\_\_\_

Use mental math to find each product.

1.  $2.7 \times 10$

27

2.  $2.5(10)$

25

3.  $100(0.21)$

21

4.  $0.77 \times 100$

77

5.  $10 \times 0.2 \times 1$

2

6.  $5 \times 0.2 \times 100$

100

7.  $2.64 \times 100$

264

8.  $7.5 \cdot 1,000$

7,500

9.  $0.5 \times 2 \times 20$

20

Use mental math to find each quotient.

10.  $0.4 \div 10$

0.04

11.  $2.3 \div 100$

0.023

12.  $7 \div 100$

0.07

13.  $52.3 \div 10$

5.23

14.  $3 \div 1,000$

0.003

15.  $41 \div 100$

0.41

Use  $<$ ,  $=$ , or  $>$  to complete each statement.

16.  $2.2 \times 10$   $>$   $2.2(10)(0.1)$

18.  $60 \div 100$   $<$   $600 \div 10$

20.  $0.22 \div 10$   $<$   $0.22 \div 0.1$

22.  $5.5 \times 2 \times 10$   $<$   $5.5 \times 100$

17.  $1.1 \div 10$   $<$   $110 \div 100$

19.  $5 \times 0.3 \times 2$   $=$   $10 \times 0.3$

21.  $0.004 \times 100$   $=$   $10 \times 10 \times 0.004$

23.  $(2 \times 5) 0.14$   $=$   $0.14 (10)$