

# Multiplying and Dividing by Powers of 10

Grade 5 Math • Section 1.2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 17

## Quick Review and Helpful Hints

**✚ Multiplying by a power of 10:** Move the decimal point to the **right** as many places as the exponent.  $3.7 \times 10^2 = 370$

**✚ Dividing by a power of 10:** Move the decimal point to the **left** as many places as the exponent.  $450 \div 10^3 = 0.45$

**💡** The number of zeros in 10, 100, 1,000, ... tells you how many places to move.

**🔍 Example:** Evaluate  $6.42 \times 10^3$ .

**✚** Since the exponent is 3, move the decimal point 3 places to the right.  $6.42 \rightarrow 64.2 \rightarrow 642 \rightarrow 6,420$ . We add a zero at the end because we need one more place.

**💡 Answer:** 6,420

## ✚ Practice Problems

Evaluate each expression.

- |                                |                              |                                |
|--------------------------------|------------------------------|--------------------------------|
| 1. $5.3 \times 10 =$ _____     | 6. $34.1 \times 10 =$ _____  | 11. $460 \div 10^2 =$ _____    |
| 2. $0.48 \times 100 =$ _____   | 7. $720 \div 10 =$ _____     | 12. $0.35 \times 10^3 =$ _____ |
| 3. $2.7 \times 10^3 =$ _____   | 8. $53 \div 100 =$ _____     | 13. $7,000 \div 10^4 =$ _____  |
| 4. $0.006 \times 10^4 =$ _____ | 9. $8,400 \div 10^3 =$ _____ | 14. $12.5 \times 10^2 =$ _____ |
| 5. $9.15 \times 10^2 =$ _____  | 10. $1.9 \div 10 =$ _____    | 15. $6,300 \div 10^2 =$ _____  |

## ✚ Word Problems

16. A factory produces 1.25 tons of cereal per day. How many tons does it produce in  $10^2$  days? \_\_\_\_\_
17. An ant weighs about 0.001 grams. Write this number using a whole number divided by a power of 10. Then find how much 10,000 ants weigh. \_\_\_\_\_



## Answer Keys

- |         |                              |
|---------|------------------------------|
| 1. 53   | 10. 0.19                     |
| 2. 48   | 11. 4.6                      |
| 3. 2700 | 12. 350                      |
| 4. 60   | 13. 0.7                      |
| 5. 915  | 14. 1250                     |
| 6. 341  | 15. 63                       |
| 7. 72   | 16. 125                      |
| 8. 0.53 | 17. $1 \div 1000$ ; 10 grams |
| 9. 8.4  |                              |

### Step-by-Step Explanations

- Start with the main idea. For powers of 10, move the decimal 1 place(s) to the right. The result is 53. Multiplying by a power of ten moves the decimal right; dividing moves it left.
- Keep the work tidy. For powers of 10, move the decimal 2 place(s) to the right. The result is 48. The exponent tells how many places to move, so count the moves carefully.
- Look at what the numbers mean. For powers of 10, move the decimal 3 place(s) to the right. The result is 2700. Zeros are placeholders here, and each one helps keep the place value correct.
- Use the setup first. For powers of 10, move the decimal 4 place(s) to the right. The result is 60. Multiplying by a power of ten moves the decimal right; dividing moves it left.
- Check the size of the answer. For powers of 10, move the decimal 2 place(s) to the right. The result is 915. The exponent tells how many places to move, so count the moves carefully.
- Match the operation to the words. For powers of 10, move the decimal 1 place(s) to the right. The result is 341. Zeros are placeholders here, and each one helps keep the place value correct.
- Write the important values first. For powers of 10, move the decimal 1 place(s) to the left. The result is 72. Multiplying by a power of ten moves the decimal right; dividing moves it left.
- Follow the pattern carefully. For powers of 10, move the decimal 2 place(s) to the left. The result is 0.53. The exponent tells how many places to move, so count the moves carefully.
- Start with the main idea. For powers of 10, move the decimal 3 place(s) to the left. The result is 8.4. Zeros are placeholders here, and each one helps

keep the place value correct.

- Keep the work tidy. For powers of 10, move the decimal 1 place(s) to the left. The result is 0.19. Multiplying by a power of ten moves the decimal right; dividing moves it left.
- Look at what the numbers mean. For powers of 10, move the decimal 2 place(s) to the left. The result is 4.6. The exponent tells how many places to move, so count the moves carefully.
- Use the setup first. For powers of 10, move the decimal 3 place(s) to the right. The result is 350. Zeros are placeholders here, and each one helps keep the place value correct.
- Check the size of the answer. For powers of 10, move the decimal 4 place(s) to the left. The result is 0.7. Multiplying by a power of ten moves the decimal right; dividing moves it left.
- Match the operation to the words. For powers of 10, move the decimal 2 place(s) to the right. The result is 1250. The exponent tells how many places to move, so count the moves carefully.
- Write the important values first. For powers of 10, move the decimal 2 place(s) to the left. The result is 63. Zeros are placeholders here, and each one helps keep the place value correct.
- Follow the pattern carefully. For powers of 10, multiply  $1.25 \text{ tons} \times 10^2 = 100$ :  $1.25 \times 100 = 125 \text{ tons}$ . Multiplying by a power of ten moves the decimal right; dividing moves it left.
- Start with the main idea. For powers of 10,  $0.001 = \frac{1}{1000}$ . For 10,000 ants,  $10,000 \times 0.001 = 10 \text{ grams}$ . The exponent tells how many places to move, so count the moves carefully.



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