



Objective: To understand and use place value with multi-digit decimal numbers

The decimal 8.888 is greater than one.

Each digit in 8.888 is $\frac{1}{10}$ the value of the digit to its left.

Each digit is 10 times the value of the digit to its right.

$$8 = 0.8 \times 10$$

$$0.8 = 0.08 \times 10$$

$$0.08 = 0.008 \times 10$$

Decimal	Fraction
0.1	$\frac{1}{10}$
0.01	$\frac{1}{100}$
0.001	$\frac{1}{1000}$

Write 0.789 in expanded form using fractions for the decimal part.

► Break apart the number using the place value of each digit.

$$\begin{aligned} 0.789 &= 0.7 + 0.08 + 0.009 \\ &= (7 \times \frac{1}{10}) + (8 \times \frac{1}{100}) + (9 \times \frac{1}{1000}) \end{aligned}$$

$$\text{So, } 0.789 = (7 \times \frac{1}{10}) + (8 \times \frac{1}{100}) + (9 \times \frac{1}{1000}).$$

Think

$$0.7 = \frac{7}{10} = 7 \times \frac{1}{10}$$

Write $(7 \times 1) + (3 \times \frac{1}{10}) + (5 \times \frac{1}{1000})$ as a decimal in standard form.

► Simplify each term. Then add the products.

$$\begin{aligned} (7 \times 1) + (3 \times \frac{1}{10}) + (5 \times \frac{1}{1000}) \\ 7 + 0.3 + 0.005 = 7.305 \end{aligned}$$

So, the decimal form of $(7 \times 1) + (3 \times \frac{1}{10}) + (5 \times \frac{1}{1000})$ is 7.305.

Practice

Write each decimal in fraction form.

1. 0.5 _____

2. 0.08 _____

3. 0.2 _____

4. 0.009 _____

Write each as a decimal.

5. $6 \times \frac{1}{100}$ _____

6. $2 \times \frac{1}{1000}$ _____

7. $1 \times \frac{1}{10}$ _____

8. $4 \times \frac{1}{100}$ _____

Discuss and Write

9. Compare and contrast multiplying by a power of ten and dividing by a power of ten. Explain what happens to the value of the digits.

Name _____

Practice

Write in expanded form.

10. 1.801

11. 2.034

12. 2.292

13. 7.573

14. 3.567

15. 5.951

Write in decimal form.

16. $(2 \times 1) + (8 \times \frac{1}{10}) + (8 \times \frac{1}{1000})$ _____

17. $(3 \times 1) + (1 \times \frac{1}{100}) + (4 \times \frac{1}{1000})$ _____

18. $(4 \times 1) + (1 \times \frac{1}{10}) + (6 \times \frac{1}{100}) + (3 \times \frac{1}{1000})$ _____

19. $(7 \times 1) + (8 \times \frac{1}{10}) + (5 \times \frac{1}{1000})$ _____

20. $(5 \times 1) + (2 \times \frac{1}{10}) + (7 \times \frac{1}{100}) + (1 \times \frac{1}{1000})$ _____

21. $(6 \times 1) + (3 \times \frac{1}{10}) + (1 \times \frac{1}{100}) + (5 \times \frac{1}{1000})$ _____

Problem Solving

Solve. Use a strategy that works best for you. Show your work.

22. In the number 2334, how does the value of the digit in the tens place compare to the value of the digit in the hundreds place?

23. In the number 2334, how does the value of the digit in the hundreds place compare to the value of the digit in the tens place?

Critical Thinking

24. Write a number in which the value of the digit in the hundredths place is exactly $\frac{1}{10}$ the value of the digit in the tenths place. Explain how you found your answer.