



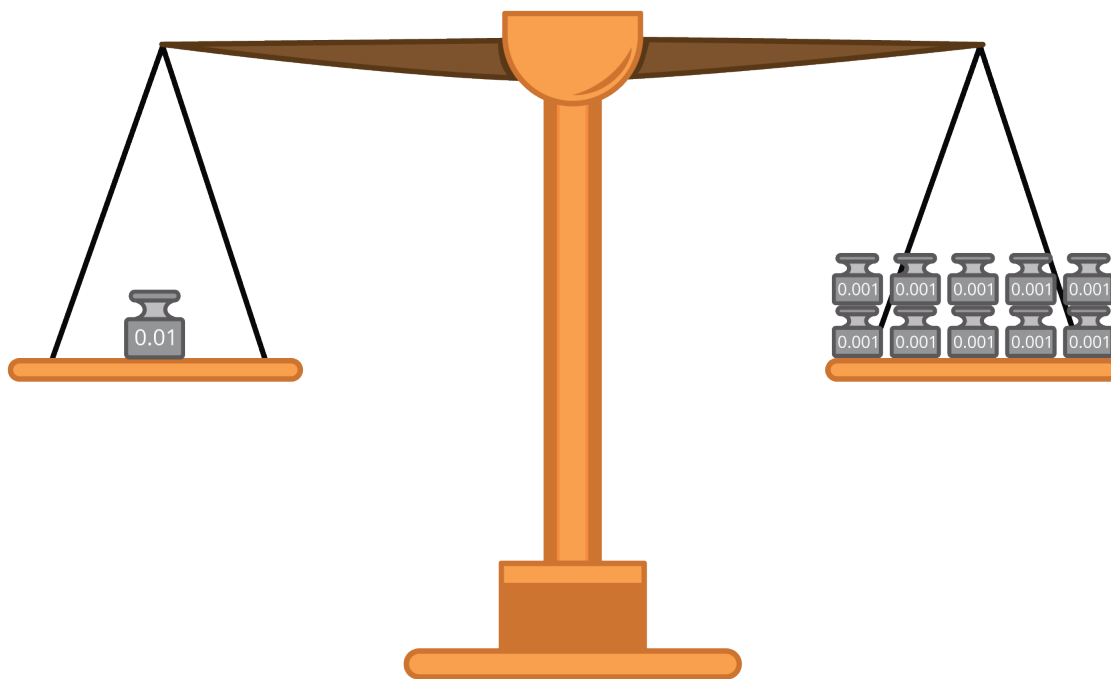
# Explore Place Value Relationships

Let's explore place value relationships.

## Warm-up

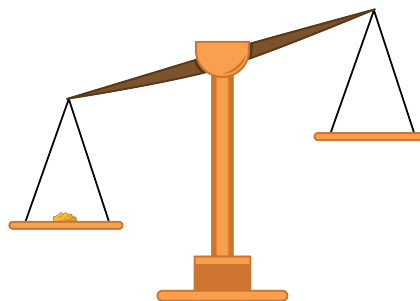
### Notice and Wonder: Maintain Your Balance

What do you notice? What do you wonder?



## Activity 1

### Balance the Weight



You have a balance and 0.1-ounce, 0.01-ounce, and 0.001-ounce weights.

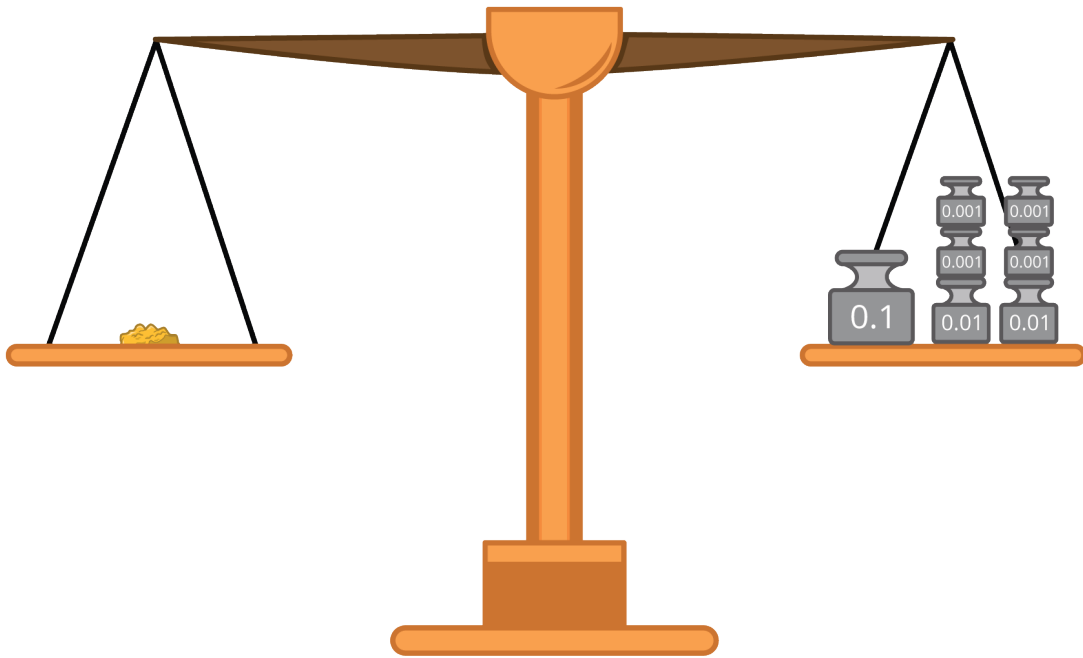
1. A gold nugget weighs 0.2 ounce.
  - a. What is one set of weights you can use to balance the nugget? Explain or show your reasoning.
  - b. What is another set of weights you can use to balance the nugget? Explain or show your reasoning.
  - c. How many 0.01-ounce weights do you need to balance the nugget? How many 0.001-ounce weights?

2. Another nugget weighs 0.385 ounce.
- What is one set of weights you can use to balance the nugget? Explain or show your reasoning.
  - What is the fewest number of weights you can use to balance the nugget? Explain or show your reasoning.
  - What is the greatest number of weights you can use to balance the nugget? Explain or show your reasoning.
3. Write a decimal number for the weight of each gold nugget that is balanced with:
- 266 of the 0.001-ounce weights
  - 150 of the 0.01-ounce weights
  - 27 of the 0.1-ounce weights



## Activity 2

### Weights and Place Values



1. Each of these sets of weights is used to balance a different gold nugget. Write the weight of each gold nugget in ounces in expanded form.
  - a. three 0.1-ounce weights, five 0.01-ounce weights, and eight 0.001-ounce weights
  - b. six 0.1-ounce weights and two 0.001-ounce weights
  - c. two 0.01-ounce weights and six 0.1-ounce weights

2. Here are the weights of 2 gold nuggets represented in word form. Write each weight in expanded form.
- a. two hundred eighty-three thousandths ounce
  - b. four hundred nine thousandths ounce
3. A gold nugget weighs 0.527 ounce.
- a. What is the value of each digit in the decimal 0.527?
  - b. How does the expanded form of 0.527 show the value of each digit in the decimal?



### Activity 3

## Comparing Place Values with Weights

1. How many 0.01-ounce weights will balance one 0.1-ounce weight? Explain or show your reasoning.
2. How many 0.001-ounce weights will balance a 0.1-ounce weight? Explain or show your reasoning.
3. The table shows the weights of 3 gold nuggets. Fill in the blanks. Explain or show your reasoning.

| gold     | weight (grams) |
|----------|----------------|
| Nugget A | 0.6            |
| Nugget B | 0.06           |
| Nugget C | 0.006          |

- a. Nugget A weighs \_\_\_\_\_ times as much as Nugget B.
- b. Nugget A weighs \_\_\_\_\_ times as much as Nugget C.
- c. Nugget C weighs \_\_\_\_\_ times as much as Nugget B.
- d. Nugget C weighs \_\_\_\_\_ times as much as Nugget A.

