Unit 5, Lesson 4

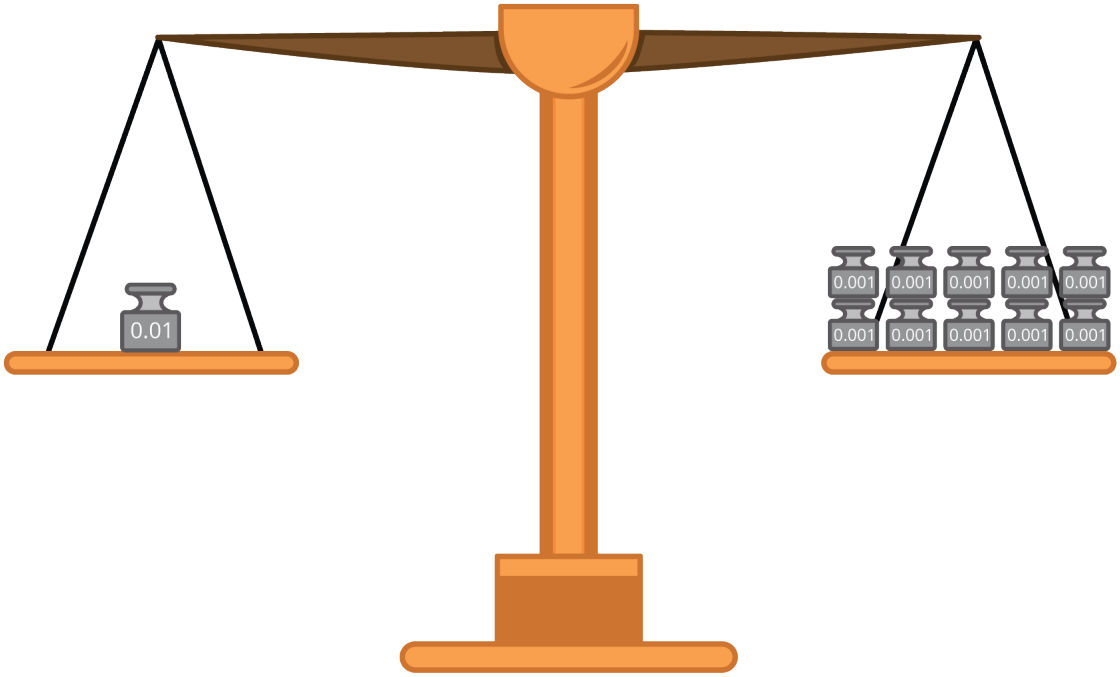
Explore Place Value Relationships

Let's explore place value relationships.

Warm-up

Notice and Wonder: Maintain Your Balance

What do you notice? What do you wonder?



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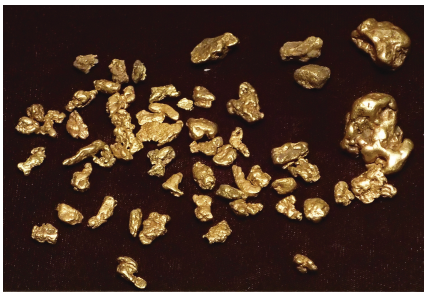
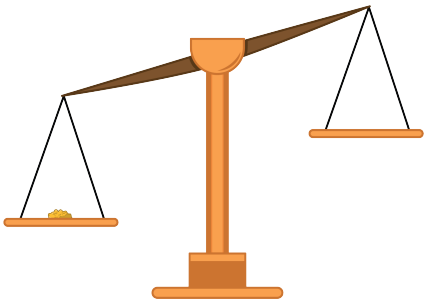
Activity 1

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.
   a. What is one set of weights you can use to balance the nugget? Explain or show your reasoning.

   b. What is the fewest number of weights you can use to balance the nugget? Explain or show your reasoning.

   c. What is the greatest number of weights you can use to balance the nugget? Explain or show your reasoning.

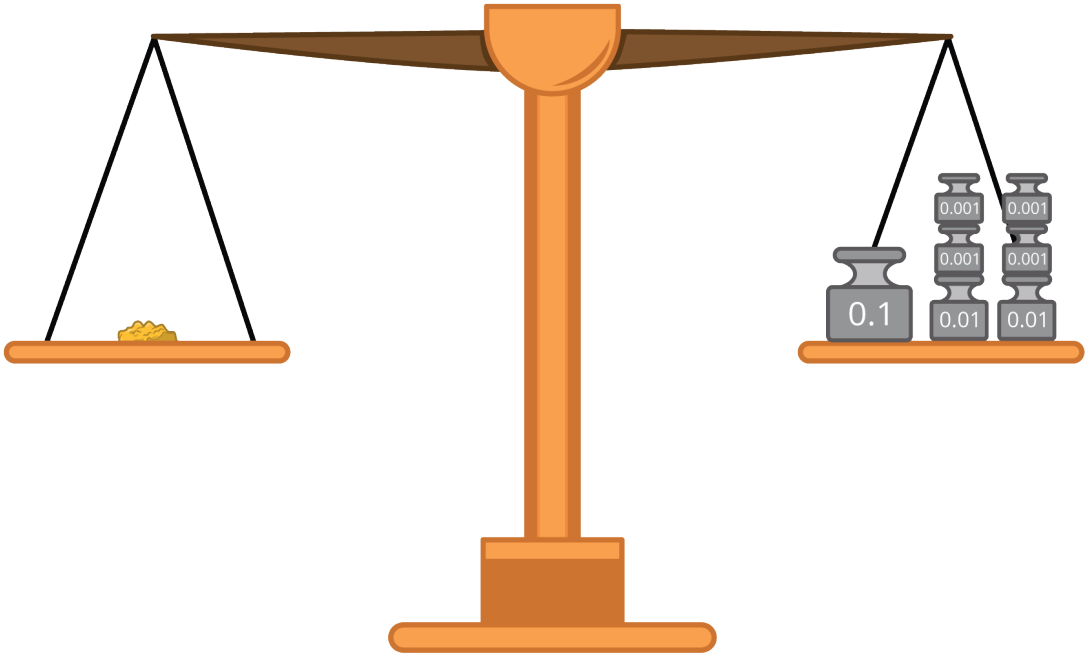
3. Write a decimal number for the weight of each gold nugget that is balanced with:
   a. 266 of the 0.001-ounce weights

   b. 150 of the 0.01-ounce weights

   c. 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.