

Chapter 2
Lesson 6

Decimal Place Value

You will need


- base ten blocks
- a decimal place value chart
- a counter

GOAL

Read, write, and model decimals.

Mateo bought a package of trail mix to take on a hike.

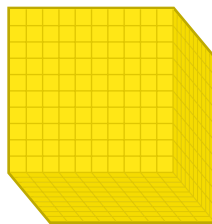


 **How can Mateo model the mass of the trail mix?**



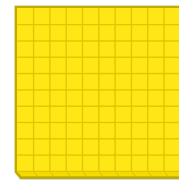
Mateo's Explanation

To model the mass, I can use the large cube for the ones.



one

If I divide the large cube into 10 parts, each part is one tenth.



one tenth

If I divide the large cube into 100 parts, each part is one hundredth.



one hundredth


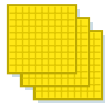
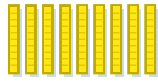

If I divide the large cube into 1000 parts, each part is one thousandth.



one thousandth



I'll model the mass on a decimal place value chart.

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
		1	3	9	3
					

Communication Tip

When you read a number with a decimal, say "and" for the decimal point; if a number has no whole number part, place a 0 before the decimal point but do not say "and."

For example, to read 645.72, say "six hundred forty-five and seventy-two hundredths." To read 0.47, say "forty-seven hundredths."

I can write the mass in expanded form.

$1.393 = 1 \text{ whole} + 3 \text{ tenths} + 9 \text{ hundredths} + 3 \text{ thousandths}$

$$\text{or } 1 + \frac{3}{10} + \frac{9}{100} + \frac{3}{1000}$$

$$\text{or } 1 + 0.3 + 0.09 + 0.003$$

To read a decimal thousandth, I think of regrouping the tenths and hundredths as thousandths.

The mass is *one and three hundred ninety-three thousandths* of a kilogram.

Reflecting

- Why does it make sense that the thousandths place is to the right of the hundredths place?
- Which 3 in the mass 1.393 represents a greater mass? Explain.

Checking

- Rachel and Lauren bought packages of trail mix, as shown at the left.
 - Model each mass of trail mix using base ten blocks on a place value chart. Sketch or describe your model.
 - Write each mass in expanded form.
 - Write each mass in words.



Practising



2. A Canadian penny costs 0.008 cents to make.
 - a) Model the cost of making a penny on a place value chart. Sketch or describe your model.
 - b) Write the cost in expanded form.
 - c) Write the cost in words.
3. Write each number in standard form.
 - a) $6 + 0.5 + 0.02 + 0.006$
 - b) $2 + 0.09 + 0.008$
 - c) $1 + 0.2 + 0.005$
4. Write each number in standard form.

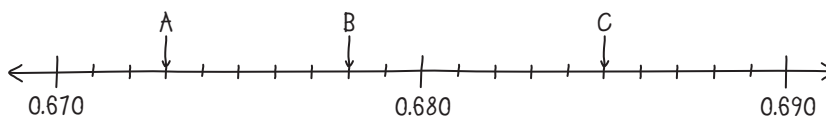
a)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

b)

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths

5. Write each number in words.
 - a) 0.120 b) 0.007 c) 0.305 d) 1.063
6. The numbers 0.345, 0.453, and 0.534 all have the same digits. What is the value of the 3 in each number?
7. Write the numbers that are at A, B, and C on the number line.



8. Write a decimal in standard form to match each description.
- one thousandth greater than 2.548
 - one hundredth greater than 2.548
 - one tenth greater than 2.548
9. a) Write the number that can be represented by placing one counter in the thousandths column of a decimal place value chart.

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
					●

- Move the counter to the hundredths column, and write this number.
 - Move the counter to the tenths column, and write this number.
 - What pattern do the three numbers make?
10. Why would you not see something with a price tag of \$9.465 in a store?



11. What decimals match all of the following clues?
- The ones digit is 0.
 - The tenths, hundredths, and thousandths digits are all even and are all different.
 - The tenths digit is less than the hundredths digit.
 - The number is less than 0.250.
12. How do you know that 0.455 is halfway between 0.45 and 0.46? Explain, using base ten blocks and a place value chart.