

Today's lesson is about understanding decimals.

You need:
Clickers
Notebook
Pencil

Get ready for the warm-up questions.



Write one thousand, three hundred twenty-one in standard form.

A 10,321

B 1,321

C 13,021

D 1,312



Write this whole number in words
612,980

A six hundred twelve thousand, nine hundred eighty

B six hundred twelve and nine hundred eighty

C six hundred twelve million, nine hundred eighty

D six hundred twelve thousand, eight hundred ninety

What You'll Learn

To read, write, and round decimals

 **New Vocabulary** expanded form
Why Learn This?

Decimal numbers allow you to write very precise values. In sports, the difference between first place and second place sometimes depends on decimal places.



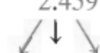
You can extend the place value chart to include values for decimal places. When you read a decimal that is greater than 1, read the decimal point as “and.”

EXAMPLE Writing a Decimal in Words

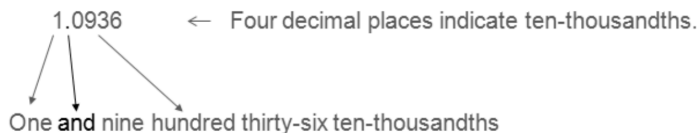
- 1 Fuel** The price of a gallon of gasoline is \$2.459. Write 2.459 in words.

Begin by writing 2.459 in a place value chart.

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths	Ten-Thousandths	Hundred-Thousandths	Millionths
		2	.	4	5	9		

2.459 ← Three decimal places indicate thousandths.

 two and four hundred fifty-nine thousandths

1 EXAMPLE Write 1.0936 in words.



Write out the decimal number in words.
67.3

- A sixty and seven three oneths
- B sixty-seven and three tenths
- C sixty and seven three tenths
- D sixty-seven and three hundredths



Write out the decimal in words.
6.734

- A six thousand seven hundred and thirty-four hundredths
- B six and seven hundredths thirty-four tenths
- C six and seven hundred tenths thirty-four hundredths
- D six and seven hundred thirty-four thousandths

You can write decimals in both standard form and expanded form. **Expanded form** is a sum that shows the place and value of each digit of a number.

Standard Form		Expanded Form		
0.75	=	0.7	+	0.05
↑		↑		↑
seventy-five hundredths		seven tenths	+	five hundredths



EXAMPLE Standard Form and Expanded Form

2 Sports At a gymnastics meet, the best score on the pommel horse was nine and forty-two thousandths. Write the score in standard form and in expanded form.

- 9. ← Write the whole number part. Place the decimal point.
- 9.■■■■ ← Thousandths is three places to the right of the decimal point.
- 9.■■42 ← Place 42 to the far right.
- 9.042 ← Insert a zero for tenths.

Standard form: 9.042 Expanded form: $9 + 0.04 + 0.002$

2 EXAMPLE There are four thousand five hundred thirty-six ten-thousandths kilograms in one pound. Write this number in standard and expanded form.

- 0 ← Write the whole number part.
- 0. ← Place the decimal point.
- 0.???? ← Ten-thousandths is 4 places to the right of the decimal point.
- 0.4536 ← Place 4536.

Standard Form: 0.4536

Expanded Form: $0.4 + 0.05 + 0.003 + 0.0006$



The winning car in a race won by fifteen hundredths of a second. Write the decimal in standard form and in expanded form.

- (A) 0.15; $0.1 + 0.05$
- (B) 0.15; $1 + 0.05$
- (C) 0.015; $0.1 + 0.05$
- (D) 0.015; $0.01 + 0.005$

Rounding decimals is similar to rounding whole numbers.

The value to the right of 3 →	0.32	0.36	← The value to the right of 3
is < 5 , so round down to	↓	↓	is ≥ 5 . So round up.
nearest tenth.	0.3	0.4	

EXAMPLE Rounding Decimals

3 Round 0.426 to the nearest hundredth.

0.426 ← Look at the digit to the right of the hundredths place.
↑
6 is ≥ 5 , so round up.

So 0.426 rounded to the nearest hundredth is 0.43.

3 EXAMPLE Round 0.539 to the nearest tenth.

0.539 ← Look at the digit to the right of the tenths place.

0.5 ← $3 \leq 5$, so round down.

Table talk about each of these problems.



3. Round each decimal to the underlined place.

a. 2.3428

b. 0.17347

c. 9.053



In the number 12.057, which digit has the greater value, the 5 or the 7?

A 5

B 7

C You can't tell



Round 0.3468 to the nearest hundredth

A 0.346

B 0.35

C 0.3

D 0.347



**Find the value of the digit 3 in
7.553**

- A 3 tenths
- B 3 hundredths
- C 3 hundreds
- D 3 thousandths



Write in expanded form 7.52

- A $7 + 0.5 + 0.02$
- B $7 + 0.5 + 0.2$
- C $0.7 + 0.5 + 0.2$
- D None of these

You can power down your clickers and put them away.

You have an assignment worksheet.

1-3 • Guided Problem Solving**103 Student Page 17, Exercise 43:**

Artists use a ratio called the Golden Mean to describe a person's height. Your height from the floor to your waist is usually six hundred eighteen thousandths of your total height. Round this number to the nearest hundredth.

Understand

1. Is the number more or less than 1? Explain.

2. The word *thousandths* represents how many decimal places to the right of the decimal point?

Plan and Carry Out

3. Write six hundred eighteen thousandths in standard form.

4. What digit is in the hundredths place?

5. What digit is to the right of the hundredths place?

6. Based on the number above, should you round up or down?

7. Round this number to the nearest hundredth.

Check

8. Did you round up or down? Why?

Solve Another Problem

9. Liz has a height of five feet and two and forty-five hundredths of an inch. Round Liz's height to the nearest inch.
