



# 5th Grade

# Decimal Concepts

2014-08-15

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**The charts have 4 parts.**

① Vocab Word **Factor**

② Its meaning (As it is used in the lesson.)

A whole number that can divide into another number with no remainder.	A whole number that multiplies with another number to make a third number.
---	--

③ Examples/ Counterexamples

$15 \div 3 = 5$   
 ↑  
 3 is a factor of 15

$3 \times 5 = 15$   
 ↑    ↑  
 3 and 5 are factors of 15

$$\begin{array}{r} 5R.1 \\ 3 \overline{) 16} \end{array}$$
 3 is not a factor of 16

④ Link to return to the instructional page. [Back to Instruction](#)

**Vocabulary words are identified with a dotted underline.**

Sometimes when you subtract the fractions, you find that you can't because the first numerator is smaller than the second! When this happens, you need to regroup from the whole number.

(Click on the dotted underline.)

How many thirds are in 1 whole?

How many fifths are in 1 whole?

How many ninths are in 1 whole?

↑

**The underline is linked to the page in the presentation's glossary containing the vocab chart.**

# What is a Decimal?

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## What is a decimal number?



*Click to find out!*

## Where do we see decimals being used?

Click on the photo to find out!



*And many other places!*

## Why do we need decimals?

Decimals are used in situations when more precision is needed.



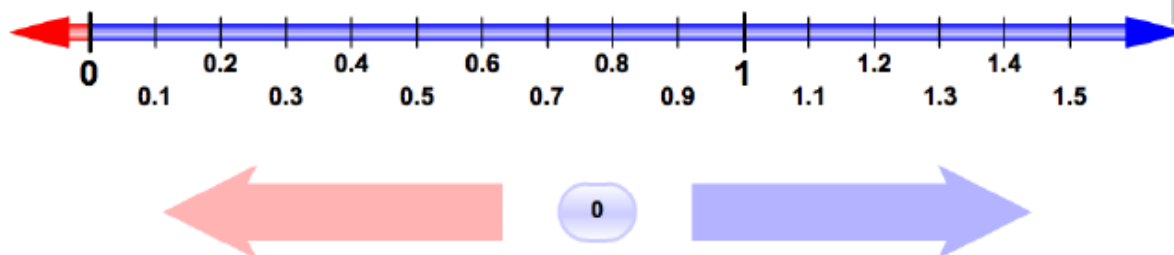
For instance, when two people cross the finish line, someone will win by a fraction of a second. We show those fractions as decimals.



If you are spending money, many things are not worth an exact dollar amount.

Lets take a look at decimals on a number line.  
Click on the picture below for an interactive number line.

Zoomable Number Line



Teacher Notes

## Identify Place Values

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1 What digit is in the thousandths place?

**987,654.0123**

- A 7
- B 2
- C 3
- D 8

Answer

2 What digit is in the tenths place?

**987,654.0123**

- A 1
- B 4
- C 0
- D 5

Answer

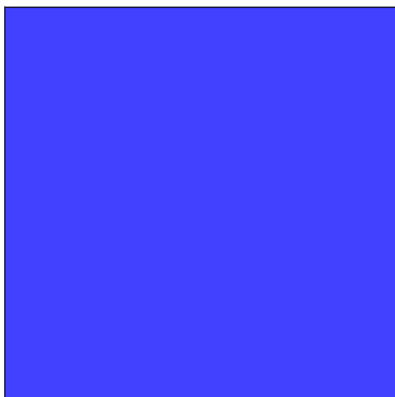
3 What digit is in the hundredths place?

**987,654.0123**

- A 5
- B 0
- C 1
- D 2

Answer

## Tenths



**Blue Block**  
**One Unit**  
(1)



**Yellow Rod**

**How many yellow rods  
are needed to fill the blue  
block?**

*click*

**What is the value of a yellow  
rod?**

*click*

Teacher Notes





Think of it in terms of money.

How many dimes does it take to make a dollar?

\_\_\_\_\_ dimes = 1 dollar

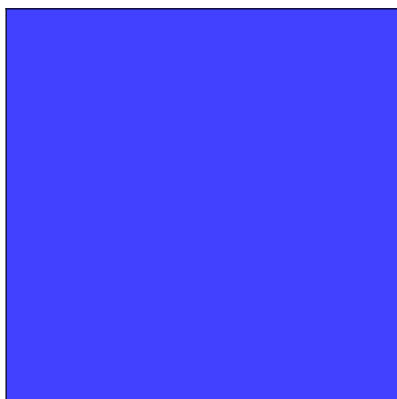


So, a dime is one tenth of a whole dollar.

## Hundredths



Yellow Rod



Red Block

How many red blocks are needed to fill the blue block?

(Hint: Fill a yellow rod with red blocks)

What is the value of a red block?

Blue Block  
One Unit

(1)



Think of it in terms of money.

How many pennies does it take to make a dollar?

\_\_\_\_\_ pennies = 1 dollar






So, a penny is one hundredth of a whole dollar.

So a dollar is a whole.

A dime is a tenth.

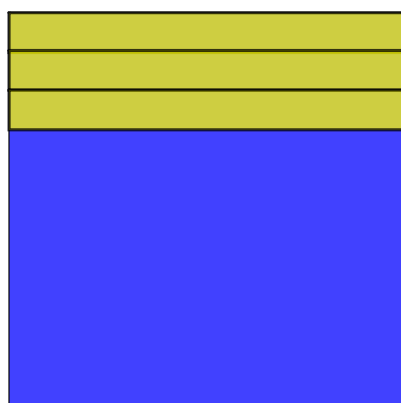
And a penny is a hundredth.

one	.	tenth	hundredth	
				

What if we had a coin that was smaller than a penny?

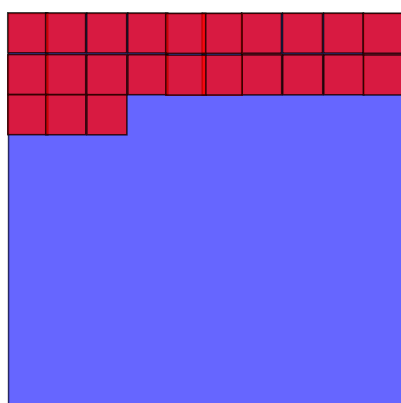
How many times smaller than a penny do you think it would be?

What would you call it?



**3 yellow rods = 0.3  
three tenths**

**Blue = One Unit**

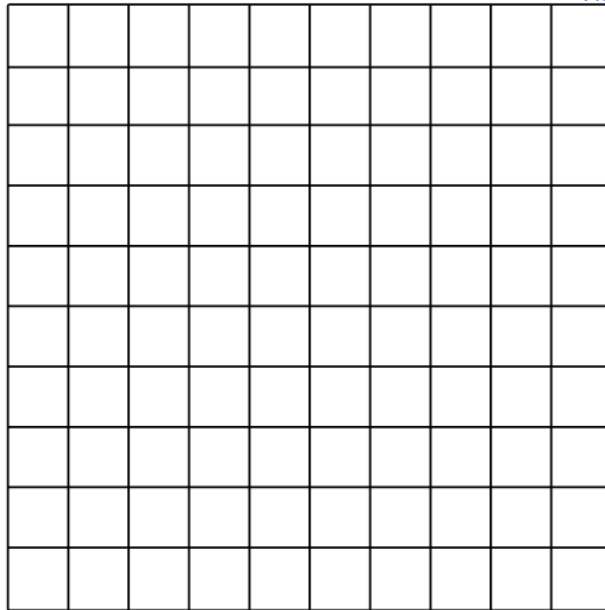


**23 red blocks = 0.23  
twenty three hundredths**

**Blue = One Unit**

# Interactive Number Grid - Use to Show Decimals

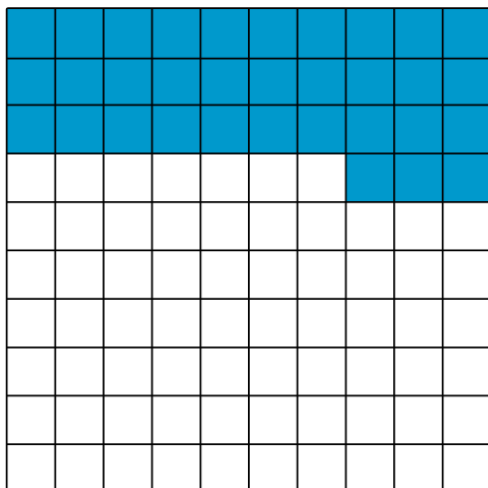
[Click to Go to Interactive Site](#)



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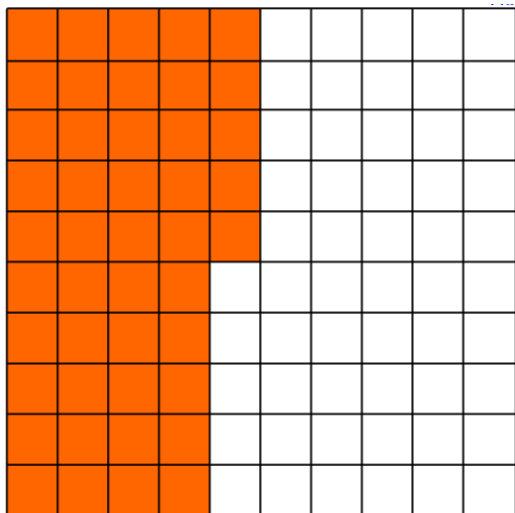
Teacher Notes

4 If the square equals one whole, what does the shaded area represent?



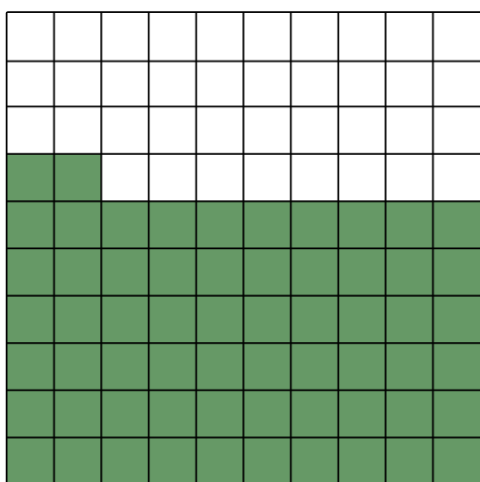
Answer

5 If the square equals one whole, what does the shaded area represent?



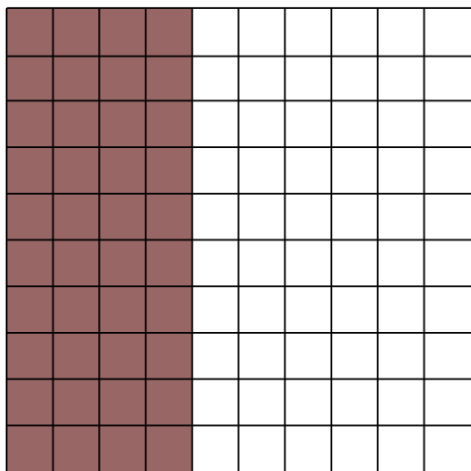
Answer

6 If the square equals one whole, what does the shaded area represent?



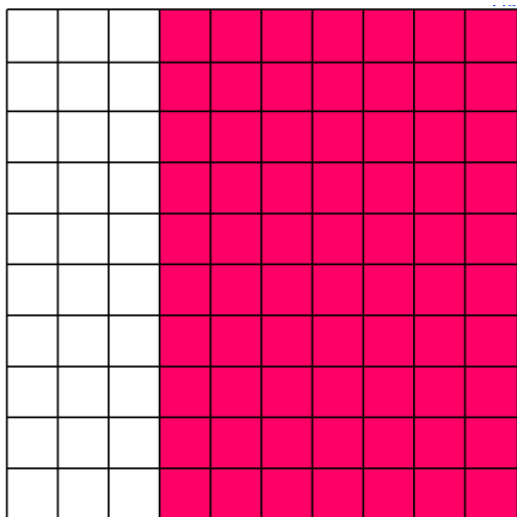
Answer

7 If the square equals one whole, what does the shaded area represent?









Answer

8 If the square equals one whole, what does the shaded area represent?



Answer

Lets look at place value using money again.

thousands	hundreds	tens	ones	.	tenth	hundredth	
							
					dime	penny	

\_\_\_\_\_ pennies = 1 dime

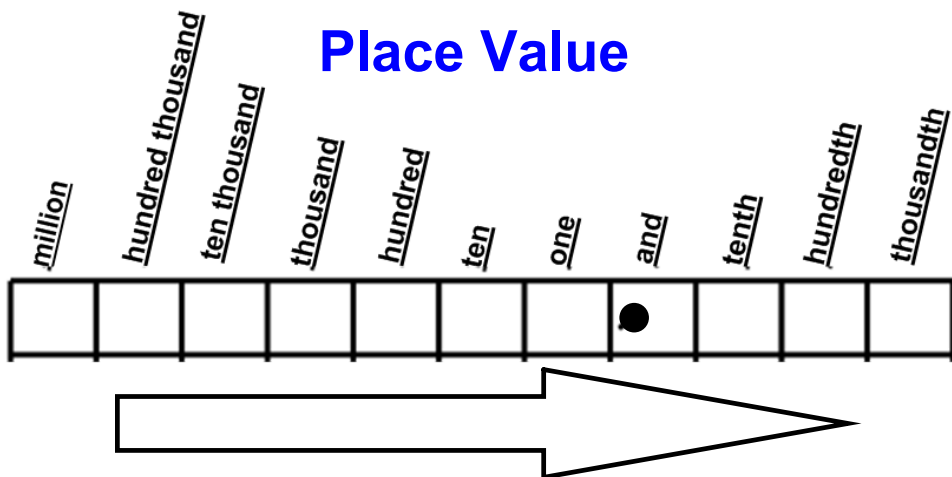
\_\_\_\_\_ dimes = 1 dollar bill

\_\_\_\_\_ 1 dollar bills = 1 ten dollar bill

\_\_\_\_\_ ten dollar bills = 1 hundred dollar bill

What do you notice about place value?

### Place Value

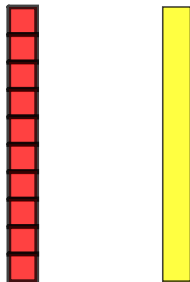


As you look at the place value chart, how many times does the value of the number decrease as you go to the right?

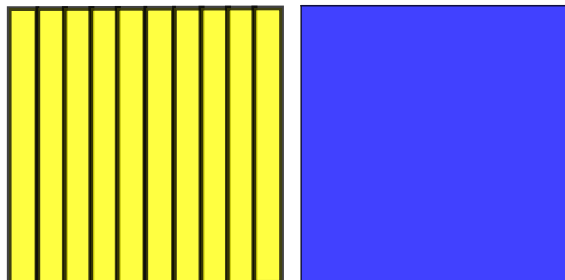
Click to reveal

Lets take a closer look at what happens as we move to the left on the place value chart.

10 ones = ten









10 tens = 1 hundred



Teacher Notes

one x 10 = ten x 10 = 1 hundred x 10 = 1 thousand...

Lets look at place value using money again.

thousands	hundreds	tens	ones	.	tenth	hundredth	
							
					dime	penny	

A hundred dollars is \_\_\_\_ times as much as ten dollars

A ten dollars is \_\_\_\_ times as much as a dollar

A dollar is \_\_\_\_ times as much as a dime

A dime is \_\_\_\_ times as much as a penny

What do you notice about place value?



## Place Value

<i>million</i>	<i>hundred thousand</i>	<i>ten thousand</i>	<i>thousand</i>	<i>hundred</i>	<i>ten</i>	<i>one</i>	<i>and</i>	<i>tenth</i>	<i>hundredth</i>	<i>thousandth</i>
							●			

As you look at the place value chart, how many times does the value of the number increase as you go to the left?

Click to reveal

Let's take a closer look at what happens as we move to the right on the place value chart.

**1 hundred ÷ 10 = ten**

**ten ÷ 10 = one**

**1 thousand ÷ 10 = 1 hundred ÷ 10 = ten ÷ 10 = 1**

Teacher Notes

Lets use place value to compare decimal #s.

	■	tenths	hundredths
<u>standard form</u>	.	3	3

word form                      thirty-three hundredths  
expanded form                 $0.3 + 0.03$

The 3 in the tenths place is **ten times** as much as the 3 in the hundredths place.

Teacher Notes

	■	tenths	hundredths
<u>standard form</u>	.	4	4

word form                      forty-four hundredths  
expanded form                 $0.4 + 0.04$

The 4 in the hundredths place is **one tenth** the 4 in the tenths place.

**9** In the number 3.33, the digit in the tenths place is one tenth of the digit in the hundredths place.

**True**

**False**

**Answer**

**10** In the number 11.111, the digit in the thousandths place is one tenth of the digit in the \_\_\_\_\_ place.

**A ones**

**B tenths**

**C hundredths**

**Answer**

**11** A digit in the ones place is 100 times as much as a digit in the \_\_\_\_\_ place.

- A** ones
- B** tenths
- C** hundredths

Answer

**12** The value of the 6 in 26.495 is \_\_\_\_\_  
the value of the 6 in 17.64.

- A** 1/10
- B** 10 times
- C** 1/100
- D** 100 times

Answer



13 The value of the 3 in 0.931 is \_\_\_\_\_  
the value of the 3 in 0.384

A 1/10

B 10 times

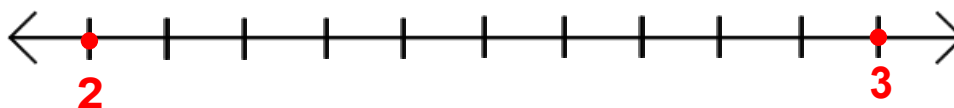
C 1/100

D 100 times

Answer

From PARCC sample test

## Decimals on the number line

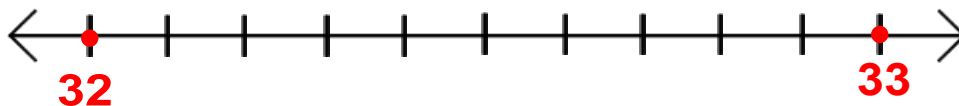


What does each line, between the whole numbers 2 and 3, represent on this number line ?

Label the number line.

Teacher Notes

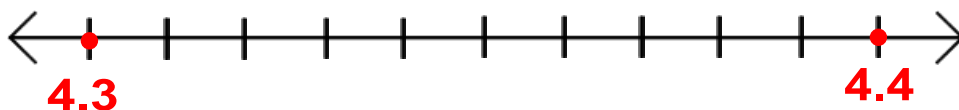
## Decimals on the number line



What does each line, between the whole numbers **32** and **33**, represent on this number line ?

Label the number line.

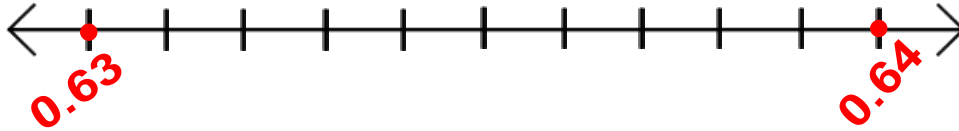
## Decimals on the number line



What does each line, between the decimal numbers **4.3** and **4.4**, represent on this number line ?

Label the number line.

## Decimals on the number line



What does each line, between the decimal numbers **0.63** and **0.64**, represent on this number line ?

Label the number line.

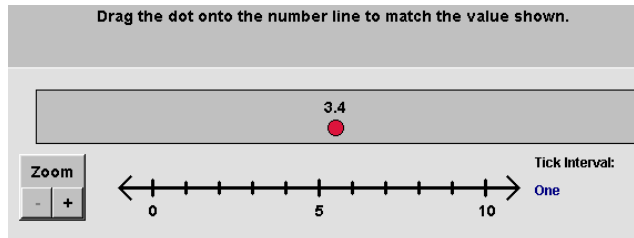
## National Library of Virtual Manipulatives

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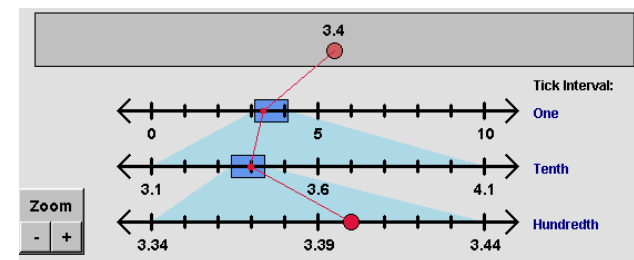
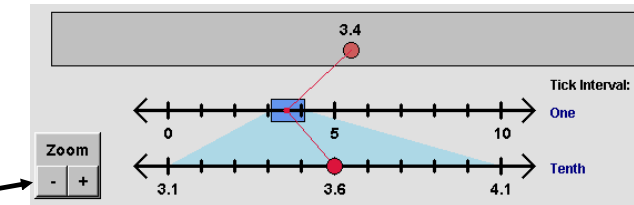
Drag the dot onto the number line to match the value shown.

Change Places to "Decimals" at the bottom left.

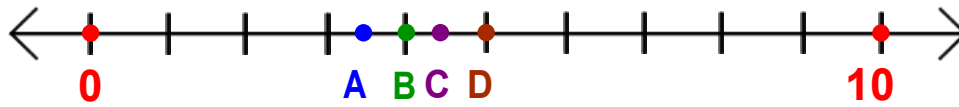
Places:



Zoom in to drag the dot more precisely.

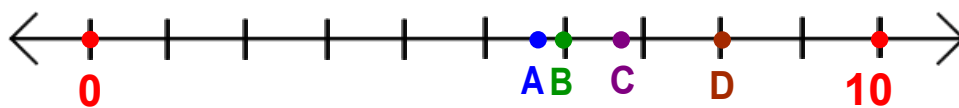


14 Which letter corresponds to the number **4.4** on this number line?



Answer

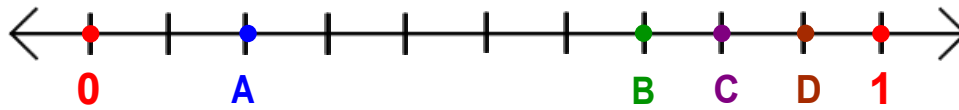
15 Which letter corresponds to the number **6.8** on this number line?



Answer

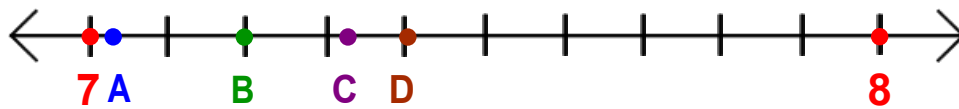


16 Which letter corresponds to the number **0.8** on this number line?



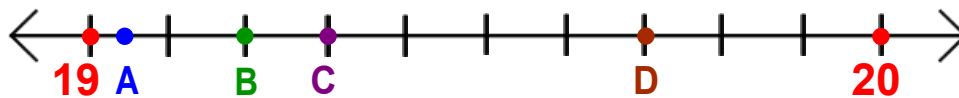
Answer

17 Which letter corresponds to the number **7.2** on this number line?



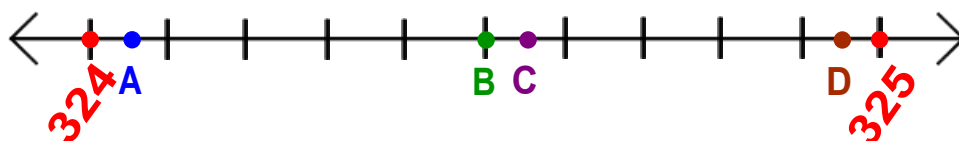
Answer

18 Which letter corresponds to the number **19.3** on this number line?



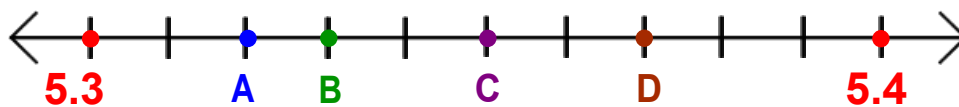
Answer

19 Which letter corresponds to the number **324.5** on this number line?



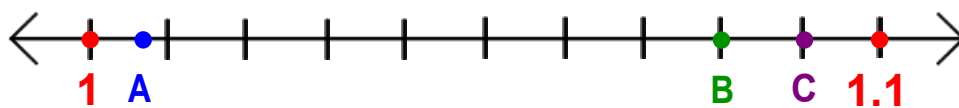
Answer

20 Which letter corresponds to the number **5.35** on this number line?



Answer

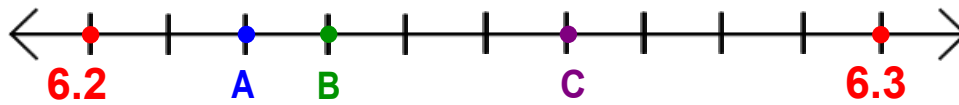
21 Which letter corresponds to the number **1.08** on this number line?



Answer

**D Not plotted on this number line**

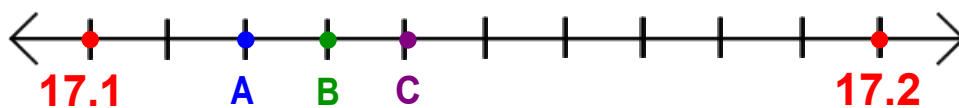
22 Which letter corresponds to the number **6.23** on this number line?



Answer

**D Not plotted on this number line**

23 Which letter corresponds to the number **17.4** on this number line?



Answer

**D Not plotted on this number line**

# **Read & Write Decimals**

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**In this unit, we will be working with numbers  
written in standard, word and expanded form.**

**Lets review each.**

## Word Form

Word form is simply the number written using words instead of digits, commas, and a period when needed.

1		$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
ones	■	tenths	hundredths	thousandths
3	and	0	4	
2	and	3	5	1
	and	8		

## Word Form

three and four hundredths

---

two and three hundred fifty-one thousandths

---

eight tenths

To read decimal numbers we:

1. Read the number to the left of the decimal
2. Say "and" for the period
3. Read the number to the right of the decimal
4. State the place value of the last digit.

<i>million</i>	<i>hundred thousand</i>	<i>ten thousand</i>	<i>thousand</i>	<i>hundred</i>	<i>ten</i>	<i>one</i>	<i>and</i>	<i>tenth</i>	<i>hundredth</i>	<i>thousandth</i>
9	8	7	5	6	1	0	.	4	7	9

This number is read:

Nine million, eight hundred seventy-five thousand, six hundred ten AND four hundred seventy-nine thousandths

Remember the place values after the decimal point start with tenths

Can you read the number?

<i>thousands</i>	<i>hundreds</i>	<i>tens</i>	<i>ones</i>	<i>and</i>	<i>tenths</i>	<i>hundredths</i>	<i>thousandths</i>
			0	.	0	7	
	5	4	6	.	2	5	9
			8	.	3		
			0	.	8	9	
			0	.	0	1	1
2	3	5	4	.	6		
			9	.	7		

Click on the the dice, and then read the number.



Teacher Notes

### How do you write a decimal in words?

1. Look to see if there is a number to the left of the decimal; if so write it out. If there is no number to the left of the decimal, skip to step 3.
2. Write an *and* for the decimal point.
3. Write the number in the decimal part.
4. Write the word for the place value of the rightmost digit.

Write 13.24 in words

Click to reveal



Click to reveal



**How does a comma help when writing a decimal number?**

**The place value before the comma is always stated.**

**For example:**

**1,547 is written**

**One THOUSAND, five hundred forty-seven**

**6,547,100 is written**

**6 MILLION, five hundred forty-seven THOUSAND, one hundred**

## **Write the decimal in words**

- 1) 5.04      Five **and** four hundred**ths**
- 2) 146.457      One hundred forty-six **and** four hundred fifty-seven thousand**ths**
- 3) .0009      Nine ten-thousand**ths**
- 4) 6,345.149      Six thousand, three hundred forty-five **and** one hundred forty-nine thousand**ths**

A cartoon ostrich with a white neck and head, and a dark grey body, stands on a brown tree branch. The background is a bright blue sky with green leaves from a tree at the top. To the right of the ostrich is a large white cloud containing the text 'Reading, Naming and Writing the Decimal' in purple. Below this cloud are two smaller white clouds, one containing 'Practice I' and the other 'Practice II', both in green text.

Reading, Naming  
and Writing  
the Decimal

Practice I Practice II

Teacher Notes

24 What is 4.36 in word form?

- A four and thirty-six
- B four and thirty-six tenths
- C four, thirty-six
- D four and thirty-six hundredths

Answer

25 What is 63.067 in word form?

- A sixty-three and sixty-seven hundredths
- B sixty-three and sixty-seven thousandths
- C sixty-three and sixty-seven
- D sixty-three, sixty-seven thousandths

Answer

26 What is 0.419 in word form?

- A zero and four hundred nineteen
- B four hundred nineteen hundredths
- C four hundred nineteen thousandths
- D four one nine

Answer

27 What is 0.09 in word form?

- A nine and nine
- B nine hundredths
- C nine and nine hundredths
- D nine and zero nine tenths

Answer

28 What is 407.021 in word form?

- A four zero seven zero two one
- B four hundred seven twenty-one
- C four hundred seven and twenty-one thousandths
- D four hundred seven and twenty-one hundredths

Answer

## Standard Form

Standard form is the way we usually see numbers written, using digits, commas and a period when needed.

### Standard Form

10.88      0.387

92.3      6.91

## Standard Form

1. If there is a *ths*, there will be a decimal
2. If there is an *and*, there will be a whole number to the left of the decimal
3. Note the ending - this is the place where the decimal number will end
4. Use the decimal chart to help you!

Use the chart as a guide to write the decimal numbers in standard form.

<i>thousands</i>	<i>hundreds</i>	<i>tens</i>	<i>ones</i>	<i>and</i>	<i>tenths</i>	<i>hundredths</i>	<i>thousandths</i>

1. two hundred sixteen and 2 tenths
2. thirty-two and nine thousandths
3. four thousand, five hundred six and twenty-four hundredths
4. nine hundred and eight hundredths



Teacher Notes

29 What is fifty-two and eighteen hundredths?

- A 52,18
- B 52.018
- C 52.18
- D 52.0018

Answer

30 What is five thousand, fifty and five hundredths?

- A 550.5
- B 5,050.5
- C 5,050.05
- D 5,500.05

Answer

31 What is six hundred three and four thousandths?

- A 603.4
- B 603.004
- C 603.04
- D 603.0004

Answer



32 What is thirty-four hundredths?

- A 340
- B 34
- C 0.34
- D 0.034

Answer

33 What is four hundred ninety-five thousandths?

- A 495
- B 495.000
- C 0.0495
- D 0.495

Answer

## Expanded Form

To write a number in expanded form, the number is written as a sum of the value of each digit.

Place value charts make it easy to write numbers in expanded form, because it helps us see the value of each digit.

1		$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1,000}$
ones	and	tenths	hundredths	thousandths
<b>3</b>	and	<b>0</b>	<b>4</b>	
<b>2</b>	and	<b>3</b>	<b>5</b>	<b>1</b>
	and	<b>8</b>		

### Expanded Form

$$3 + 0.04$$

---


$$2 + 0.3 + 0.04 + 0.001$$

---


$$0.8$$

**2.538**

Money and decimal place value intuition

Choose the right number of bills and coins to make

\$729.24

Thousands	Hundreds	Tens	Ones	Tenths	Hundredths
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢
\$1000	\$100	\$10	\$1	10¢	1¢

100 + 20 + 9 + 0.2 + 0.04

This interactive game will help you practice writing numbers in expanded form.

As a class, select the correct building blocks for each place value, then write the number in expanded form.

Check your work as a class.



**34 What is  $80 + 0.2 + 0.03$  in standard form?**

**Answer**

**35 What is  $0.5 + 0.004$  in standard form?**

**Answer**

**36 Which is equivalent to 30.53?**

- A  $30+0.5+0.3$**
- B  $3+0.05+0.03$**
- C  $30+0.5+0.03$**
- D  $0.3+0.05+0.003$**

**Answer**

**37 Which is equivalent to 0.873?**

- A  $0.8+0.07+0.03$**
- B  $8+0.7+0.3$**
- C  $0.8+0.07+0.3$**
- D  $0.8+0.07+0.003$**

**Answer**

**38 Which number is equivalent to 0.08?**

- A eight tenths**
- B  $.8 + 0.08$**
- C eight hundredths**

**Answer**

**39 Which number is equivalent to  $0.3 + 0.004$**

- A 3.04**
- B 0.34**
- C three hundred four thousandths**

**Answer**

**40 Which number is equivalent to sixteen hundredths?**

**A .016**

**B  $0.1 + 0.06$**

**C  $.01 + 0.06$**

**Answer**

## **Compare & Order Decimals**

**[Return to  
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There are two symbols we use to compare numbers when they are not equal. We call these number sentences inequalities.

> (greater than)

< (less than)

One number goes on the **left** of the symbol and another number goes on the **right** of the symbol.

The number on the left of the ">" shows the larger number.

For example:

$2 > 1$   
2 is "greater than" 1

The number on the left of the "<" shows the smaller number.

For example:

$1 < 2$   
1 is "less than" 2

*Symbols and Words to remember  
when comparing numbers*

SYMBOL

WORDS

>

greater than/largest

<

less than/ smallest

=

equal



## Comparing Decimals

- Line up the decimal points
- Put zeros in wherever digits are missing
- Compare the digits, from left to right
- The largest digit, having the same place value, names the largest number

## Compare 0.045 and 0.21

- Line up the decimal points
- Put zeros in wherever digits are missing
- Compare the digits, from left to right
- The largest digit, having the same place value, names the largest number

$0.045$   
 $0.210$

put zero on the end

Compare left to right.  
2 is greater than 0,  
so 0.21 is greatest.

Click to reveal

## Compare 0.36 and 0.312

- Line up the decimal points
- Put zeros in wherever digits are missing
- Compare the digits, from left to right
- The largest digit, having the same place value, names the largest number

$0.360$  ← put zero on the end  
 $0.312$

Compare left to right.  
6 is greater than 1,  
so 0.36 is greatest.

Click to reveal

## Compare 0.009 and 0.02

- Line up the decimal points
- Put zeros in wherever digits are missing
- Compare the digits, from left to right
- The largest digit, having the same place value, names the largest number

$0.009$   
 $0.020$  ← put zero on the end

Compare left to right.  
2 is greater than 0,  
so 0.02 is greatest.

Click to reveal

## Decimal Squares Interactive Games

Click for link.

**Place Value Strategy**

Each player tries to form the greater decimal by placing numbers from the spinner into the place value table. The player with the greater decimal wins the round. The first player to win 2 rounds wins the game.

Select the type of place value table

3 PLACE TABLE    4 PLACE TABLE

Game could also be played with two students having a spinner and writing down their decimal number.

**Robot WON TWO ROUNDS AND WON THE GAME!**

SPIN    PLAY AGAIN    MENU

	Tenths	Hundredths	Thousandths	Ten-Thousandths	Rounds Won
Melissa	5	0	2	1	0
Robot	7	9	5	0	2

In this game the robot won, because 0.7950 is greater than 0.5021.

41 Choose the correct symbol.

- A >
- B <
- C =

$$0.41 \square 0.049$$

Answer

42 Choose the correct symbol.

0.301  three hundred eleven thousandths

A >

B <

C =

Answer

43 Choose the correct symbol.

A >

B <

C =

0.007  0.05

Answer

44 Choose the correct symbol.

A >

B <

C =

0.179  twenty-four hundredths

Answer

45 Choose the correct symbol.

A >

B <

C =

forty-six hundredths  0.6

Answer

**46** In a paper airplane contest, Marcel's plane travels 3.345 meters. Salvador's plane travels 3.35 meters. Based on the measurements, whose plane traveled the farthest distance?  
On your paper, explain how you know.

**A** Marcel

**B** Salvador

Answer

(Derived from engage<sup>ny</sup>)

## Ordering Decimals

- Line up all of the decimal points
- Put zeros in wherever digits are missing
- Compare the digits, from left to right
- The largest digit, having the same place value, names the largest number

Example:

Why is  
this the  
smallest  
number?



910.800

085.007

910.801

911.900

085.070



Compare the digits

What digit tells us  
this is the largest  
number?



click

47 The number with the least value is:

- A 61.005
- B 61.3
- C 61.05
- D 61.04

Answer

48 The number with the least value is:

- A 0.005
- B 0.5
- C 0.05
- D 0.0005

Answer

49 The number with the greatest value is:

- A 9.888
- B 9.8
- C 9.008
- D 9.088

Answer

50 The number with the greatest value is:

- A 0.67
- B 0.067
- C 0.0067
- D 0.00067

Answer



51 How much money would you like to win?

- A \$150.59
- B \$140.99
- C \$150.82
- D \$140.50

Answer

52 Using the following digits, create the largest number you can between 0 and 1.

1, 7, 0, 2

Answer

**53** Using the following digits, create the smallest number you can between 0 and 1.

**1, 7, 0, 2**

Answer

## Ordering Decimals

Order the numbers from least to greatest.  
Move the numbers to put them in order.

15

0

1.5

0.015

0.15

## Ordering Decimals

Order the numbers from greatest to least.  
Move the numbers to put them in order.

**0.709****0.009****0.68****0.08****0.07**

54 Which of the following is ordered least to greatest?

A 0.3, 0.03, 0.33, 3.3

B 0.03, 0.3, 0.33, 3.3

C 3.3, 0.33, 0.3, 0.03

Answer

55 Which of the following is ordered least to greatest?

- A 0.008, 0.06, 0.5
- B 0.5, 0.06, 0.008
- C 0.06, 0.5, 0.008

Answer

56 Which of the following is ordered greatest to least?

- A 8.07, 0.008, 0.087, 0.87
- B 0.008, 0.087, 0.87, 8.07
- C 8.07, 0.87, 0.087, 0.008

Answer

57 Which of the following is *not* correct?

- A  $0.23 > 0.08 > 0.009$
- B  $0.23 > 0.009 > 0.08$
- C  $0.009 < 0.08 < 0.23$

Answer

58 Which of the following is correct?

- A  $0.8 < 0.32 < 0.41 < 0.701$
- B  $0.8 > 0.701 > 0.41 > 0.32$
- C  $0.32 > 0.41 > 0.701 > 0.8$

Answer

**59** In a paper airplane contest, Marcel's plane travels 3.345 meters. Salvador's plane travels 3.35 meters. Jennifer's plane travels 3.3 meters. Based on the measurements, who won the contest? On your paper, explain your answer.

- A** Marcel
- B** Salvador
- C** Jennifer

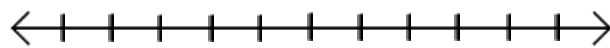
**Answer**

(Derived from engage<sup>ny</sup>)

## **Round Numbers to Designated Place Values**

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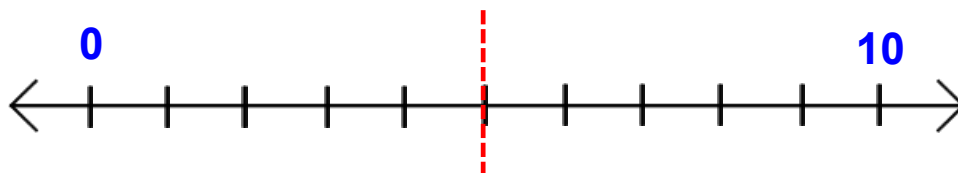
## Number Line Investigation



Instructions for the next slide:

1. Roll the die.
2. Click the yellow arrow to pop out the number.
3. Move the number to the correct place on the number line.
4. Determine whether the number is closer to 0 or 10.  
The dotted line shows the halfway mark between 0 and 10.

This can be repeated six times.



Think, Pair, Share:

What rule can you use to determine whether any given number is closer to 0 or to 10?

# Rounding

Rounding makes numbers easier to work with in your head.

- Rounded numbers are only approximate.
- An exact answer generally can not be obtained using rounded numbers.
- Use rounding to get an answer that is close and does not have to be exact.

## Review

**Round 8,749 to the nearest ten.**



1. Put your pencil point under the digit in the tens place.  
Look to the right.

2. Is the digit 5 or more?  
Yes OR No

3. What happens to the digit?  
Increases by 1 OR remains the same

4. What happens to everything to the left of the tens place?  
Those digits always remain the same.

5. What happens to everything to the right of the tens place?  
Those digits become zero.



## Review

**Round 8,749 to the nearest hundred.** 

1. Put your pencil point under the digit in the tens place.

Look to the right.

2. Is the digit 5 or more?

Yes OR No

3. What happens to the digit?

Increases by 1 OR remains the same

4. What happens to everything to the left of the hundreds place?

Those digits always remain the same.

5. What happens to everything to the right of the hundreds place?

Those digits become zero.

Teacher Notes

60

Round **143** to the nearest ten.

Answer

61

Round **4,561** to the nearest hundred.

Answer

62

Round **564,012** to the nearest hundred thousand.

Answer

63

Round **7,399** to the nearest thousand.

Answer

64

Round **63,752** to the nearest hundred.

Answer

**What happens in this case?**

**Round 697 to the nearest ten.**



**The 7 to the right of the 9 tells us to increase the 9 by 1.**

**What happens?**

**Answer \_\_\_\_\_**

65

**Round 3,972 to the nearest hundred.**

**Answer**

66

Round **98** to the nearest ten.

Answer

67

Round **399,238** to the nearest  
ten thousand.

Answer

68

Round **9,521** to the nearest thousand.

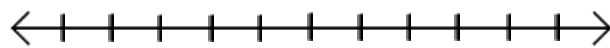
Answer

69

Round **9,983** to the nearest hundred.

Answer

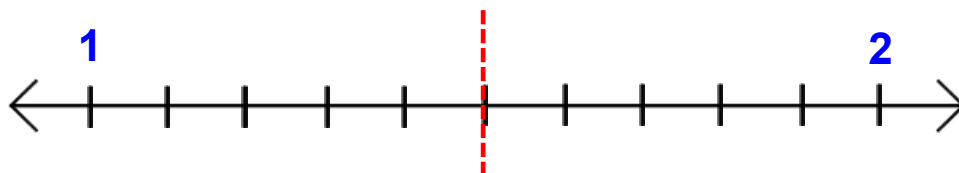
## Number Line Investigation



Instructions for the next slide:

1. Roll the die.
2. Click the yellow arrow to pop out the number.
3. Position the number in the correct place on the number line.
4. Determine whether the number is closer to 1 or 2.  
The dotted line shows the halfway mark between 1 and 2.

This can be repeated six times.



Think, Pair, Share:

What rule can you use to determine whether any given number is closer to 1 or to 2?

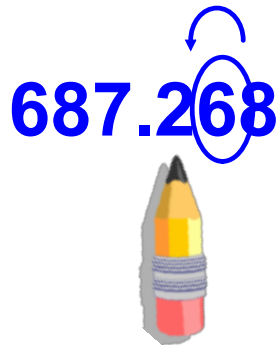
## Rounding Decimals

Let's learn how to round decimals using the following examples:

Round 687.268 to the nearest tenths place.

When rounding decimals, put your pencil point under the place value that you are rounding to

**DO NOT MOVE IT**



**Round 687.268 to the nearest tenth.**



1. Put your pencil point under the digit in the tenths place.

Look to the right.

2. Is the digit 5 or more?

Yes OR No

3. What happens to the digit?

Increases by 1 OR remains the same

4. What happens to everything to the left of the tenths place?

Those digits always remain the same.



### 5. What happened to the digits to the right of the tenths place?

Remember, we are rounding.

The place values to the right of the tenths place have zero value, so now the digits 6 and 8 become zeroes.

$$687.300 = 687.3$$

However we leave the zeros off when they are at the end of a number to the right of the decimal point.

## Round 8.73258 to the hundredths place.



1. Put your pencil point under the digit in the hundredths place.  
Look to the right.

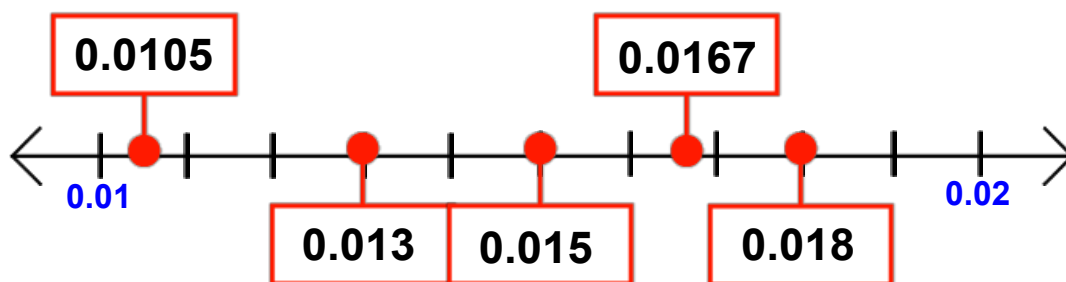
2. Is the digit 5 or more?  
Yes OR No

3. What happens to the digit?  
Increases by 1 OR remains the same

4. What happens to everything to the left of the hundredths place?  
Those digits always remain the same.

5. What happens to everything to the right of the hundredths place?  
Those digits become zero (and we leave them off since they are to the right of the decimal).

Which of the decimals round to 0.02?



Try this:

Round 687.4953 to the nearest hundredths place

Click to reveal

**70 Round**

**6874.6479**

**to the nearest hundredth.**

**Answer**

**71 Round**

**6874.6479**

**to the nearest ten.**

**Answer**

72 Round

**6874.6479**

**to the nearest hundred.**

Answer

73 Round

**6874.6479**

**to the nearest tenth.**

Answer

**74 Round**

**6874.6479**

**to the nearest thousand.**

**Answer**

**75 Round**

**6874.6479**

**to the nearest thousandth.**

**Answer**

## Caution!

When rounding to a specific place, your answer **MUST** have a digit in that place.

**Example:**

Round 23.97 to the nearest tenth

**Answer: 24.0**

There must be a digit in the tenths place, since we were to round to the tenths place.

76 Round

678.97

to the nearest tenth.

Answer

**77 Round**

**6.304**

**to the nearest hundredth.**

**Answer**

**78 Round**

**5.03**

**to the nearest tenth.**

**Answer**

79 Round

0.3497

to the nearest thousandth.

Answer

80 Round

84.951

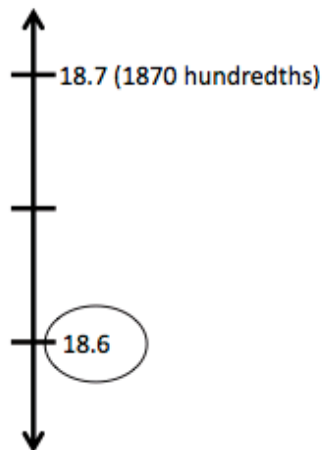
to the nearest tenth.

Answer



**81** A decimal number has two digits to the right of its decimal point. If we round it to the nearest tenth, the result is 18.6.

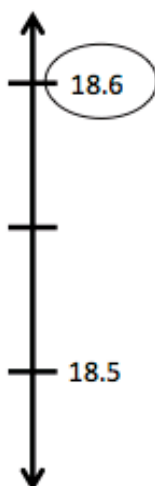
What is the maximum possible value of this decimal?  
On your paper, use words and the number line to explain your reasoning.

**Answer**

(Problem derived from engage<sup>ny</sup>)

**82** A decimal number has two digits to the right of its decimal point. If we round it to the nearest tenth, the result is 18.6.

What is the minimum possible value of this decimal?  
On your paper, use words and the number line to explain your reasoning.

**Answer**

(Problem derived from engage<sup>ny</sup>)

**83 Jules reads that one pint is equivalent to 0.473 liters. He asks his teacher how many liters there are in a pint. His teacher responds that there are about 0.47 liters in a pint. He asks his parents, and they say there are about 0.5 liters in a pint. Who is correct? On your paper, explain your answer.**

- A His teacher**
- B His parents**
- C Both of them**

(Problem derived from engage<sup>ny</sup>)

Answer

**84 Rainfall collected in a rain gauge was found to be 3.4 cm when rounded to the nearest tenth of a centimeter.**

**Select all the measurements below that could be the actual measurement of the rainfall.**

- A 3.251 cm**
- B 3.349 cm**
- C 3.352 cm**
- D 3.295 cm**

Answer

85 Annual rainfall total for cities in New York are listed below.

Rochester 0.97 meters

Ithaca 0.947 meters

Saratoga Springs 1.5 meters

New York City 1.268 meters

Round the smallest total rainfall to the nearest tenth.

Answer

(Derived from engage<sup>ny</sup>)

## Drag and Drop

Drag and drop one number into each box. When you are finished, the number inside each box should match the number below the box when rounded to the nearest hundredth.

5.025

5.079

5.103

5.117

5.066

5.108

--	--	--	--

5.07

5.08

5.10

5.11



Use rounding to estimate answers to problems.

At a restaurant, a burger is \$5.99, fries are \$3.85 and a small drink is \$1.29. Round to the nearest dollar to estimate the cost to purchase all three items.

Cost Estimate

\$5.99 → \$6

\$3.85 → \$4

\$1.29 → \$1



It would cost about \$11 to purchase all three items.

- 86 Round the following items, to the nearest dollar, to figure out the approximate cost if all of the items were bought.



pens \$2.99  
pencils \$2.20  
book bag \$15.75



Answer

87 Round the following items to the nearest dollar to figure out the approximate cost if all of the items were bought.



jeans \$24.99  
t-shirt \$6.79  
hat \$12.31



Answer

88 Round the following items to the nearest dollar to figure out the approximate cost if all of the items were bought.



milk \$3.79  
bread \$2.15  
juice \$2.40



Answer

89 Round the following items to the nearest half dollar to figure out the approximate cost if all of the items were bought.



chicken \$8.60  
potatoes \$2.45  
peas \$0.99

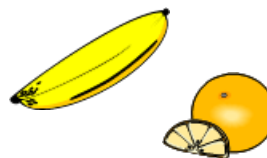


Answer

90 Round the following items to the nearest half dollar to figure out the cost if all of the items were bought.

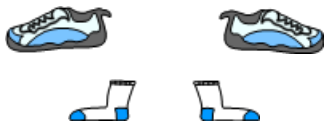


apples \$4.60  
bananas \$1.90  
oranges \$3.10



Answer

91 Round the following items to the nearest ten dollars to figure out the approximate cost if all of the items were bought.



sneakers \$36.21  
sweatshirt \$13.99  
socks \$6.00



Answer

92 Round the following items to the nearest hundred dollars to figure out the approximate cost if all of the items were bought.



computer \$688.23  
printer \$213.50  
desk \$175.89



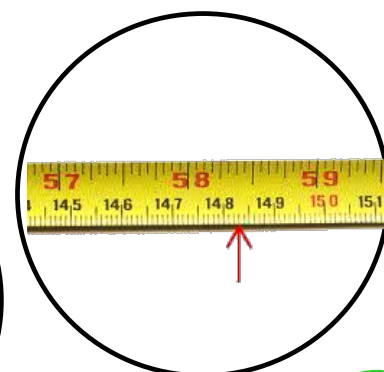
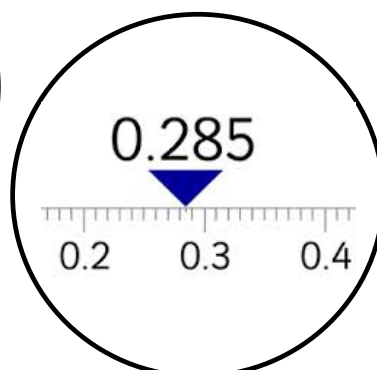
Answer

# Glossary

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## Decimal Number

A Decimal Number (based on the number 10, tenth parts, and powers of ten) contains a Decimal Point.



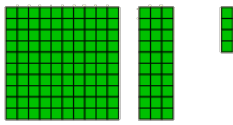
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## Expanded Form

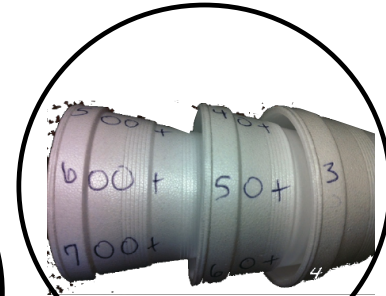
When a number is written as a sum of the value of each digit.

$$134 = 100 + 30 + 4$$



$$0.456 =$$

$$0.4 + 0.05 + 0.006$$



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## Greater Than

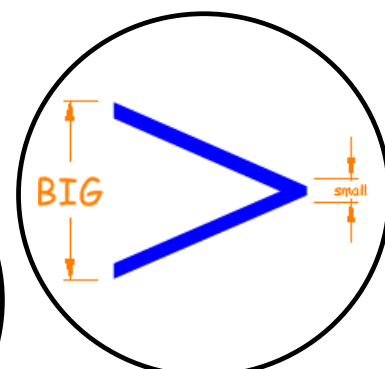
A symbol that shows that the number on the left is larger than the number on the right.



the alligator eats  
the bigger number

$$.4 > .2$$

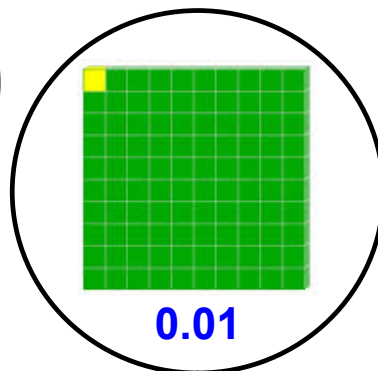
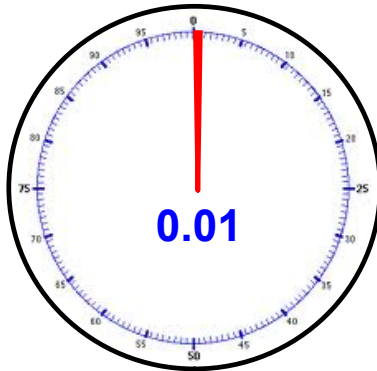
four tenths  
is greater than  
two tenths



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## Hundredths

A part of one whole that has been divided into 100 equal parts. Also, a part of one tenth that has been divided into 10 equal parts.



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## Inequality

A number statement that shows that two numbers are not equal.

$$.4 > .2$$

four tenths  
is greater than  
two tenths

$$.2 < .4$$

two tenths  
is less than  
four tenths

$$.2 \neq .4$$

two tenths  
is not equal to  
four tenths

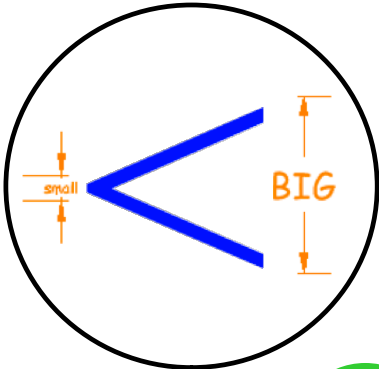
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# Less Than

A symbol that shows that the number on the left is smaller than the number on the right.



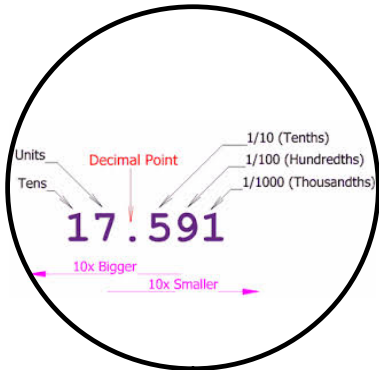
$.2 < .4$   
two tenths is less than four tenths



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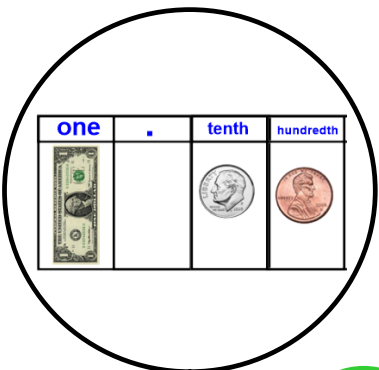
# Place Value

The value of a digit depending on its position in a number.



**Decimal Place Value**  
what is the value of each digit in the number below?

200	70	3	.	4	.06	.008
2	7	3	.	4	6	8
Hundreds	Tens	Ones	Decimal place	Tenths	Hundredths	Thousandths



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## Standard Form

Standard form is the way we usually see numbers written, using digits, commas and a period when needed.

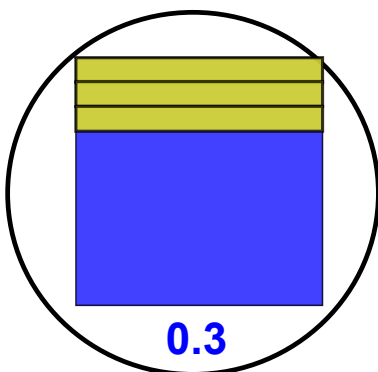
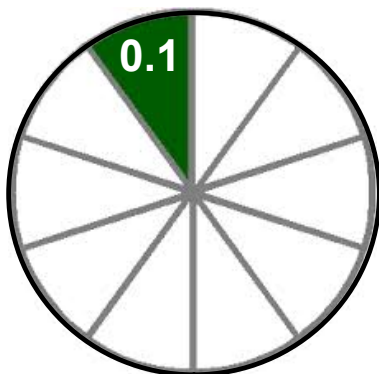
2.35



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## Tenths

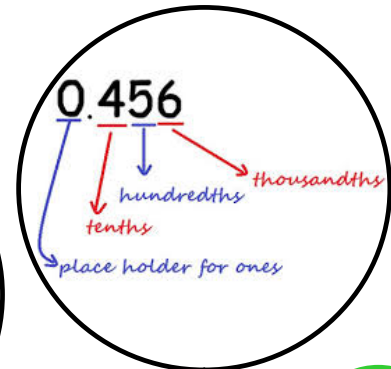
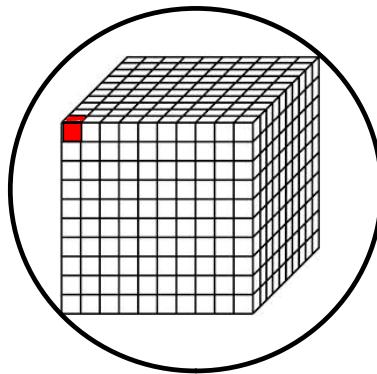
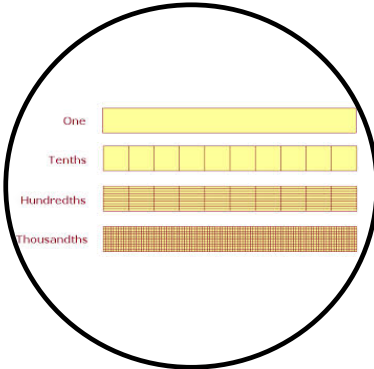
A part of one whole that has been divided into 10 equal parts.



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# Thousandths

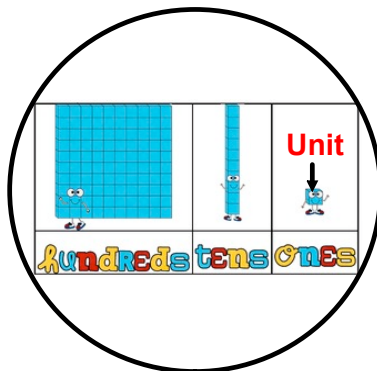
A part of one whole that has been divided into 1,000 equal parts. Also, a part of one tenth that has been divided into 100 equal parts, and a part of one hundredth that has been divided into 10 equal parts.



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# Unit

A unit is used to describe one of something.  
In place value, a unit is the ones place.



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# Word Form

Word form is a number written using words instead of digits, commas, and a period when needed.

**\$3.44**

three dollars  
and forty-four  
cents

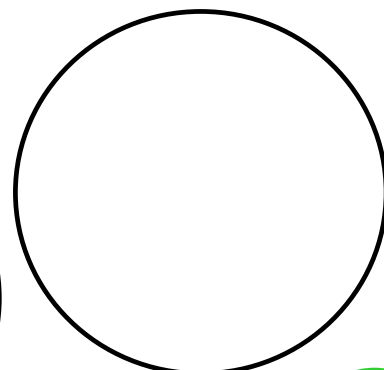
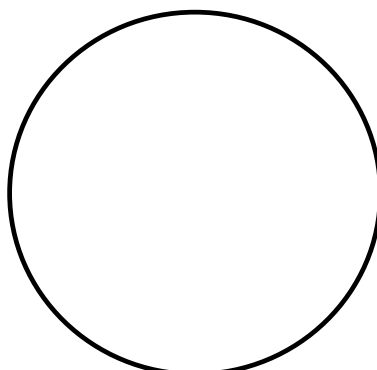
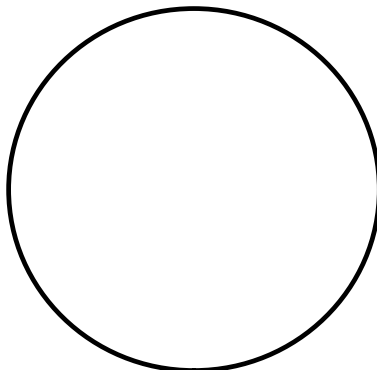
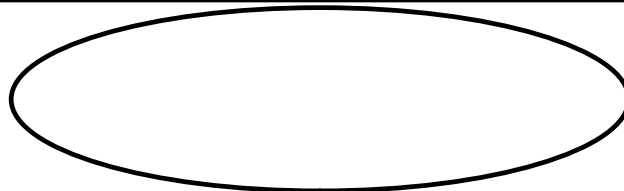
**8:24pm**

Eight twenty-four  
pm

**3.45**

three and forty-five  
hundredths

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Instruction

This page features a large rectangular frame. At the top center is a horizontal oval. Below it is a horizontal rectangle. At the bottom are three circles of equal size, arranged horizontally. In the bottom right corner of the frame is a green circular button with the text "Back to Instruction" in white.

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