DECIMAL NUMBERS

A DEFINITION

Discover: When we write numbers, the place of each digit is very important. Look at the number:

• The **5** is in the **Ones** place. That means we have 5 ones:



• The **3** is in the **Tens** place. That means we have 3 tens:



• The **2** is in the **Hundreds** place. That means we have 2 hundreds:

	<u> </u>	_	_	_	_	<u> </u>	<u> </u>	_	_	~	_
_										Ľ	
						<u> </u>			<u> </u>	7	-
									L	ы	н.
	-	-	-	-	-			-	-	n	-r
										и	4
											П.
	-	-	-	-	-			-	-	n	-r
									L	и	L
										٢r	Т
	_	-	-	-				_	-	и	-1
									L	IJ	L
				-					-	r t	7
										и	4
									L	IJ	I.
	-	-	-	-				-	-	n	-r
										и	4
											-
										~	

When we move to the left \leftarrow , each place is 10 times bigger:

• 10 ones makes 1 ten:



2 hundreds = 2

• 10 tens make 1 hundred:



When we move to the right \rightarrow , each place is 10 times smaller:

- 1 hundred $\div 10 = 1$ ten
- 1 ten $\div 10 = 1$ one

What if we continue past the Ones place? If we divide one \Box by 10, we get a **tenth** which is written as $\frac{1}{10}$ or ℓ To show where the Ones place is, we use a decimal point:



Definition **Decimal Number**

A decimal number is a number that has a decimal point. The decimal point separates the whole number part from the part that is smaller than one. We can write a decimal number in different ways:

35.4

5 ones + 4 tenths

 $\overline{10}$

 $4 \times \frac{1}{10}$

5 +

 $5 \times 1 +$

• Numeral form (how we usually write it):

• Expanded form :	
•	3 tens +
	30+
	$3 \times 10 +$
• Table:	



Ø

1111 4 tenths

• Table:

• Blocks:



B ON THE NUMBER LINE

Discover: Decimal numbers, like fractions, can be shown on a number line. A number line helps us see where the numbers go.

• Showing Tenths on a Number Line

- Imagine we cut the space between 0 and 1 into 10 equal parts. Each part is called one tenth, or $\frac{1}{10}$.

- Since $\frac{1}{10} = 0.1$, we can write the number line like this:



• Showing Hundredths on a Number Line

Now, let's zoom in and cut the line between 0 and 0.1 into 10 equal parts. Each tiny part is called one hundredth, or 0.01.

> 0 0.010.020.030.04 0.050.060.070.08 0.090.1

Method How to Draw a Number Line for a Decimal Number

Here's how to put a decimal number on a number line:

- 1. Choose your range: If your numbers are between 2.2 and 2.3, your number line starts at 2.2 and ends at 2.3.
- 2. Divide into ten equal parts: On a number line from 2.2 to 2.3, the first mark is 2.21, the second is 2.22, and so on, until you get to 2.30 (which is the same as 2.3).



Ex: Find the value of x.

Answer:

• Each small division on the number line shows 0.01.

 $\begin{array}{c} x \\ 1.2 & 1.21 & 1.22 & 1.23 & 1.24 & 1.25 & 1.26 & 1.27 & 1.28 & 1.29 & 1.3 \end{array}$

3

• So, x = 1.22