

## What do I need to be able to do?

By the end of this unit you should be able to:

- Understand place value and the number system including decimals
- Understand and use place value for decimals, integers and measures of any size
- Order number and use a number line for positive and negative integers, fractions and decimals,
- use the symbols  $=$ ,  $\neq$ ,  $\leq$ ,  $\geq$
- Work with terminating decimals and their corresponding fractions
- Round numbers to an appropriate accuracy
- Describe, interpret and compare data distributions using the median and range

## Keywords

- Approximate:** To estimate a number, amount or total often using rounding of numbers to make them easier to calculate with
- Integer:** a whole number that is positive or negative
- Interval:** between two points or values
- Median:** A measure of central tendency (middle, average) found by putting all the data values in order and finding the middle value of the list
- Negative:** Any number less than zero, written with a minus sign
- Place holder:** We use 0 as a place holder to show that there are none of a particular place in a number
- Place value:** The value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right
- Range:** The difference between the largest and smallest numbers in a set
- Significant figure:** A digit that gives meaning to a number. The most significant digit (figure) in an integer is the number on the left. The most significant digit in a decimal fraction is the first non-zero number after the decimal point

## Integer Place Value

Billions			Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O	H	T	O
		3	1	4	8	0	3	3	0	2	9

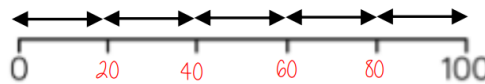
Placeholder

Three billion, one hundred and forty eight million, thirty three thousand and twenty nine

1 billion 1,000,000,000

1 million 1,000,000

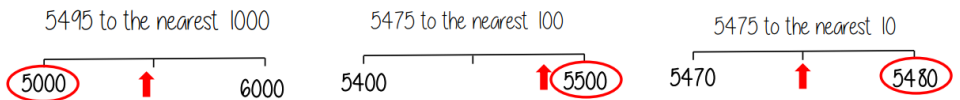
## Intervals on a number line



Divide the difference by the number of intervals (gaps).  
E.g.  $100 \div 5 = 20$

## Rounding to the nearest power of ten

If the number is halfway between we "round up"



## Compare integers using $<$ , $>$ , $=$ , $\neq$

- $<$  less than  
 $>$  greater than  
 $=$  equal to  
 $\neq$  not equal to
- Two and a half million  $\equiv$  2 500 000  
300 000 000  $\equiv$  Three billion  
Six thousand and eighty  $\equiv$  68 000

## Range Spread of the values

Difference between the biggest and smallest

3 9 8 12

Range: Biggest value - Smallest value

$$12 - 3 = 9$$

Range = 9

## Median The middle value

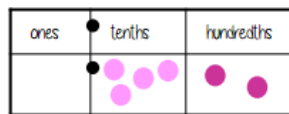
Example 1 Median: put the in order 3 4 8 9 12  
4 3 9 8 12 find the middle number 3 4 **8** 9 12

Example 2 Median: put the in order  
150 154 148 137 148 **150 154** 158 160  
137 160 158 There are 2 middle numbers  
Find the midpoint  
152

## Decimals

We say "nought point five two"

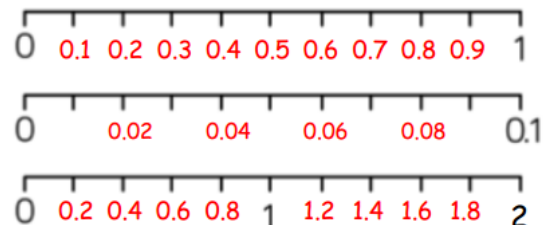
Five tenths and two hundredths



$$0 \text{ ones, } 5 \text{ tenths and } 2 \text{ hundredths} \\ 0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01 \\ = 0 + 0.5 + 0.02 \\ = 0.52$$

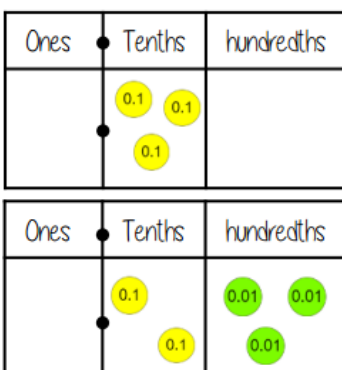
## Decimal intervals on a number line

One whole split into 10 parts makes tenths = 0.1  
One tenth split into 10 parts makes hundredths = 0.01



## Comparing decimals

Which the largest of 0.3 and 0.23?



$0.3 > 0.23$

"There are more counters in the furthest column to the left"

0.30  
0.23

Comparing the values both with the same number of decimal places is another way to compare the number of tenths and hundredths

## Round to 1 significant figure

- 370 to 1 significant figure is 400
- 37 to 1 significant figure is 40
- 3.7 to 1 significant figure is 4
- 0.37 to 1 significant figure is 0.4
- 0.00000037 to 1 significant figure is 0.0000004

Round to the first non zero number