

YEAR 7 — PLACE VALUE AND PROPORTION

Ordering integers and decimals

@whisto_maths

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

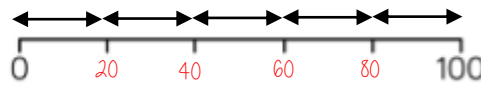
Integer Place Value

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

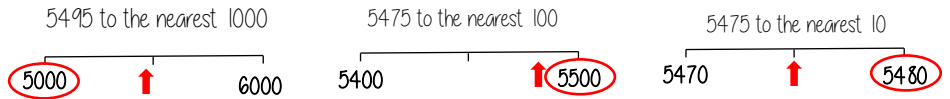
Intervals on a number line



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

Rounding to the nearest power of ten

If the number is halfway between we "round up"



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

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

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

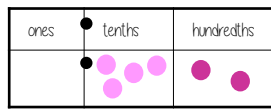
Median The middle value

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



$$0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01 = 0 + 0.5 + 0.02 = 0.52$$

Comparing decimals

Which the largest of 0.3 and 0.23?

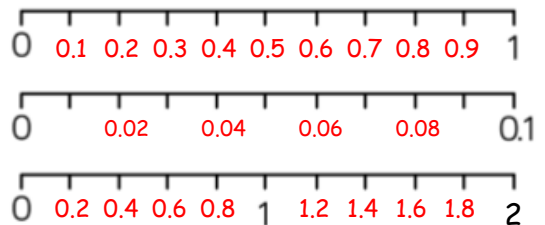
Ones	Tenths	hundredths
	0.1 0.1	
	0.1	
Ones	Tenths	hundredths
	0.1	0.01 0.01
	0.1	0.01

$0.3 > 0.23$
 "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

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



Round to 1 significant figure

370 to 1 significant figure is 400
 37 to 1 significant figure is 40
 37 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