

Y7 Maths - Autumn

Place value

The position of the digit gives its size

thousands	hundreds	tens	units	•	tenths	hundredths
4	3	5	2	•	6	1

Example

The value of the digit '4' is 4000

The value of the digit '3' is 300

Multiply & Divide by 10 or 100

- To **multiply** by 10, move each digit one place to the **left**

e.g. $35.6 \times 10 = 356$

Hundreds	Tens	Units	•	tenths
	3	5	•	6
3	5	6	•	

- To **divide** by 10, move each digit one place to the **right**

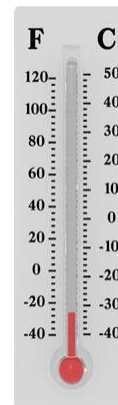
e.g. $35.6 \div 10 = 356 = 3.56$

Tens	Units	•	tenths	hundredths
3	5	•	6	
	3	•	5	6

- To **multiply** by 100, move each digit 2 places to the **left**
- To **divide** by 100, move each digit 2 places to the **right**

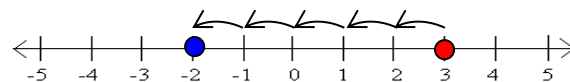
Recognise negative numbers

- These can be seen on a thermometer



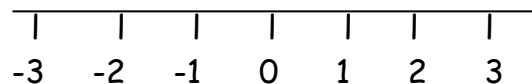
The numbers below freezing (0°) are negative

- Number line to work out sums



$$3 - 5 = -2$$

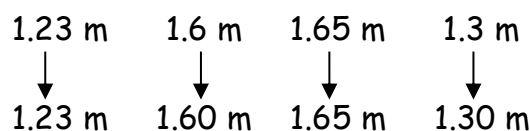
Order negative numbers



$2 > -2$ → We say 2 is bigger than -2

$-1 < 3$ → We say -1 is less than 3

Order decimals



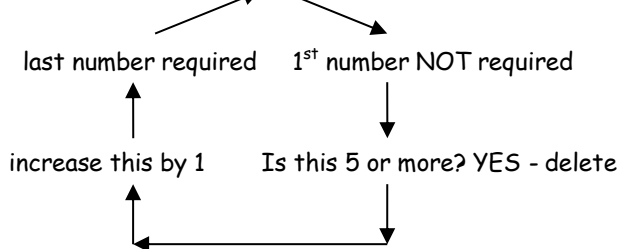
Make the number of digits the same, it is easier to order them

Smallest \longrightarrow Largest
 1.23 m 1.30 m 1.60 m 1.65 m

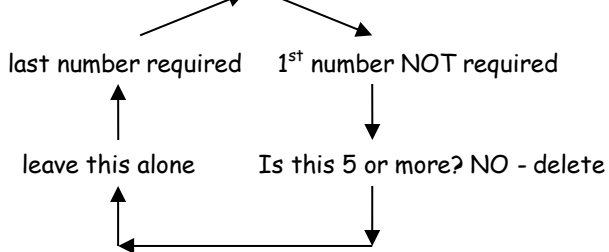
Rounding decimals

- Look at the last number required
- Look at the first number NOT required

e.g. To round 5.47 to 1dp



e.g. To round 5.43 to 1dp



Round to one significant figure

These all have ONE significant figure

4000
300
80
2
0.7
0.05
0.003

Estimate answers to calculations

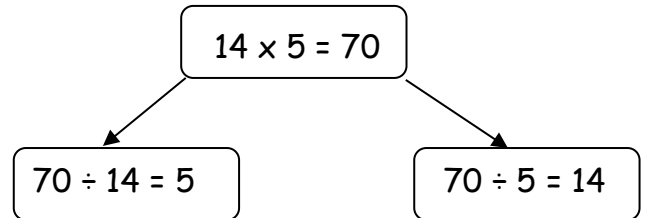
- Round each number to 1 s.f. first

e.g. $5979 \div 29 \approx 6000 \div 30 \approx 200$

e.g. $\frac{423 \times 28}{568} \approx \frac{400 \times 30}{600} \approx \frac{12000}{600} \approx 20$

Division facts from a multiplication

Any multiplication sum can be written as 2 division sums



Order of operations

Bracket

Indices

Divide

Multiply

Add

Subtract

} Do these in the order they appear

} Do these in the order they appear

e.g. $3 + 4 \times 6 - 5 = 22$

↑
first

Direct proportion

e.g.1

5 miles is approximately 8km.

How many miles are equal to 24km?

$$24\text{km} \div 8\text{km} = 3$$

$$5 \text{ miles} \times 3 = 15 \text{ miles}$$

e.g.2

It takes 90 Lego bricks to build 3 planes



How many bricks would be needed for 11?

$$1 \text{ plane uses } 90 \div 3 = 30 \text{ bricks}$$

$$11 \text{ planes will use } 11 \times 30 = 330 \text{ bricks}$$

Multiple, factor, prime & square numbers

- **FACTORS** are what divides exactly into a number

e.g. Factors of 12 are:

1	12
2	6
3	4

- **MULTIPLES** are the times table answers

e.g. Multiples of 5 are:

5 10 15 20 25

- **PRIME** numbers have only **TWO** factors

e.g.

2, 3, 5, 7, 11, 13, 17, 29, 31, 37

- **SQUARES** are the result of multiplying a number by itself

e.g. $1 \times 1 = 1$
 $2 \times 2 = 4$
 $3 \times 3 = 9$

Square numbers

Use inverse operations

- To undo ADD, just SUBTRACT

e.g. $36 + 23 = 59$ ($59 - 36 = 23$)

- To undo MULTIPLY, just DIVIDE

e.g. $7 \times 3 = 21$ ($21 \div 7 = 3$)

- Use balancing:

$20 + \square = 20 \times 4$

$20 + \square = 80$

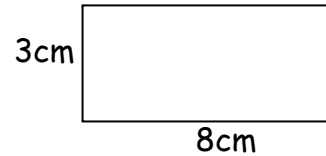
$20 + 60 = 80$ ($80 - 20 = 60$)

Area and perimeter of rectangle

Area is the amount of space inside the outline of a shape

Perimeter is the length of the outline of a shape

- **Area of rectangle = length x width**



$$\begin{aligned}\text{Area of rectangle} &= l \times w \\ &= 8 \times 3 \\ &= \underline{24\text{cm}^2}\end{aligned}$$

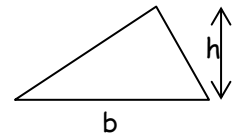
- **Perimeter of the rectangle**

$$\begin{aligned}\text{Perimeter} &= 3 + 8 + 3 + 8 \text{ OR } 2 \times 3 + 2 \times 8 \\ &= \underline{22\text{cm}}\end{aligned}$$

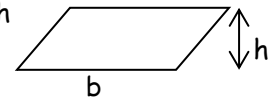
Areas

Formulae to learn:

$$\text{Area of triangle} = \frac{b \times h}{2}$$



$$\text{Area of parallelogram} = b \times h$$



Averages and Range

Mode - most frequent measure

Median - middle measure (put them in order)

Mean - total of measures \div no. of measures

Range - Highest minus lowest measure

- **Range** measures how spread out the measures are
- **Mode, median & mean** gives an average
- The range and one of the averages is used to compare distributions