# YEAR 7 NUMERACY REVISION NOTES

## SOME NUMERICAL FACTS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10mm | = | 1cm | 1000ml | = | 1l | 1000mg | = | 1g |
| 100cm | = | 1m | 1000cm$^3$ | = | 1l | 1000g | = | 1kg |
| 1000m | = | 1km | | | | 1000kg | = | 1tonne |

| | | | | | | |
|---|---|---|---|---|---|---|
| 60secs | = | 1min | 1inch | = | 2.5cm | One million = 1,000,000 |
| 60mins | = | 1hr | 5miles | = | 8km | (6 zeros) |
| 3600secs | = | 1hr | 2.2pounds | = | 1kg | |
| | | | 1 ¾ pints | = | 1litre | |

## SQUARE NUMBERS AND SQUARE ROOTS

$1^2 = 1 \times 1 = 1$
$2^2 = 2 \times 2 = 4$
$5^2 = 5 \times 5 = 25$

$\sqrt{25} = 5$ (the square root of 25 = 5 because 5 x 5 = 25)

## DIVISION

Work out 322 ÷ 14

$$14 \overline{)\,3\ {}^{3}2\ {}^{4}2} \quad 2\ 3$$

- 14 into 3 doesn't go so carry the 3 onto the next number
- 14 into 32 goes twice with 4 left over – carry this onto next number.
- 14 into 42 goes 3 times.
- Answer = 23

It helps to write the 14 times table!
1 x 14 = 14
2 x 14 = 28
3 x 14 = 42
4 x 14 = 56
5 x 14 = 70
6 x 14 = 84
7 x 14 = 98
8 x 14 = 112
9 x 14 = 126
10 x 14 =140

## MULTIPLES

Multiples of 5 for example are the numbers in the 5 times table

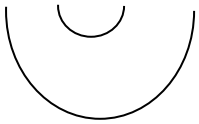
e.g. 5, 10, 15, 20, 25, .....

## FACTORS

Factors of a number go into it exactly leaving no remainder

e.g. factors of 15 are:

**1, 3, 5, 15**



Notice that it is a good idea to list the factors in pairs – e.g.

1x15 = 15 & 3x5 = 15

## PRIME NUMBERS

**2,3,5,7,11,13,17,19,23,29,.....** **A prime number has only two factors, 1 and itself**

## BASIC DEFINITIONS

**SUM ( add or + )**

**DIFFERENCE ( subtract or - )**

**PRODUCT ( multiply or x )**

## ROUNDING

### Decimal Places

3·78 (1dp) = 3·8

3.443 (2dp) = 3·44

If the number after the line is 5 or more – add 1 to the number before the line.

### Estimation

Estimate the sum of £4.99, £6.02, £3.52

£5 + £6 + £3.50 = £14.50

## ORDER OF OPERATION

**B -** bracket
**I -** indices
**D -** division
**M -** multiplication
**A -** addition
**S -** subtraction

5 + 3 x 4
= 5 + 12
= 17

Do x before +

3 x (5-2)
= 3 x 3
= 9

Do bracket before x

## FRACTIONS, DECIMALS AND PERCENTAGES

### SIMPLIFYING FRACTIONS

Simplify the following:

$\frac{20}{25} = \frac{4}{5}$ ← Divide top and bottom by 5

$\frac{12}{18} = \frac{2}{3}$ ← Divide top and bottom by 6

### ADDING AND SUBTRACTING FRACTIONS

$\frac{2}{3} + \frac{1}{4}$

$= \frac{8}{12} + \frac{3}{12}$

$= \frac{11}{12}$

We can't add fractions unless the denominator is the same – choose 12 because it is in the 3 and 4 times tables.

If we wanted to subtract the answer would be $\frac{5}{12}$

### Common Fraction, Decimal and Percentage Equivalents

The following table contains commonly used fraction, decimal and percentage equivalents – they need to be learned.

| Fraction | Decimal | Percentage |
|---|---|---|
| ½ | 0.5 | 50% |
| ¼ | 0.25 | 25% |
| ⅛ | 0.125 | 12.5% |
| ¾ | 0.75 | 75% |
| ⅓ | $0.\dot{3}$ | $33.\dot{3}\ \%$ |
| ⅔ | $0.\dot{6}$ | $66.\dot{6}\ \%$ |
| $^1/_{10}$ | 0.1 | 10% |
| $^1/_5$ | 0.2 | 20% |

### Fractions of Quantities

Find $\frac{3}{4} of\ 24$

= 24 ÷ 4 x 3

= 18

Divide by the bottom and **T**imes by the **T**op

## Percentages of Quantities

## Examples

10% of 350 = 35

1% of 350 = 3.5

10% of 47 = 4.7

For 10% ÷ 10,

For 1% ÷ 100

15% of 420 10% = 42,

5% = 21

15% = 42+21 = 63

## RATIO

## Method 1

Ann : Bill

= 2 : 7

= ? : 35 ↓ X 5

7 x 5 = 35 so 2 x 5 = 10

So Ann has 10 pencils

## Method 2

Ann and Bill share pencils in the ratio 2:7. If Bill has 35 pencils, how many does Ann have?

7 parts = 35

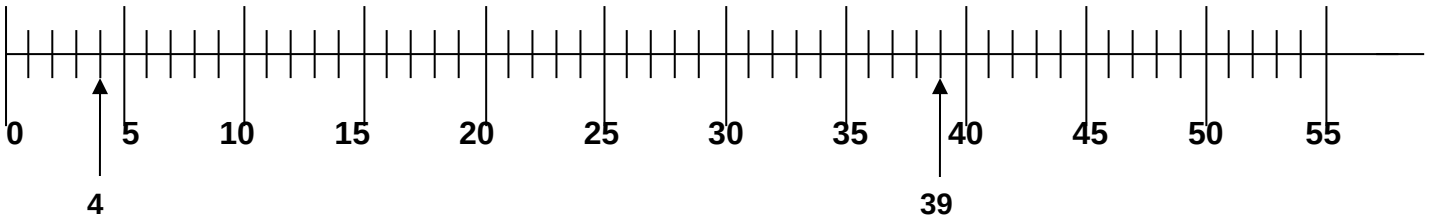
1 part = 5 (35 ÷ 7)

2 parts = 10

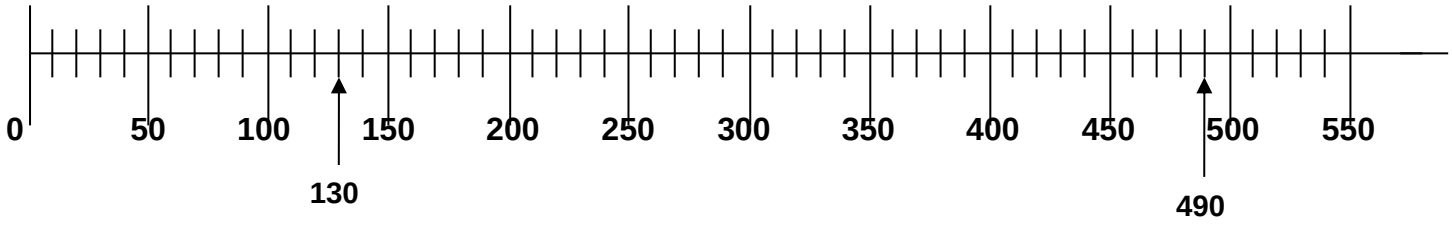
Ann has 10 pencils

**READING SCALES**

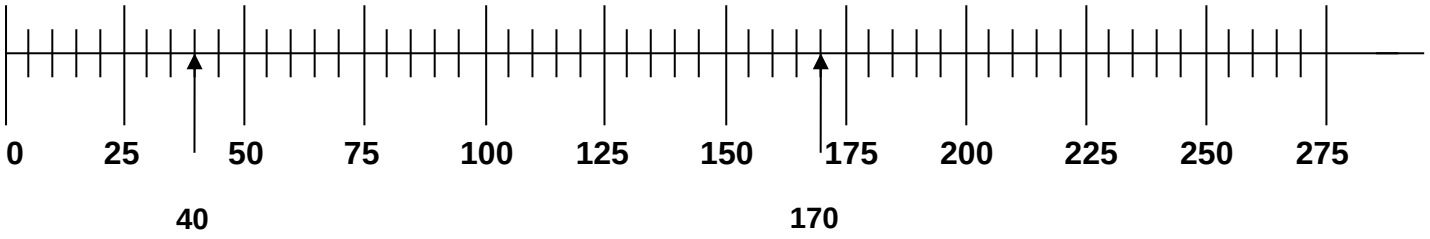
**1) This scale is going up in 1**



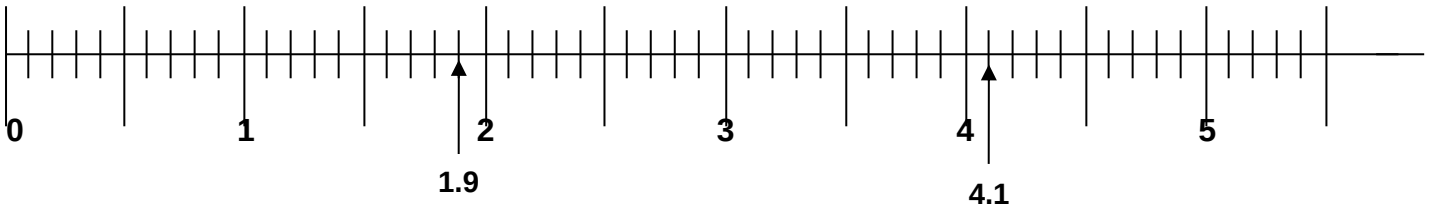

**2) This scale is going up in 10**



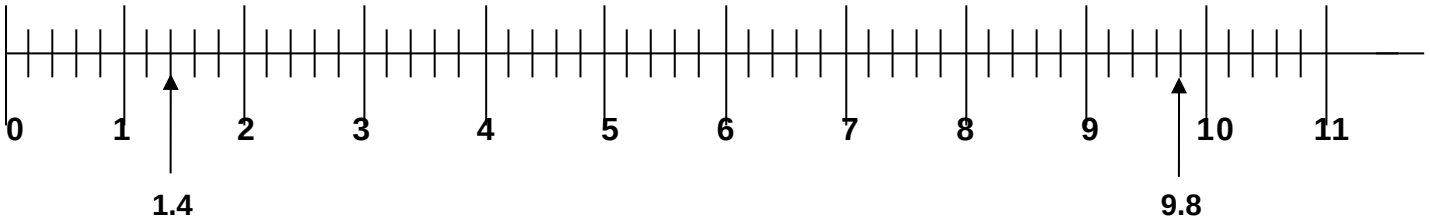

**3) This scale is going up in 5**




**4) This scale is going up in 0.1**




**5) This scale is going up in 0.2**



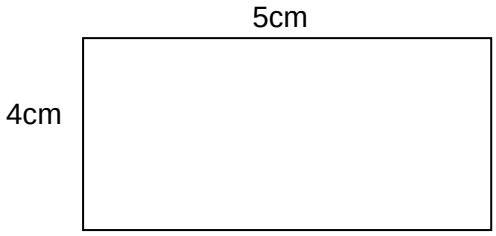
## AREA

The **AREA** of a shape is the amount of space taken up inside the shape.

**Note:** The units of the answer will be squared. e.g. **$cm^2$** **$mm^2$** etc

## Examples

### Rectangle



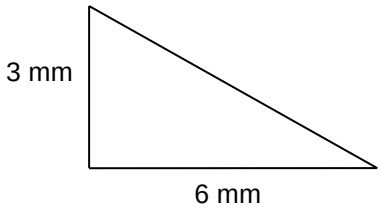

*Area = length X width*

Area = 5 x 4

= 20 $cm^2$

### Triangle

*Area = $\frac{\text{base X perpendicular height}}{2}$*




Area = $\frac{6 \times 3}{2}$

= $\frac{18}{2}$

= 9 $mm^2$

## VOLUME

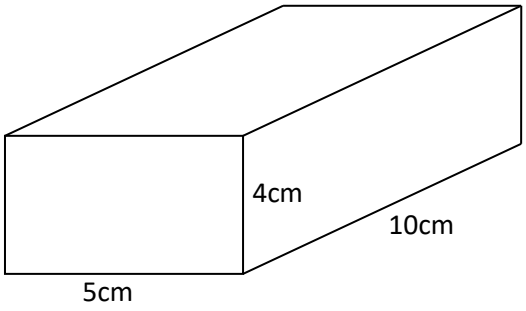
## Example

Find the volume of the following prism:

Volume = L x W x H

= 10 x 5 x 4

= 200 $cm^3$



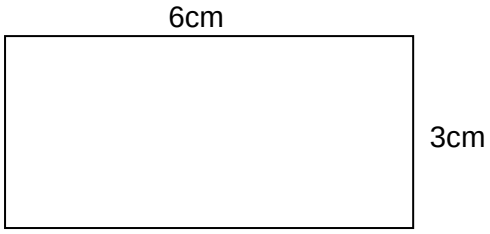

Notice units are cubed – i.e. the power is 3

## PERIMETER

The **PERIMETER** of a shape is the total distance around its edge.

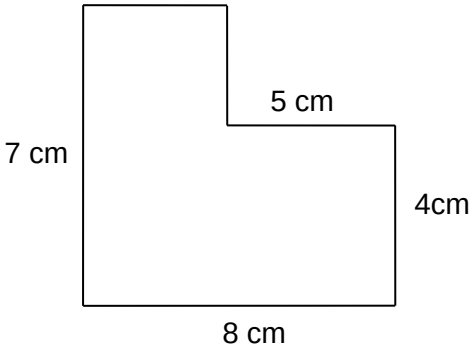
**Note:** The units of the answer will be the same as the ones used for each of the edges.

## Examples




Perimeter = 6 + 6 + 3 + 3

= 18 cm

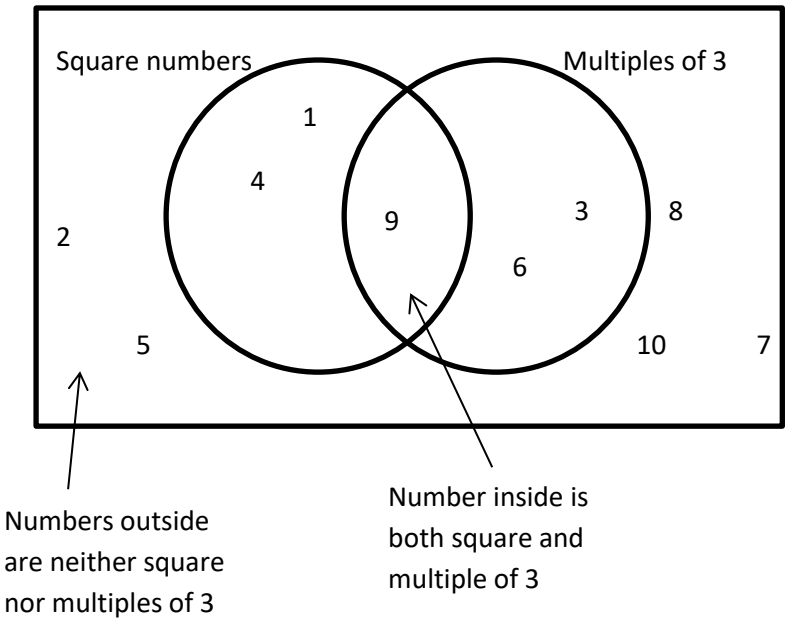



Perimeter = 7 + 8 + 4 + 5 + 3 + 3

= 30 cm

## VENN DIAGRAMS

Put the numbers 1 -10 into the Venn Diagram



# MEAN, MEDIAN, MODE AND RANGE

## MODE

The mode is the number that occurs the MOST often in a list.

2, 3, 5, 6, 2, 3, 7, 8, 6, 3 The mode is 3

## MEDIAN

The median is the middle number in a list of numbers that has been put in order from the smallest to the biggest. Sometimes there will be two middle numbers (if we have an even amount in the list). If this happens we have to find the mean of the two middle ones (add the middle ones up and divide by 2).

1) 2, 7, 8, 3, 4, 6, 3 Put them in order first

2, 3, 3, 4, 6, 7, 8 The median is 4

2) 5, 7, 3, 2, 5, 9, 10, 15

In order,

2, 3, 5, 5, 7, 9, 10, 15 5 + 7 = 12, 12 ÷ 2 = 6

The median = 6

## MEAN

To find the mean from a list of numbers we need to add them up to get a total and then divide the total by how many numbers in the list.

If we have 12, 6, 17, 5, 10

Total = 12+6+17+5+10
= 50

**Mean** = 50 ÷ 5
= 10

## RANGE

To find the range of a list of numbers, we take the smallest from the biggest.

3, 14, 21, 2, 6, 73 **Range** = 73 – 2
= 71