GO FURTHER

English, Maths and Foundation Learning

Barnet Southgate College

HeadStart

GCSE Maths Assessment Practice topics

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Decimals

BILLIONS			MILLIONS			THOUSANDS			ONES				DECIMALS			
100	10	1	100	10	1	100	10	1	100	10	1	.	tenths	hundredths	thousdandths	ten-thousandths
					4	5	7	8	0	3	2	.				
						3	0	5	0	4	2	.	3	0	5	

4578032

00305042.305000   305042.305

Four Rules

- 36 × 27

$$36$$
$$\times \quad 27$$
$$252$$
$$+ \quad 720$$
$$972$$

$$= 972$$

- 291 ÷ 3

$$97$$
$$3\overline{)2\,9\,1}$$

- 23.4 + 37.83

$$23.40$$
$$+ \quad 37.83$$
$$61.23$$

Rounding (10,100,1000 etc.)

- Round 35487 to the nearest 10, 100, 1000 etc.

35490   35500   35000

- Round 24983.72 to the nearest 10, 100, 1000 etc.

24980   25000   25000

Basic Powers

- 5^2 $5 \times 5 = 25$ $\sqrt{25} = 5$ or -5 ± 5

                                           $1, 4, 9, 16$

- 5^3 $5 \times 5 \times 5 = 125$ $\sqrt[3]{125} = 5$

                                        $1, 8, 27, 64$

- 5^4 $5 \times 5 \times 5 \times 5 = 625$

BIDMAS (order of operations)

- a) 3 + 22 − 1 = *24*

- b) $(5 + 2)^2 \times 2$ = *98*

- c) 12 − 5 × 2 = *2*

- d) $7 − (2 + 3)^2$ = *−18*

- e) 4 + 4 × 5 = *24*

f) 10 + 22 ÷ 2 = *21*

g) 28 − 4 ÷ 2 = *26*

h) 3 × 12 ÷ 4 = *9*

i)   (6 + 5) × 3 = *33*

j) (10 − 2) × 5 = *40*

Directed Numbers (positive and negative)
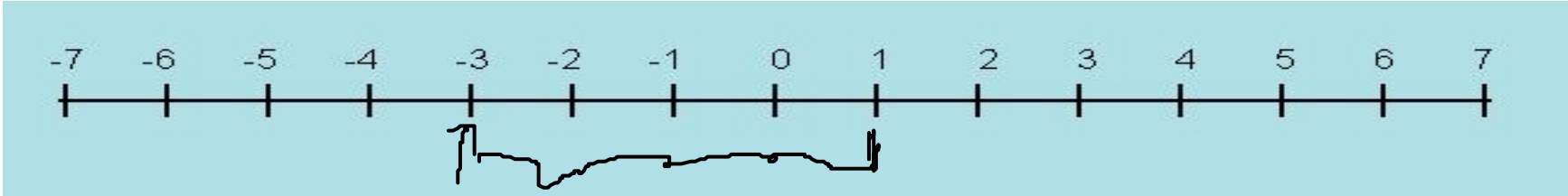
```
-7    -6    -5    -4    -3    -2    -1    0    1    2    3    4    5    6    7
+-----+-----+-----+-----+-----+-----+-----+----+----+----+----+----+----+----+
```

What is $3 - 4$? -1

Signs together

What is $-3 - 4$? -7

What is $3 - (-4)$? 7

What is $-3 - (+4)$ -7

What is $-3 - (-4)$

Factors and Multiples

- Factors of 8 $1, 2, 4, 8$

- Factors of 12 $1, 2, 3, 4, 6, 12$

                              $HCF = 4$

- Multiples 0f 4 $4, 8, 12, 16 \ldots$

- Multiples of 6 $6, 12, 18, 24 \ldots$ $LCM = 12$

Fractions

- $\dfrac{3}{8} = \dfrac{9}{?} = \dfrac{?}{40}$ $\times 3$ $\times 3$ $\times 5$

$$\dfrac{9}{24} = \dfrac{15}{40}$$

- $\dfrac{3}{5} + \dfrac{3}{8} = \dfrac{24}{40} + \dfrac{15}{40} = \dfrac{39}{40}$ $\times 8$ $\times 5$

Ratio

- Simplify 10 apples : 15 oranges

$2a : 3o$

$\dfrac{2}{5}$ or $\dfrac{10}{25}$

If Squash is 3 parts juice to 10 parts water   3:10

- How much water would you add to 12cl of juice?

$3p : 12cl$

$1p : 4cl$

$10 \text{ parts} = 10 \times 4 = 40cl$

- How much juice is in 78cl of squash? $3 + 10 = 13p$

$13p : 78cl$

$1p : 6cl$

$3p = 3 \times 6 = 18cl$

Percentages

- What is 20% as a fraction and as a decimal

$$\frac{20}{100} = \frac{2}{10} = \frac{1}{5}$$

$$20\% = 0.2$$

- What is 20% of £280?

$$10\% = £28$$
$$20\% = £56$$

$$\frac{20}{100} \times \frac{280}{1} = \frac{56}{1} = £56$$

- Reduce £60 by 30%

$$10\% = £6$$
$$30\% = £18$$

$$= 60 - 18 = £42$$

Averages and Range

- Find the mean, median, mode and range of 5, 7, 2, 7 and 3

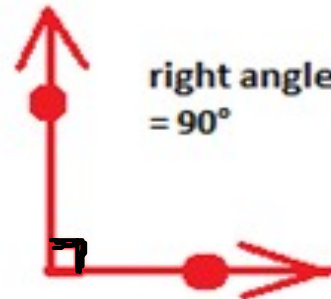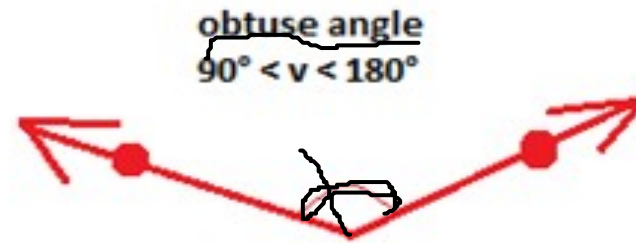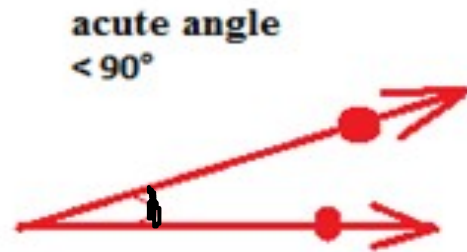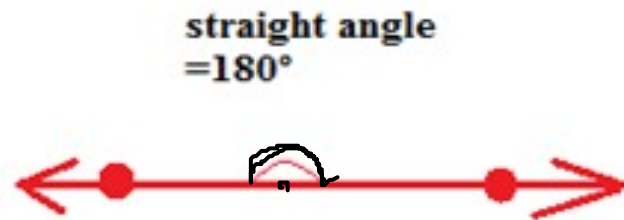$$mean = \frac{5+7+3+7+3}{5} = \frac{24}{5} = 4\frac{4}{5}$$

$$mode = 7$$

$$Median = 2, 3, \boxed{5}, 7, 7 = 5$$

$$Range = 7 - 2 = 5$$

Angles

straight angle
=180°

obtuse angle
90° < v < 180°

acute angle
< 90°

right angle
= 90°

Graphs
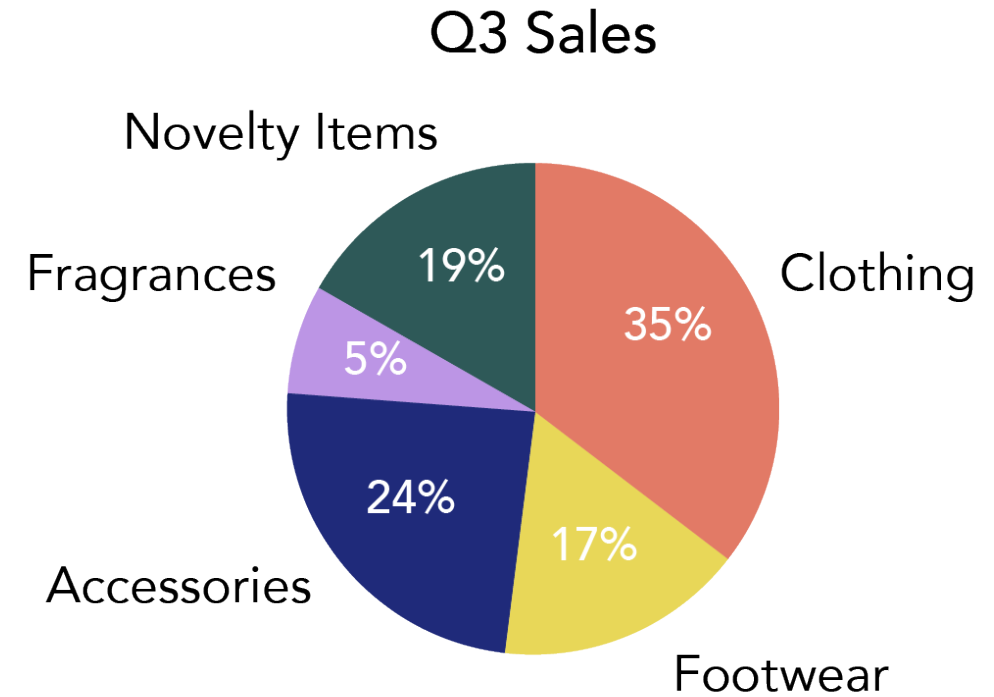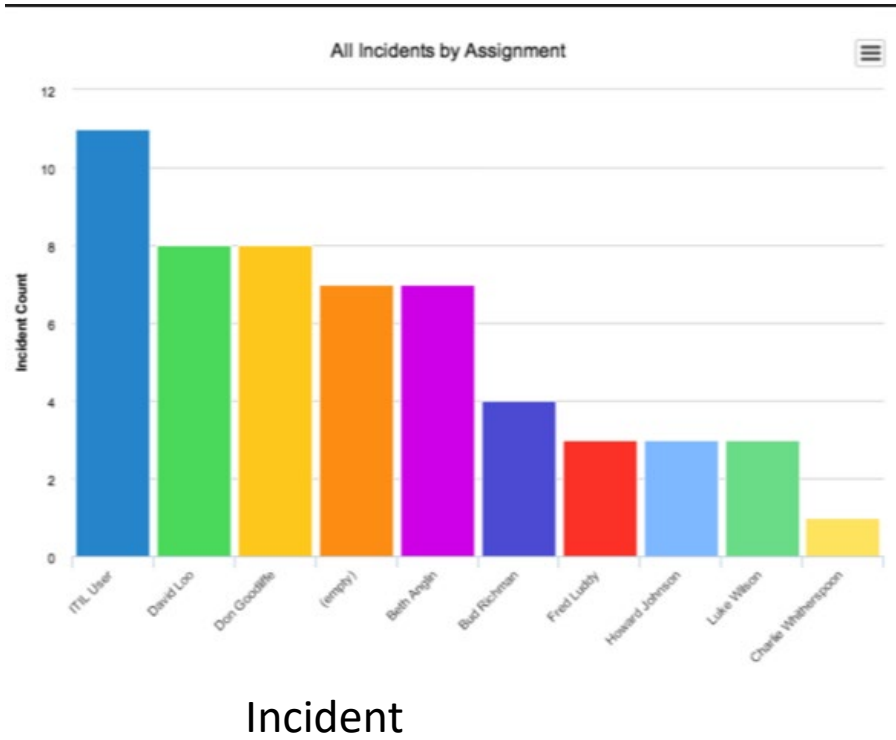
Metric

Capacity
Central unit is the Litre(l)
1 l = 100 cl
1 l = 1000 ml
1 kl = 1000 l

- What is 384cm in metres?

$$3.84 \ m$$

Weight
Central unit is the Gram(g)
1 g = 100 cg
1 g = 1000 mg
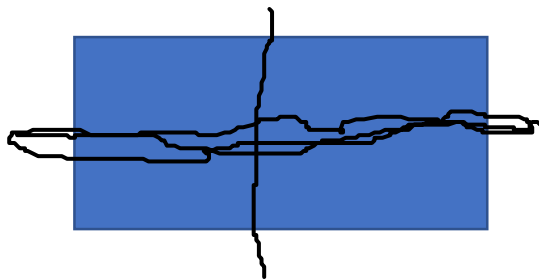1 kg = 1000 g

- What is 3.2 kg in grams?

$$3200 \ g$$

- What is 376mm + 182cm + 2.3m?
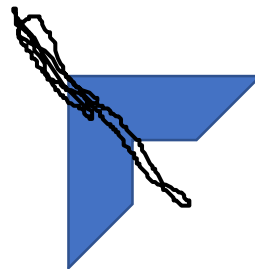
$$37.6 + 182 + 230 = 449.6 \ cm$$
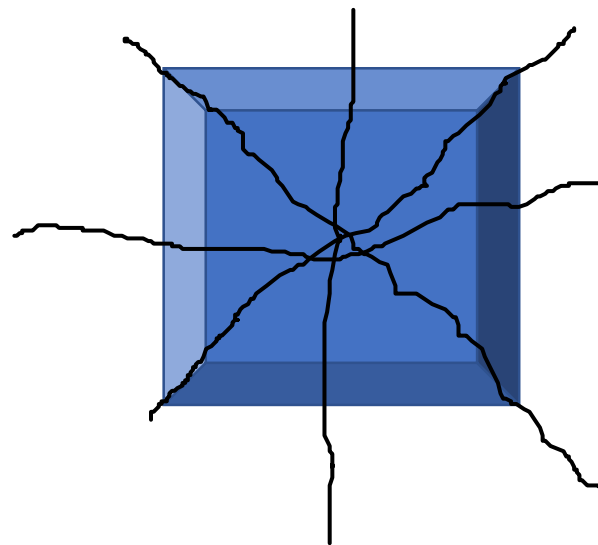
Symmetry

- 1

- 2

- 3

- 4

Speed and Time

- What is the Time between 2.48pm and 5.18pm

$$12m + 2h + 18m = 2h \; 30 \, min$$

- How fast am I going on average if I travel 28km in 4 hours?

$$km/h \qquad \boxed{\frac{S}{\;\;|\;\;T}} \qquad \frac{28}{4} = 7 \, km/h$$

- How far do I go in 3hrs 15mins at 40km/h

$$40 \times 3\frac{1}{4} = 130 \, km$$

- How long does it take to do 38km at 8km/h

$$\frac{38}{8} = \frac{19}{4} = 4\frac{3}{4} = 4h \; 45 \, mins$$

Substitution

- If $x = 5$, y = 3 and z = -2 then what are the values of

- $2x - y$ $2 \times 5 - 3 = 7$

- $x^2 y$ 75

- $2z - 3x$ $-4 - 15 = -19$

- $3x - 2z$ $15 - 2 \times (-2) = 19$

Simplifying 1   Adding and Subtracting (Collecting like terms)

- $5x + 3x$

$$8x$$

- $8x - y - 5x - 3y$

$$3x - 4y$$

- $7x^2 - 8y - 11x^2 + y$

$$-4x^2 \quad -7y$$

Simplifying 2   Multiplying

- 3y x 2y

$$3 \times 2 \times y \times y = 6y^2$$

- 5x^3y x 3xy^2

$$15x^4y^3$$

- (4a^2)^3

$$4a^2 \times 4a^2 \times 4a^2 = 64a^6$$