

# Week 2 Study Sheet

## Cube numbers

1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, ... ..

- $1^3 = 1 \times 1 \times 1 = 1$
- $2^3 = 2 \times 2 \times 2 = 8$
- $3^3 = 3 \times 3 \times 3 = 27$
- $4^3 = 4 \times 4 \times 4 = 64$
- $5^3 = 5 \times 5 \times 5 = 125$
- $6^3 = 6 \times 6 \times 6 = 216$
- $7^3 = 7 \times 7 \times 7 = 343$
- $8^3 = 8 \times 8 \times 8 = 512$
- $9^3 = 9 \times 9 \times 9 = 729$
- $10^3 = 10 \times 10 \times 10 = 1000$



## Indices

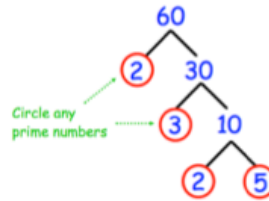
- Power of a half      Square root
- Power of a third      Cube root
- Negative power      Reciprocal then positive power

$$36^{\frac{1}{2}} = 6 \quad 64^{\frac{1}{3}} = 4 \quad 5^{-2} = \frac{1}{25}$$

## Product of Primes



Write 60 as a product of primes



$$60 = 2 \times 2 \times 3 \times 5$$

$$60 = 2^2 \times 3 \times 5$$

In index form

### Sine Rule

$$\frac{a}{\text{Sine } A} = \frac{b}{\text{Sine } B} = \frac{c}{\text{Sine } C}$$

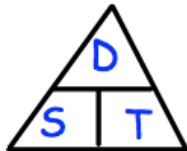
### Cosine Rule

$$a^2 + b^2 - 2bc \cos A$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$



$$\text{Gradient} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

You will need to know the primes

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31 ...

Difference between two squares

$$\text{Factorise } y^2 - 81$$

$$(y - 9)(y + 9)$$

## Regular Polygons

All exterior angles add up to  $360^\circ$   
 Each interior and exterior angle add up to  $180^\circ$   
 Divide  $360^\circ$  by the size of one exterior angle to find the number of sides.

**median:** order numbers then select the middle value  
**mode:** most common number (or piece of data)  
**mean:** add up all the numbers and then divided by how many  
**range:** largest value subtract smallest value

length, L, cm	Frequency	Midpoint	$fx$
$0 < L \leq 10$	21	5	105
$10 < L \leq 20$	11	15	165
$20 < L \leq 30$	31	25	775
$30 < L \leq 40$	12	35	420
$40 < L \leq 50$	25	45	1125
	<u>+ 100</u>		<u>+ 2590</u>

Calculate an estimate of the mean length of the fish.

$$2590 \div 100$$

$$\begin{array}{r} 25.9 \\ \hline \end{array} \text{cm} \\ (4)$$

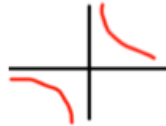
Type of graph

Shape

Quadratic



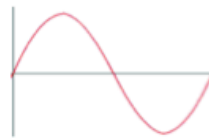
Reciprocal



Exponential



Sine



Cosine

