

Key Knowledge Nat 5 Quiz

Circumference of a Circle: $C = \pi D$

Area of a Circle: $A = \pi r^2$

Arc Formula: $ARC = \frac{\theta}{360} \times \pi D$

Sector Formula: $Sector = \frac{\theta}{360} \times \pi r^2$

Volume of Cylinder: $Vc = \pi r^2 h$

Volume of a prism: $V = An$ A is cross section

Pythagoras formula: $c^2 = a^2 + b^2$

Converse of Pythagoras steps:

1) Square
Hyp

2) Square
2 smaller
sides add

3) IF $Hyp^2 = Smaller^2 + Smaller^2$
Then by converse of pythg & AT
IF $Hyp^2 > Smaller^2 + Smaller^2$
then by converse of pythg not RAT

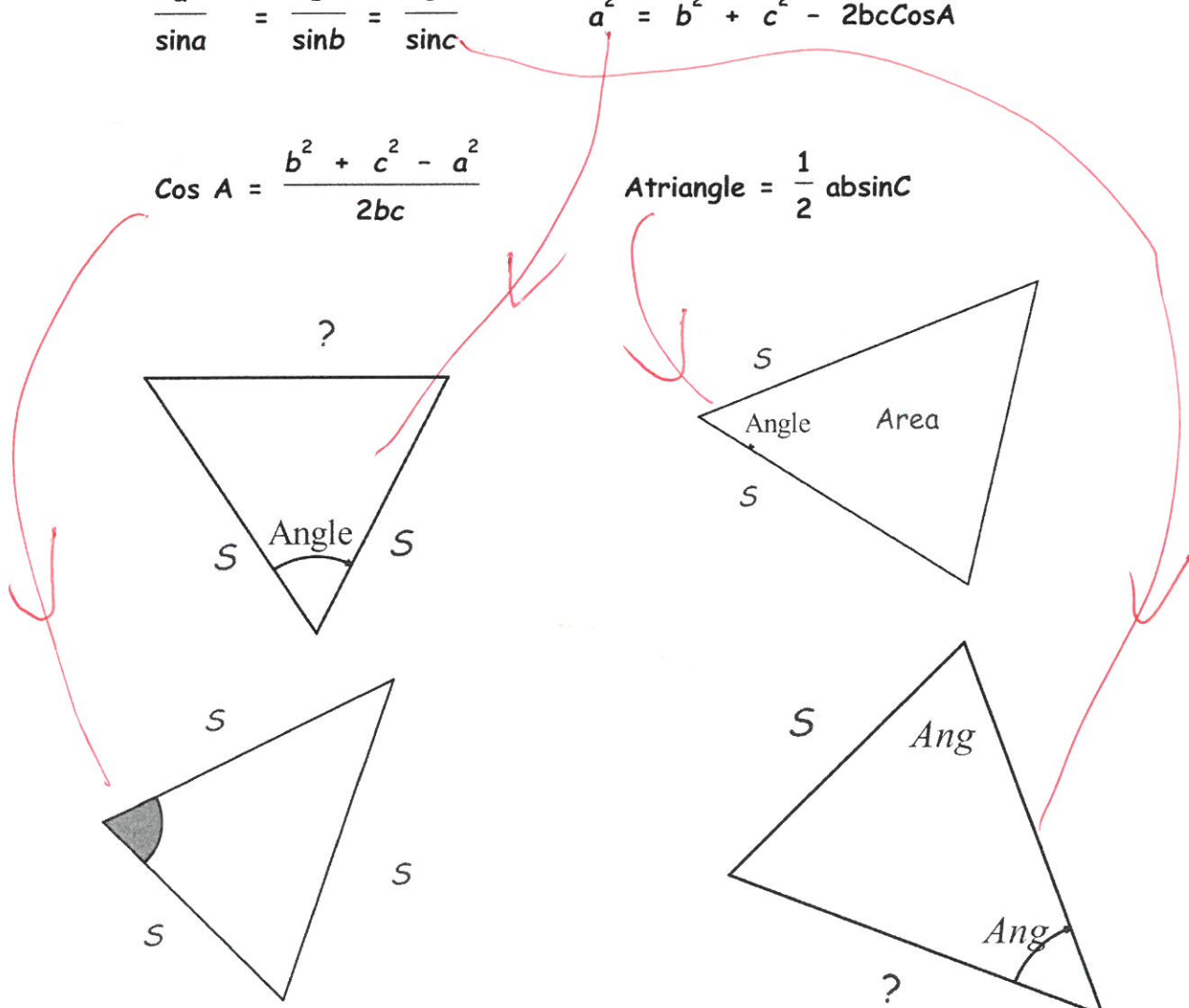
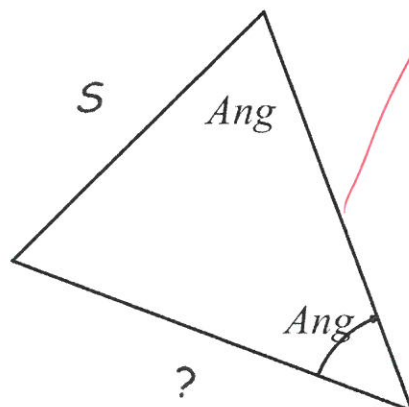
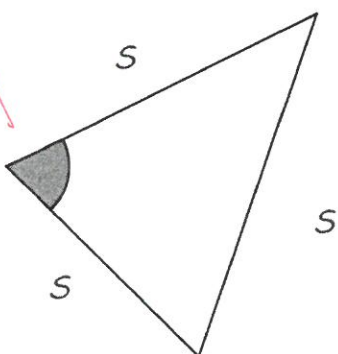
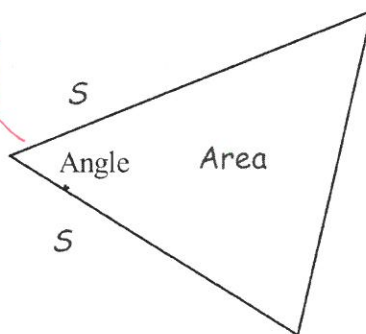
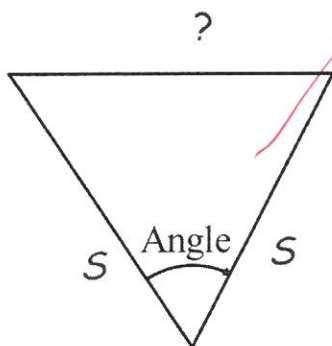
The four trig formulas are listed below connect each one to the correct diagrams

$$\frac{a}{\sin a} = \frac{b}{\sin b} = \frac{c}{\sin c}$$

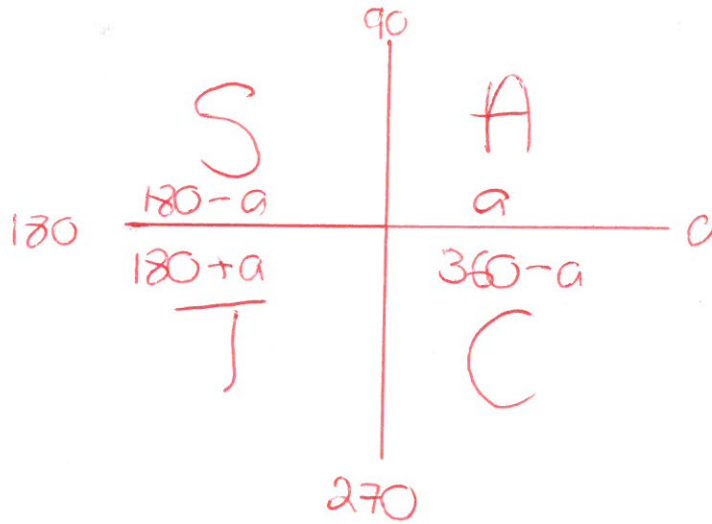
$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$A_{triangle} = \frac{1}{2} ab \sin C$$



Draw a cast diagram with all features:



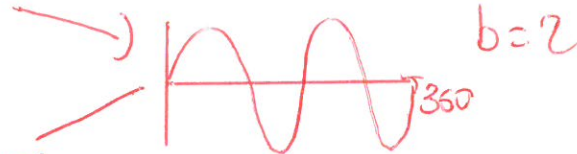
Trig Graphs

Amplitude: $(\text{Max} - \text{Min}) \div 2 \rightarrow$ $a=4$

Frequency: Waves over 360

Period: $(360 \div \text{Freq})$

$$360 \div 2 = 180^\circ$$

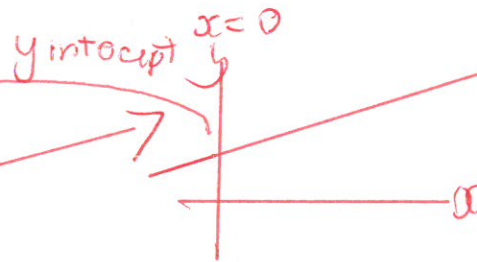


General equation of a line formula:

$$y = mx + c$$

$$\text{Gradient } m = \frac{V}{H} = \frac{(y_2 - y_1)}{(x_2 - x_1)}$$

Gradient of line formula:



Quadratics

Main features

- 1) y intercept when $x=0$
- 2) x intercept (roots) when $y=0$
- 3) Axis of Symmetry (Add Roots divide by 2)
- 4) T.P sub axis of symmetry into original equation
 $ax^2 \rightarrow$ Min T.P
 $-ax^2 \rightarrow$ Max T.P

Trig Ratios

- 1) $\tan x = \frac{\sin x}{\cos x}$
- 2) $\sin^2 x + \cos^2 x = 1$





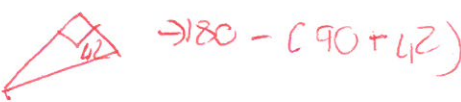
What are the three measures of central tendency? Define each one

- 1) Mean
 $\bar{x} = \frac{\sum x}{n}$
- 2) Median
(Middle in ordered list)
- 3) Mode

What are the three measures of spread? Define each one

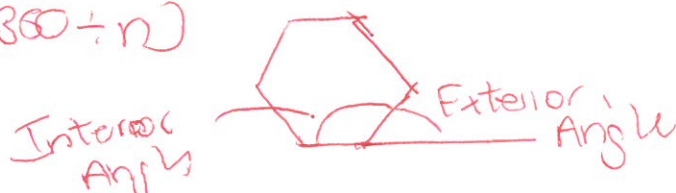
- 1) Range
 $= H - L$
- 2) I. Q. R.
 $= Q_3 - Q_1$
- 3) Standard Dev
(Formula sheet)

Angle Problems What to Look For

- 1) Right Angles / Tangents 
Angle in semi-circle 
- 2) Mark Radii
Look for Isosceles 
- 3) Missing Angle in Straight line 
- 4) Missing Angle in triangle 

Exterior Angle : $360 \div n$ (number of sides)

Interior Angle : $180 - (360 \div n)$



Factorising Priority

- 1) Common Factor
- 2) Difference of two square
- 3) Trinomial

Example

$$3x+12 \Rightarrow$$

$$3(x+4)$$

$$4a^2 - 25 \Rightarrow$$

$$(2a-5)(2a+5)$$

$$x^2 + 4x + 3 \Rightarrow$$

$$(x+3)(x+1)$$

Solution

Complete the square form

Form

$$y = (x-a)^2 + b$$

Turning Point

$$\text{Min } (a, b)$$

Sketch



Axis of symmetry

$$x=a$$

Form

$$y = -(x+c)^2 + b$$

Turning Point

$$\text{Max } (c, b)$$

Sketch



Axis of symmetry

$$x=c$$

Rules of indices

Rules

$$x^m \times x^n = x^{m+n}$$

$$\frac{x^m}{x^n} = x^{m-n}$$

$$(x^m)^n = x^{mn}$$

$$x^0 = 1$$

$$x^{-m} = \frac{1}{x^m}$$

Example

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

$$\frac{x^7}{x^3} = x^4$$

$$(5p^3)^2 = (5)^2 (p^3)^2 = 25p^6$$

$$5^0 = 1$$

$$7x^{-2} = \frac{7}{x^2}$$