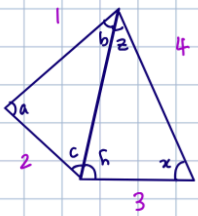
Yearly Assessment Notes

Properties of Geometrical Figures

Quadrilaterals

Quadrilaterals

DO NOW



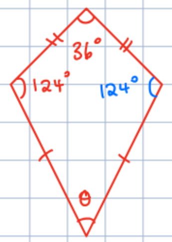
$a+b+c = 180°$

$x+y+z = 180°$

This is a quadrilateral

- Since all quadrilaterals can be split into two triangles, we know that the angle sum of a quadrilateral will be 360°

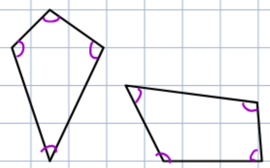
eg.

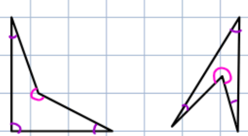


$\theta = 360 - (36 + 124 \times 2)$

$= 76°$ (∠ sum of quad.)

Classifying Quadrilaterals





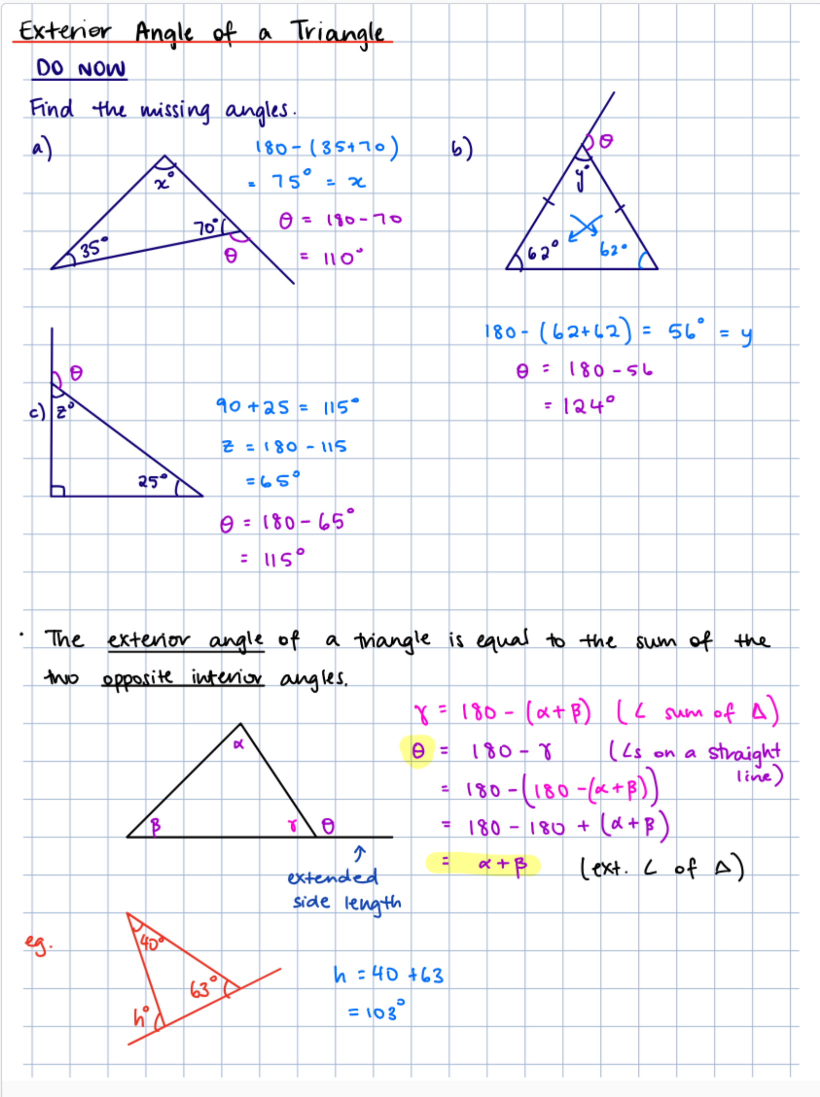
CONVEX

- All angles less than 180°
- All vertices point OUTward

CONCAVE

- One internal reflex angle
- One vertex points INward

Exterior Angle of a Triangle



Exterior Angle of a Triangle

DO NOW

Find the missing angles.

a)

$180 - (35 + 70)$
$= 75° = x$

$\theta = 180 - 70$
$= 110°$

b)

$180 - (62 + 62) = 56° = y$

$\theta = 180 - 56$
$= 124°$

c)

$90 + 25 = 115°$

$z = 180 - 115$
$= 65°$

$\theta = 180 - 65°$
$= 115°$

- The exterior angle of a triangle is equal to the sum of the two opposite interior angles.

$\gamma = 180 - (\alpha + \beta)$ ($\angle$ sum of Δ)

$\theta = 180 - \gamma$ ($\angle$s on a straight line)

$= 180 - (180 - (\alpha + \beta))$

$= 180 - 180 + (\alpha + \beta)$

$= \alpha + \beta$ (ext. $\angle$ of Δ)

extended side length

eg.

$h = 40 + 63$
$= 103°$

Classifying Triangles

Equilateral Triangle: All sides and angles equal. (All angles are 60 degrees) All sides of the same length.

Isoceles Triangle: Two sides and angles equal. Two sides of the same length.

Scalene Triangles: No sides or angles equal. All sides of different lengths.

Right Angled Triangles: They have one 90 degree angle.

Obtuse Triangle: Any triangle that has an angle greater than 90 degrees. (The other two are acute)

Acute Triangles: Abt triangles that has three acute angles.

Volume

Volume Formula

$$V = Ah$$

Where V is the volume of the object
A is the cross sectional area of the object
h is the height of the object

Cross Sections

A cross section of a prism is where however many times you cut it, the 2-dimensional shape stays the same.

Various Cross Section Formulas for other solids (multiply everything by the height (h) of the object)

Cube: $A = l^2$
Rectangular Prism: $A = bh$
Rhombic Prism: $A = \frac{1}{2}xy$

Trapezoidal Prism: $A = \frac{1}{2}(a + b)h$

Triangular Prism: $A = \frac{1}{2}bh$

Cylinder: $A = \pi r^2$

Semi-Cylinder?: $A = \frac{1}{2}\pi r^2$

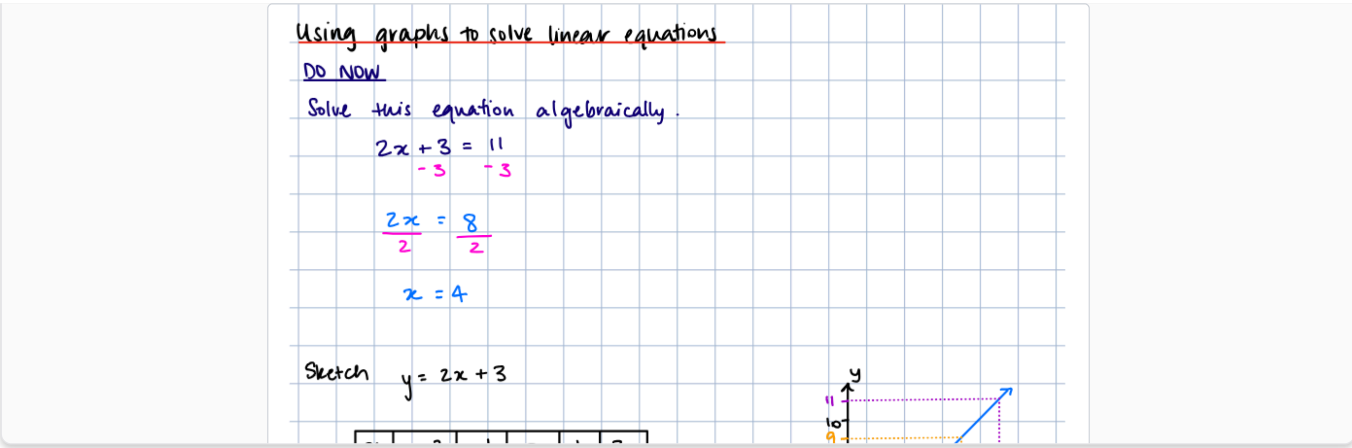
Sector: $A = \frac{\theta}{360}\pi r^2$

Composite Solids

Split the solid into various recognizable solids, and then add them together

Linear Relationships

Using Graphs to Solve Linear Equations



Using Graphs to Solve Inequalities

Using Graphs to Solve Inequalities

- A horizontal line (parallel to the x-axis) has the rule in the form of $y = c$ where c is any number
- A vertical line (parallel to the y-axis) has the rule in the form of $x = k$ where k is any number
- A region in the plane is described using an inequality.
  - All the points that satisfy the inequality form the shaded region
  - A dashed line is used to show that the points on a line are not included in the region. A dashed line is used when the < and > symbols are given.
  - A full line is used to show that the points on a line are included in the region. A full line is used when the $\leq$ and $\geq$ symbols are given.

$y = mx + c$

$$y = mx + c$$

y is the y value

m is the slope/gradient, also called the coefficient of x

x is the x value

c is the y intercept (where y crosses the x axis when $x = 0$)

Ways to solve a linear equation

1. Using table of value

Draw up a table of values with x being -2, -1, 0, 1, 2 (or whatever is suitable)
eg. $y = 2x + 1$

y	-2	-1	0	1	2
x	-3	-1	1	3	5

Plot the points, join the line and add arrows and label the line.

2. Using $y = mx + c$

c is the y-intercept so, plot (0, c)

m is the gradient of the line, so convert it to a fraction, so if m is a whole number, then make it $\frac{m}{1}$ and if it is fractional, keep it the same.
This fractional form is basically $\frac{rise}{run}$ so rise is how much the line is going up for every 1 x. So, from your y-intercept, count $rise$ number of units up and run number of units across.

Join the line and add arrows and label the line.