Maths – Reasoning with Algebra – Autumn Term 1

LEES BROOK COMMUNITY SCHOOL

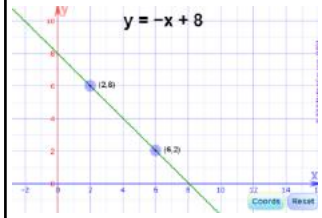
Section A: Vocabulary

Gradient	How steep a line is,
Perpendicular	At 90^0 to each other
Horizontal	Flat parallel to the x axis
Vertical	Straight up parallel to the y axis
Intercept	Where a line crosses the Y axis
Linear	A straight line
Parallel	Lines that never meet, equidistant to each other
Unknown	A value that we don't yet know
Solve	To find/work out a value
Expand	To multiply to remove the brackets
Inequality	Comparing values, showing if one is less than or more than or equal to.
Co-efficient	A number used to multiply a variable
Variable	A symbol for a value we don't know yet, we normally use a letter like x or y.
Formula	A rule or fact written with mathematical symbols.
Multiple	The times table of a number.
Factor	Numbers we multiply together to get another number.
Prime	A number greater than 1 that cannot be made by multiplying other whole numbers.
Prove	Mathematical argument used to show the truth of a statement.
Conjecture	A statement that might be true, but is not proven.
Co-ordinates	A set of values that show an exact position.

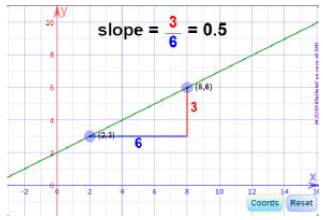
Section B:

Gradient is the $\frac{increase\ in\ y}{increase\ in\ x}$

Gradient can be negative or positive



A negative graph



a positive graph

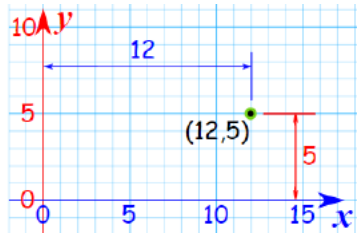
The equation of a straight line is y = mx + c
Where M stands for the gradient and C is the intercept point, where the line crosses the y axis.

Example: x + 2 = 7
The variable is x,
when we put 5 in place of x we get **5 + 2 = 7**,
and 5 + 2 = 7 is true, so **x = 5**, and the equation is solved.

a ≠ b says that a is not equal to b
a < b says that a is less than b
a > b says that a is greater than b
(those two are known as strict inequality)
a ≤ b means that a is less than or equal to b
a ≥ b means that a is greater than or equal to b.

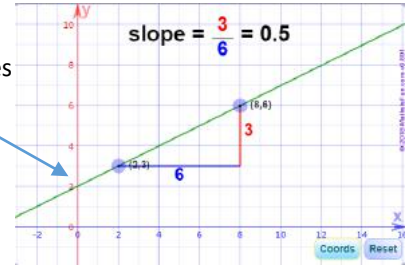
The fist 8 prime numbers are; 2, 3, 5, 7, 11, 13, 17, 19…

Our co-ordinates are (12, 5), so we go 12 right first and then 5 up. We say along the corridor the up or down the stairs.



Section C:

Intercept point, where the straight line crosses the y axis.



So we have a gradient that is 0.5 and a intercept point at (0, 25), so the equation of the line is y = 0.5x + 2

Equations with unknown on both sides

4x + 5 = 3x + 24
-3x -3x

x + 5 = 24
-5 -5

x = 19

$2(x+2) \equiv 2x+4$

Algebra tiles can represent a binomial expansion
Has two terms

Revision QR Code for Corbett Maths which includes videos, worksheets and exam questions

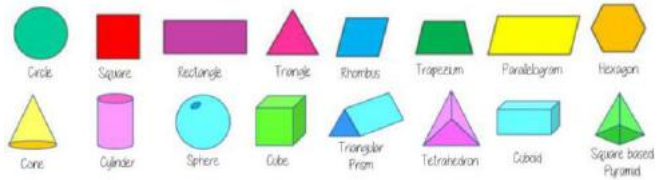
Maths – Constructing in 2D & 3D – Autumn Term 2

LEES BROOK COMMUNITY SCHOOL

Section A: Key Vocabulary

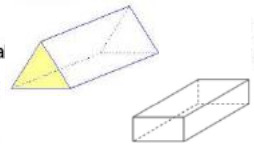
2D	Two dimensions to the shape e.g. length & width
3D	Three dimensions to the shape e.g. length, width & height
Vertex	A point where two or more line segments meet (a corner)
Edge	A line on the boundary joining two vertex
Face	A flat surface on a solid object
Cross-section	A view inside a solid shape made by cutting through it
Plan	A drawing of something when drawn from above (sometimes birds eye view)
Perspective	A way o give illustration of a 3D shape when draw on a flat surface
Protractor	A piece of equipment used to measure and draw angles
Locus	Set of points with a common property
Equidistant	The same distance
Perpendicular	Lines that meet at 90 degrees
Arc	Part of a curve
Bisector	A line that divides something into two equal parts
Congruent	Figures that are identical is size and shape
Scale	The ratio of the length in a drawing (or model) to the length on the real thing

Section B:



A prism:

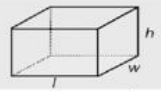
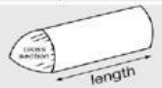
- A three dimensional figure with 2 congruent polygon bases and rectangular sides.



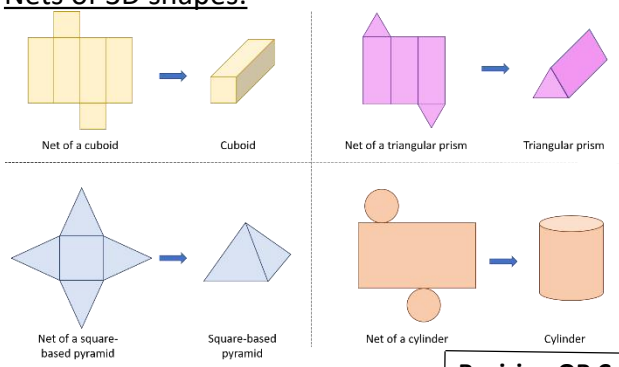
Finding the Surface Area:

- Add up the areas of all of the sides.

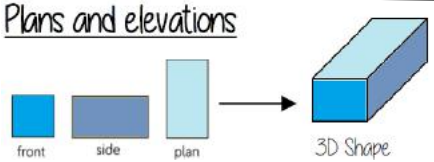
Finding the volume

Cuboid = $l \times w \times h$	
Prism = area of cross section × length	
Cylinder = $\pi r^2 h$	
Pyramid = $\frac{1}{3} \times$ area of base $\times h$	

Nets of 3D shapes:



Plans and elevations



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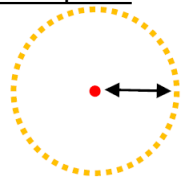
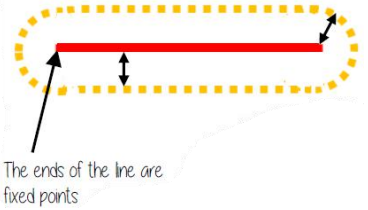
Section C:

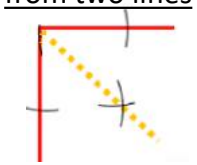
Locus of a distance from a point



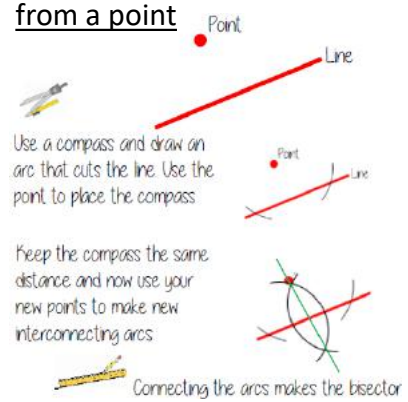
Locus of a distance from a straight line



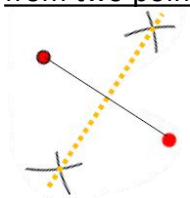
Locus of a distance from two lines



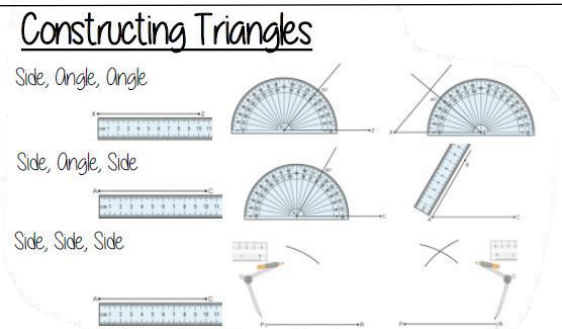
Construct a perpendicular from a point



Locus equidistant from two points



Constructing Triangles



Congruent triangles

- Side-side-side
- Angle-side-angle
- Side-angle-side
- Right angle-hypotenuse-side

Congruent figures are identical – all corresponding sides and angles are the same size.