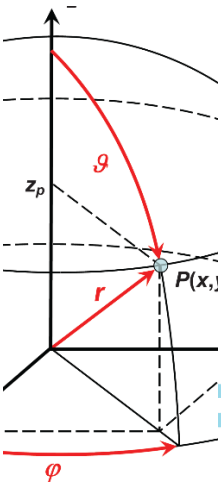
GCSE Maths

Prep ASSIGNMENT

Required preparation for the session on……

Co-ORDINATES, NUMBER MACHINES and Y=MX+C LINES

Aims of this session: Review your abilities in each of these areas, Green (feel confident…G), Amber (need to work more on….A), Red (Feel weaker at this….R)



1. Identify position in 2D space using two coordinates
2. Set up and use a number machine
3. Draw a straight line using y=mx+c on a 2D Cartesian coordinate grid
4. Identify, draw and reposition lines on a coordinate system
5. Plot curved lines in the form $y=mx^2 + c$ (extension only)

G A R

MOSTLY GREEN ☐ MOSTLY ORANGE ☐ MOSTLY RED ☐

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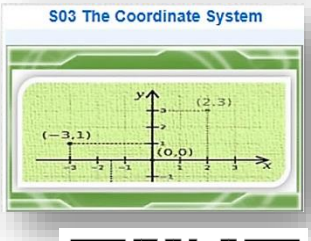
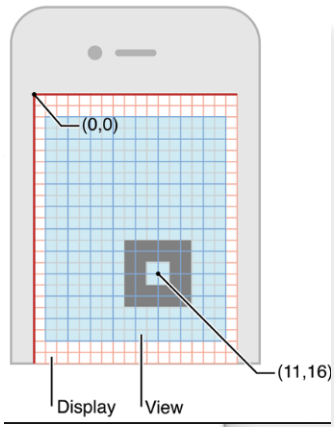


START Log into S03 . Watch the video/s, read and practice

using the online materials. Read your GCSE maths AQA book

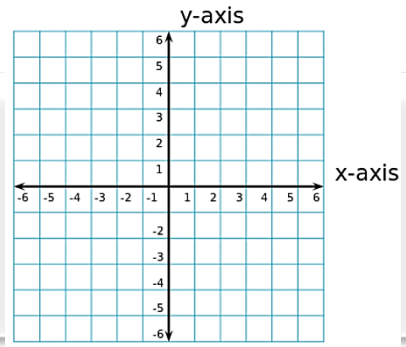
Write a comment about what you learned from the videos / materials below

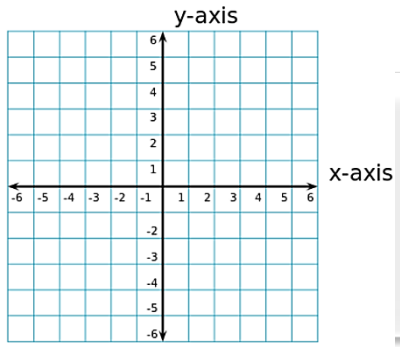


1.

Identify position in 2D space using two coordinates

Q… Items in the world can be related to each other if they are described as being 'relative' to each other. We can choose a fixed point (zero) on a flat 2d plane and move one item away from the other left-right (x direction) or forward-back (y direction). See if you know how to plot the point (6, -2) and (-4, 3) on the axis below.





HINT… in the brackets (,) you need to move left or right along the x direction first (x, ..). Count along the x axis line in the middle starting at the zero. Don't plot the point yet though as you need to look for the 'y' value next (…,y) and that's the up down bit, now plot away !.

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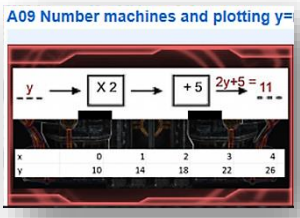
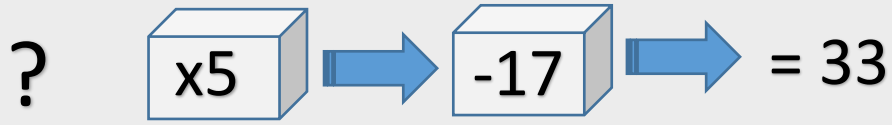


2. Next look at A09

Set up and use a number machine

Q… A 'Number Machine' is a maths tool which attempts to break up a larger sum into separate pieces and tells you which bit to do, one at a time. Can you work out the value you started with?



HINT… Start with the answer 33 and work backwards, reverse each of the sums to find out what it was before!

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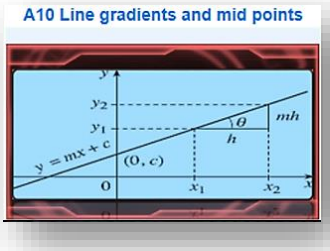
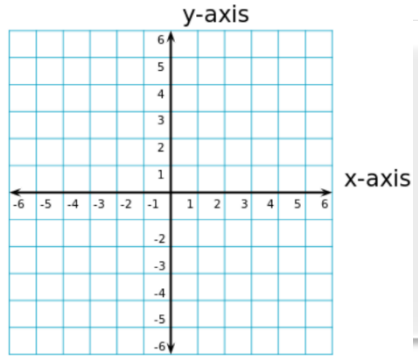


3. *Ok, now it's A10*

Draw a straight line using y=mx+c on a 2D Cartesian coordinate grid

Q…. This is some of the basics of programming and computer graphics as well as navigation and dynamics. Equations can have shape and a basic shape is a straight line. Things moving in a straight line in two dimensions have an equation of y=mx+c. Plot the equation of y=2x-4 on the Cartesian system below.

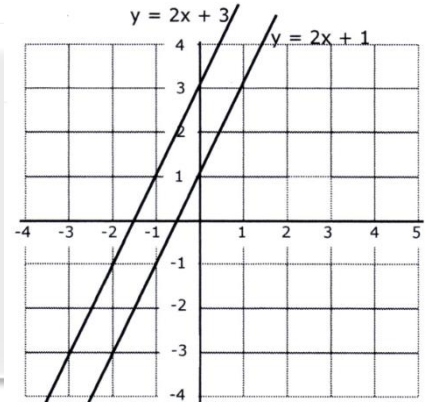


Hint…you will need to draw a straight line on the grid above. In the y=2x-4 equation the '2x' bit means the two times table ie along one then two up, but the '-4' bit means take 4 away from every point on the line you are drawing therefore moving the whole line down by 4 spaces.

4.

Identify, draw and reposition lines on a coordinate system

Q… Some lines are already drawn for you on this grid. Draw two other straight lines anywhere on the grid and state what their equations are (can you quote how they have changed from the originals?)

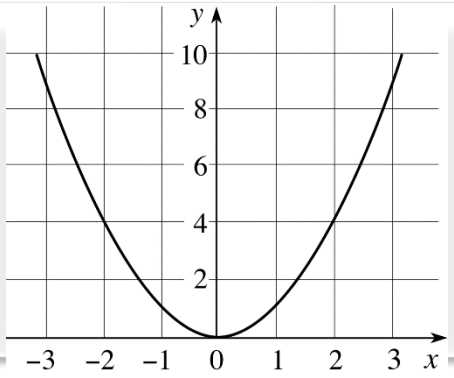


HINT… You are needing to show what is happening to the numbers in the equations as they change! You can make lines go up and down by adding or subtracting or changing their gradient with multiplying or dividing.

5

Plot curved lines in the form $y=mx^2 + c$

Q… Some equations can draw other shapes such as curved lines, these can model real life such as increasing growth or falling objects etc. A simple form is $y=mx^2+c$ where a value is squared before multiplying it and adding. Can you draw on the same graph $y=3x^2 + 1$?



Hint… remember we are just plotting points on a grid, just lots of them which will all line up. To get where each coordinate plot is you need to multiply the x value by itself first then times by 'm' (in this case a 3). After you just move all the points up by 1.

END OF PREPATORY ASSIGNMENT

What to do now….

1. **Ensure you have marked in each box if you feel confident in each topic or not (this will inform you and your tutor which activities you should do in the session)**
2. **Bring this yellow assignment with you to your next session and check with your tutor answers given**
3. **Add this to your folder of work IN ORDER YELLOW…GREEN…ORANGE… (and any BLUE you achieve)!**