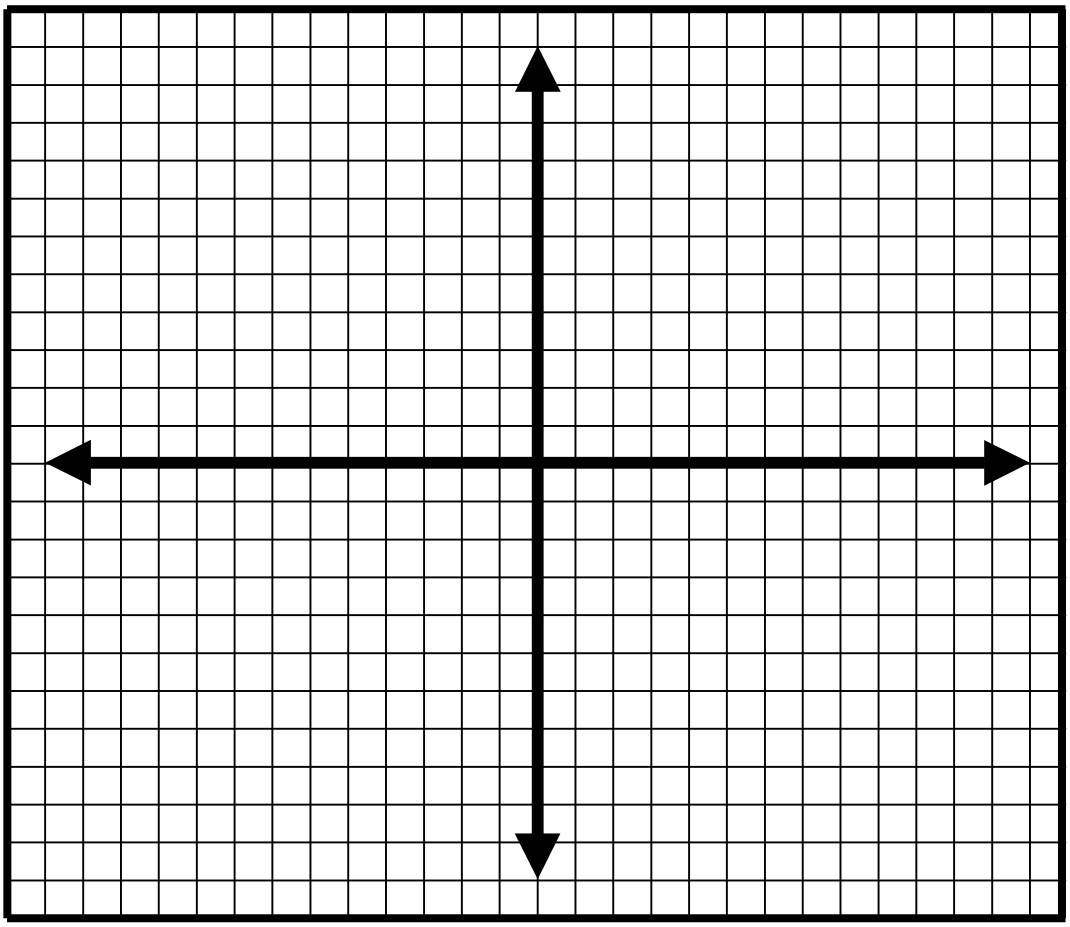
Special lines and plotting from formulas

- X = 4 is a rule describing a special line. All the points on this line have co-ordinates like

  (4, 6) (4, -6) (4, 0) (4, 2.5) (4, 1 000 000)

- **Plot these points** (except for the last one!) on the grid below.
- **Draw a line** through the points.
- Describe the line in words. Remember to **label your axes** and scale the grid.



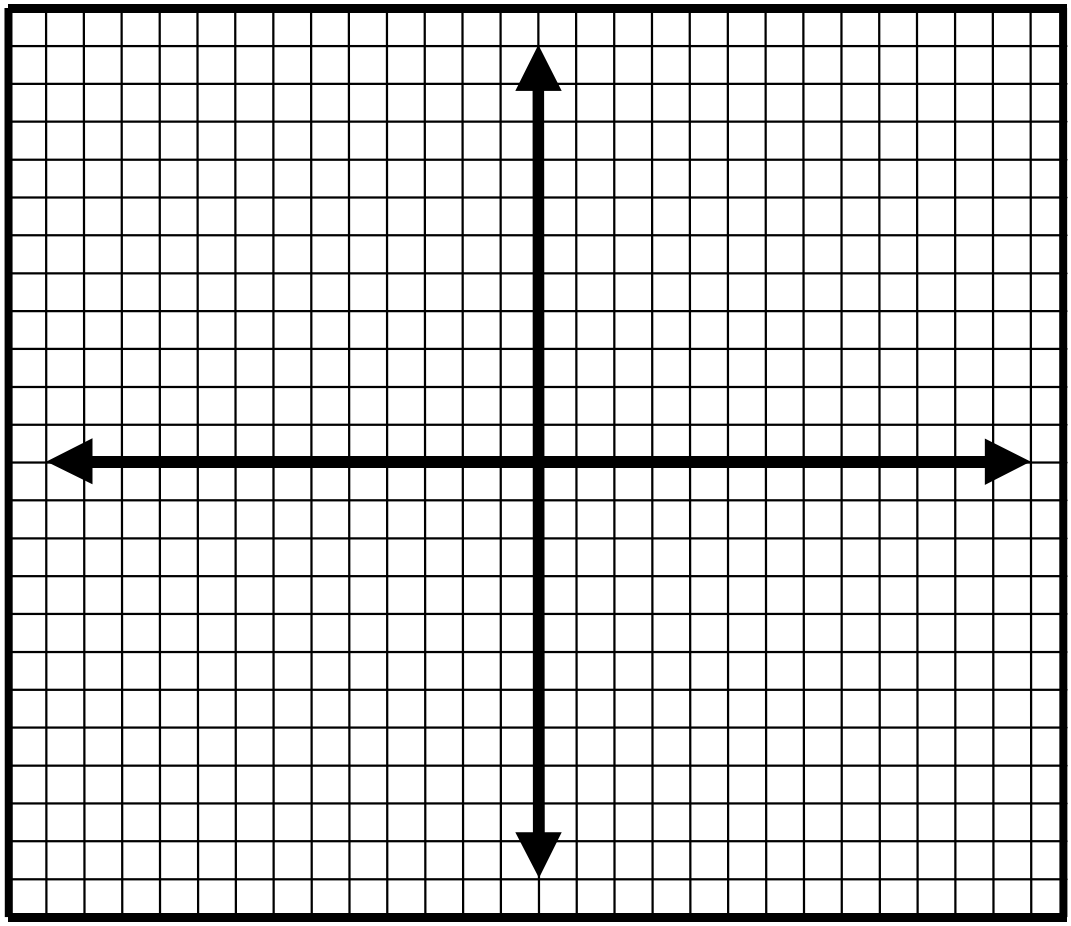
- Now try plotting the following special lines for yourself

  Y = 3 X = -2 Y = 0 X = Y X + Y = 5

- Make up three or four co-ordinates for each line according to the rule
- Plot the points - make sure they fall on a straight line
- Draw the line through them
- Label the line with the rule
- Try to describe the line in words to the person sitting next to you!

Formulas as rules

- $y = 3x - 4$ is a *formula* that provides you with a rule connecting X and Y co-ordinates
- Think of an X, say $x = 2$.
- Now **substitute** $x = 2$ into the formula and do the calculation. You should find that Y comes out to be $y = 3 \times 2 - 4 = 6 - 4 = 2$
- Think of a few more X values and work out the corresponding Y values.
- **Plot the points** on the grid below
- Take **two squares to 1 unit** and label the axes - you have to be careful to pick X values that result in Y values that are still on the graph!
- Draw the resulting straight line on the graph and label the line with the formula



- Now try plotting the lines represented by the following formulas…

$y = 3x + 1$ $\qquad$ $y = 3x$ $\qquad$ $y = -2x + 1$

Check your answers against the model answers - perhaps swap with the person next to you and 'mark' each other's plotting.