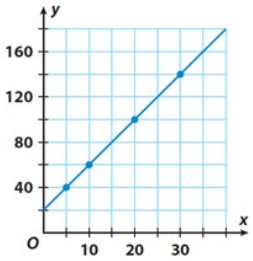
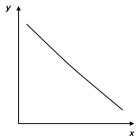
Common graph shapes in Science – DESCRIBE THE GRAPH

1. Replace the letters x and y with the independent and dependent variables
2. In answering a question be sure to use actual values if the question asks 'using the graph' or words to that effect
3. EXTRA: refer to r^2 and how well error bars contain the line of best fit (for your science reports)
4. If asked to EXPLAIN THE GRAPH – you must use scientific theories
5. Always state the line of best fit given by Excel. Eg. "As mass increases, time increases in a linear relationship. **The relationship is y = 5x + 2."**

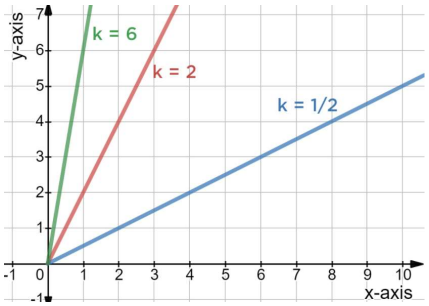
Linear – As x increases, y increases in a linear relationship. The slope of the line is positive.
(Line does not go through 0 when x = 0)
y = mx + c.



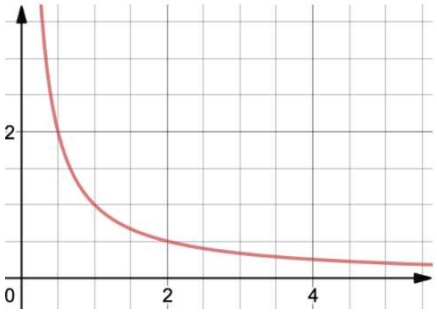
The slope of the line is negative.



Directly proportional – As x increases y decreases in a directly proportional relationship.
(When x = 0, y = 0, as x doubles, y doubles).
y = kx.

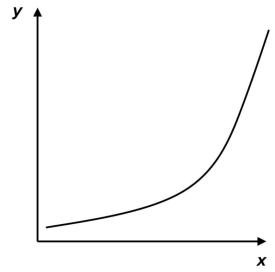


Inversely proportional – As x increases y decreases in an inversely proportional relationship.
(When x doubles, y halves).
y=k/x

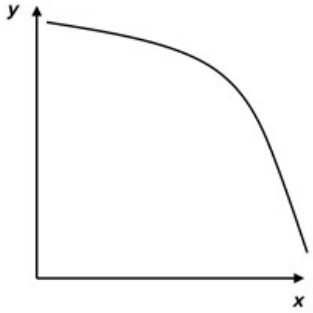


Curvilinear graphs

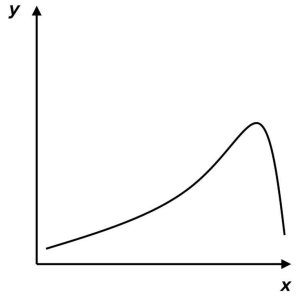
As x increases, y increases at an increasing rate.
(You need the equation of the line to determine if the curve is exponential, logarithmic, polynomial etc)



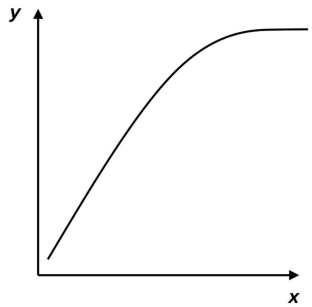
As x increases, y decreases at an increasing rate.



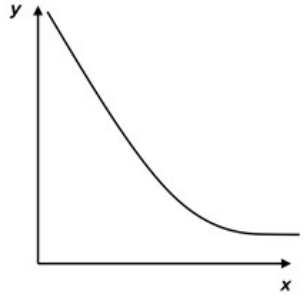
As x increases the rate at which y increases also slowly increases then decreases to a maximum (**optimal**) value at ….. y then rapidly decreases (relative).



As x increases, y increases at a decreasing rate until a **maximum** is reached.



As x increases, y decreases at a decreasing rate until a **minimum** is reached.



As x increases, y increases at an increasing rate, then the rate slows until it reaches a maximum in a **sigmoidal** shape.