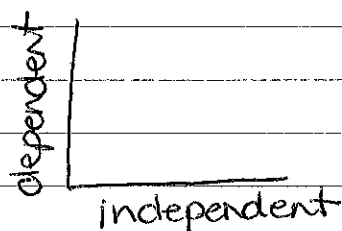


10.1 Math 11 AW - notes

Linear relation → linear = makes a line
 * has a pattern relation = one thing depends on another

independent variable - can happen without the other one (you choose)

dependent variable - depends on the independent variable (result of what you chose)



discrete - cannot be broken into smaller parts & still make sense.

continuous - can be broken into smaller parts & still make sense.

degree - highest exponent on variable
 $y = 2x + 1 \rightarrow$ degree of 1
 $y = 2x^3 + 1 \rightarrow$ degree of 3

non-linear relation - any equation that does not make a straight line
 - any equation with a degree more than 1.

rate of change - what you would multiply by to get the next number
 - aka slope

10.2 Math 11 AW - notes

Graphing Linear Relations:

Create a table of values

$$y = 2x + 3$$

① Choose numbers \rightarrow
to plug in for x

x	y
0	3
2	7
5	13

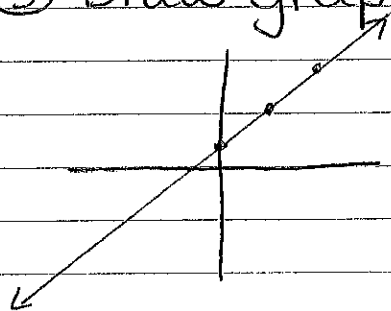
② calculate y

$$y = 2(0) + 3 = 3$$

$$y = 2(2) + 3 = 7$$

$$y = 2(5) + 3 = 13$$

③ Draw graph & join points (extend line beyond points)



interpolate - use graph
to find other values

extrapolate - estimate values
beyond graph.

10.3 Direct & Partial Variation

$$y = mx + b$$

\uparrow slope \nwarrow y-intercept

ex $y = 2x + 3$

\uparrow slope = 2 y-intercept = 3

By using the slope & y intercept: you can
write the equation

ex slope = $\frac{1}{4}$ y intercept = 4

$$\therefore y = mx + b \Rightarrow y = \frac{1}{4}x + 4$$

* now you can find other answers from
the questions by using the formula.

y intercept
is answer
when x=0

writing an equation from words $y = mx + b$

m (slope) is the thing that changes
(km/h; \$/carton)

b (y intercept) is the cost/answer if nothing happens ($x=0$)

- it is the upfront cost or starting fee.
(\$45, \$150)

Submarine at sea level; 50m every 5 min.

$y = mx + b$ ← where does it start?
at sea level so $b = 0$

rate = 50m every 5 min

or $50\text{m} / 5\text{min} \rightarrow \text{reduce}; \frac{50}{5} = 10\text{m}/\text{min}$

so formula is:

$$y = 10x + 0 \quad \text{or} \quad y = 10x$$

10.5 Scatter Plots - data does not make a straight line
- data is 'scattered' over graph.

To find a trend / line of best fit

- use a ruler
- line up ruler so it is close to as many points as possible (in the middle)
- it doesn't have to touch the most points, just has to be close to the most.

