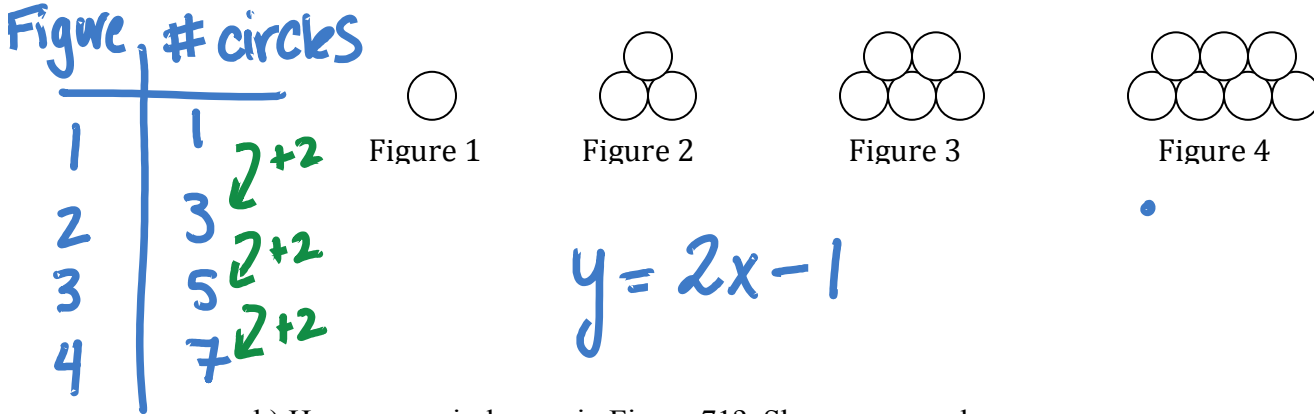# Chapter 6 – Linear Relations Review Package

Representing Patterns: Problem Set # 1 & 2

1. a) Create a table of values and write an equation to represent the number of circles in relation to the figure number.

Figure, # circles

Figure	# circles
1	1
2	3
3	5
4	7

2+2
2+2
2+2

Figure 1   Figure 2   Figure 3   Figure 4

$$y = 2x - 1$$

b) How many circles are in Figure 71? Show your work.

$$y = 2(71) - 1$$

$$y = 141$$

c) Which figure number has 83 circles? Show your work.

$$83^{+1} = 2x - 1^{+1}$$

$$\frac{84}{2} = \frac{2x}{2}$$

$$x = 42$$

2. A number pattern starts at 1.5. Each number after that is four more than the number before.
   a) Make a table of values for the first five terms.

#	Value
1	1.5
2	5.5
3	9.5
4	13.5
5	17.5

b) Develop an equation that can be used to determine the value of each term in the pattern.

$$y = 4x - 2.5$$

c) What is the value of the 95th term?

$$y = 4(95) - 2.5$$

$$y = 377.5$$

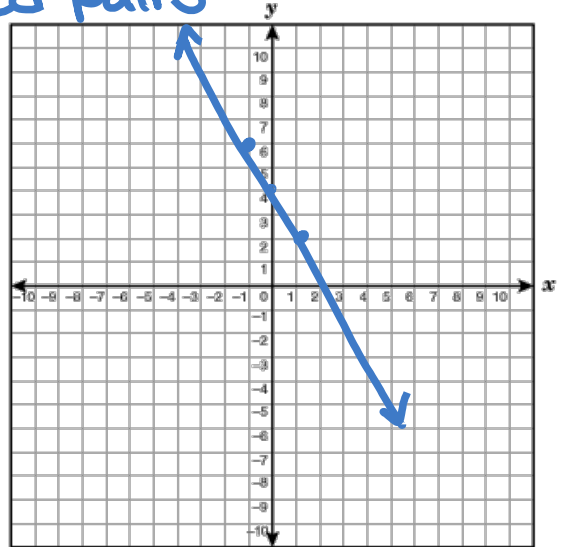d) Which term has a value of 237.5?

$$237.5^{+2.5} = 4x - 2.5^{+2.5}$$

$$\frac{240}{4} = \frac{4x}{4}$$

Graphing Linear Equations: Problem Set # 3 & 4

3. a) Given the equation y = -2x + 4, <u>explain in a numbered list of steps</u> how you would go about graphing this.

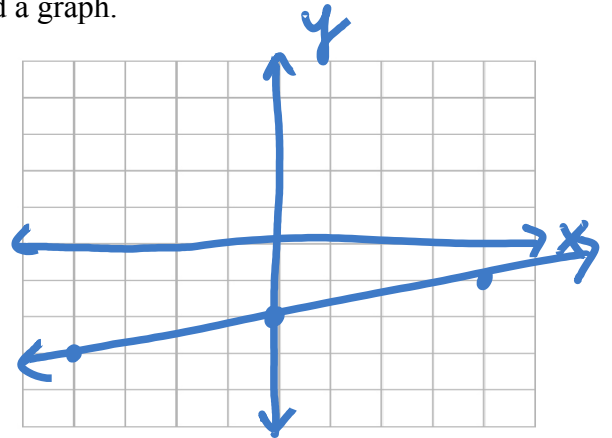1. Make a table of values
2. Recognize the ordered pairs
3. Plot them

b) Carry out your steps in the space below and graph the equation.

x	y
-1	6
0	4
1	2

4. For the linear equation, create a table of values and a graph.

$$y = \frac{x}{4} - 2$$

x	y
-4	-3
0	-2
4	-1

5. Create a graph and a linear equation to represent the table of values.

a)

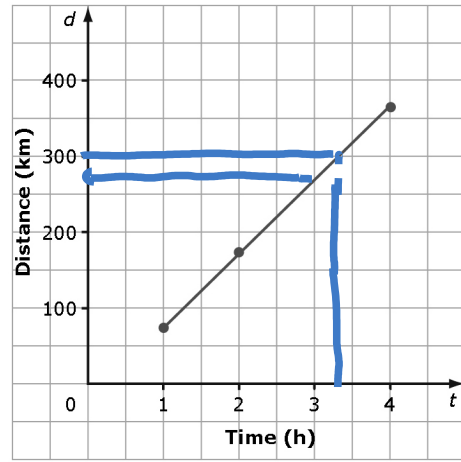| x	y
–2	4
–1	4
0	4
1	4
2	4
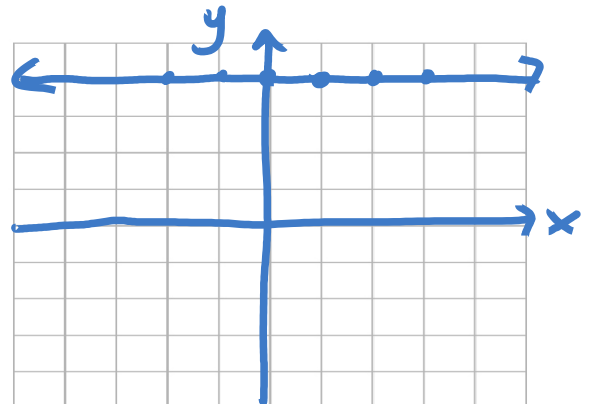
Interpreting Graphs: Problem Set # 5

6. a) What is the approximate value of *d*

when *t* = 3? __270 km__

b) What is the approximate value of *t*

when *d* = 300? __3.25 hr__

To find a value on a graph that is BEYOND the known range of values on a graph is called **EXTRAPOLATION**. What is the approximate value of d when t = 6?
To find a value on a graph that is BETWEEN the known values on a graph is called **INTERPOLATION.** What is the approximate value of t when d-350?

Example of interpolation and extrapolation

7. a) What is the approx. value of *y* when *x* = 3.5? __-0.9__ (interpolation OR extrapolation)

   b) What is the approx. value of *x* when *y* = 0.5? __-4__ (interpolation OR extrapolation)

   c) What is the approx. value of x when y = -3 __14__ (interpolation OR extrapolation)
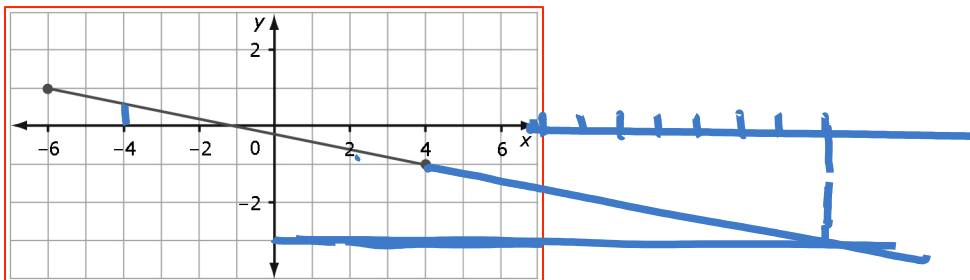
Word problem example:

A car rental company charges a flat rate of $35.00 plus $0.45 per kilometre for renting a car. The graph shows the cost of renting a car based on the number of kilometres driven.
a) Is it reasonable to interpolate or extrapolate values on this graph? YES or NO
Explain. __You can find a cost for__
__55km or 1000km.__

b) What is the rental cost after driving 300 km? __$170__
Is this interpolation or extrapolation?

c) Approximately how many kilometers
can be drive for a rental cost of $115? __175 km__
Is this interpolation or extrapolation?