Sec. 5.6 – Properties of Linear Relations

1. Which table of values represents a linear relation? Justify your answer.

a) The relation between the number of bacteria in a culture, n, and time, t minutes.
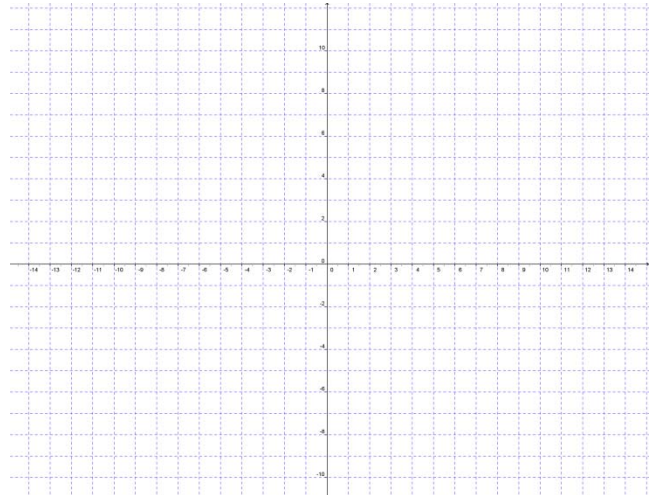
t	n
0	1
20	2
40	4
60	8
80	16
100	32

b) The relation between the amount of goods and services tax charged, T dollars, and the amount of the purchase, A dollars
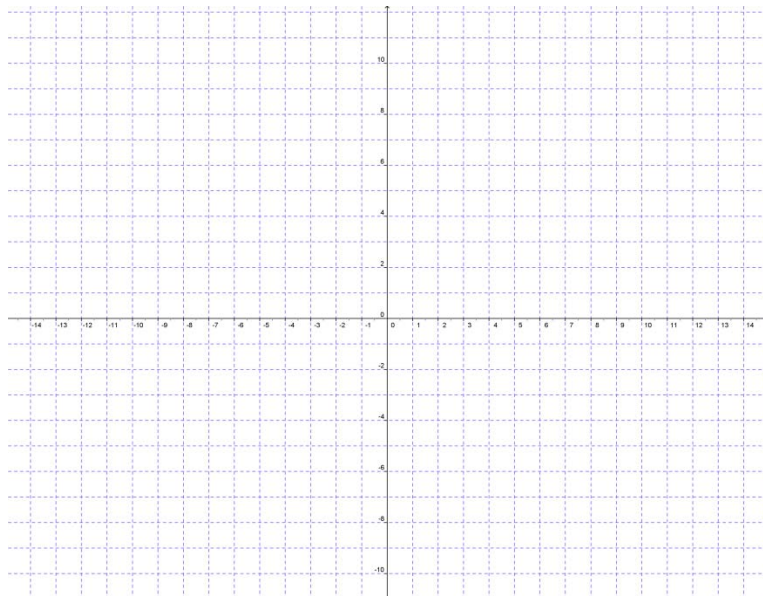
A	T
60	3
120	6
180	9
240	12
300	15

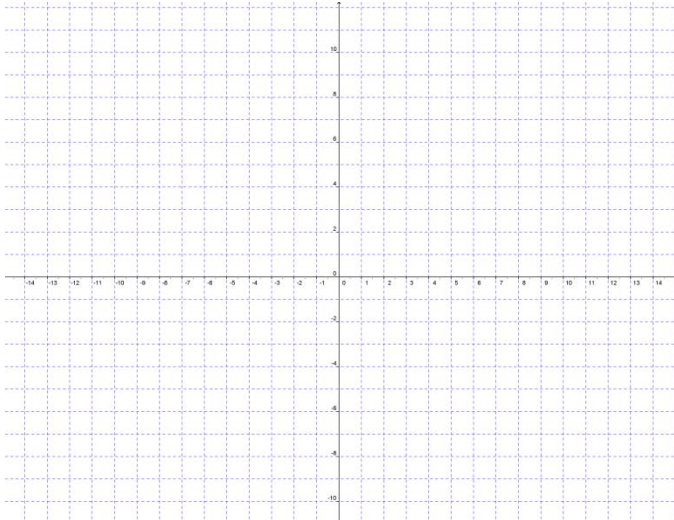**2. a)** Graph each equation.
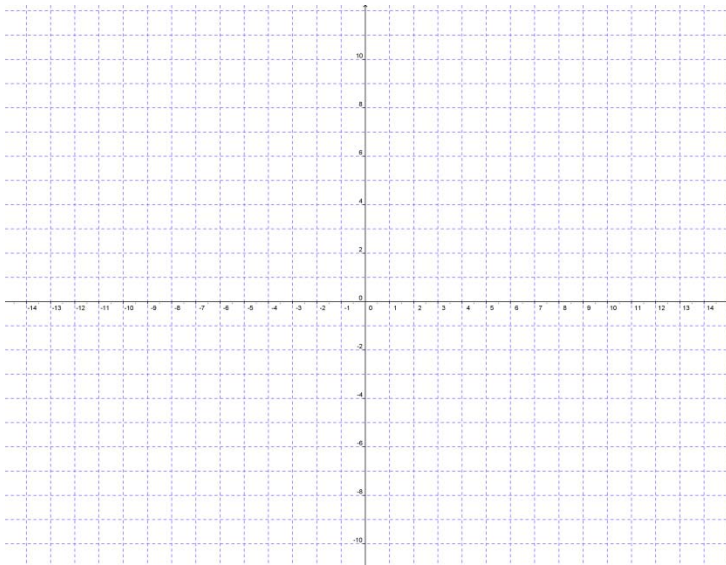
i) $x = -2$

ii) $y = x + 25$

iii) $y = 25$

iv) $y = x^2 + 25$

b) Which equations in part a represent linear relations? How do you know?

3. Which relation is linear? Justify your answer.

a) A dogsled moves at an average speed of 10 km/h along a frozen river. The distance travelled is related to time.

Time (hours)	Distance Travelled (km)
0	0
1	10
2	20
3	30

+1   +10
+1   +10
+1

b) The area of a square is related to the side length of the square.

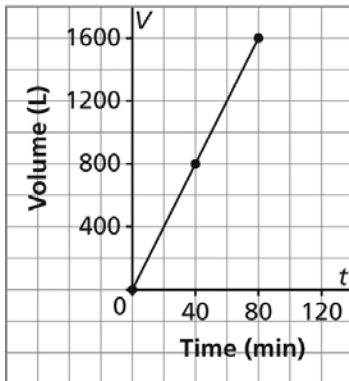| Side Length (cm)	Area (cm^2)
1	1
2	4
3	9
4	16
5	25

+1   +3
+1
+1
+1

4. A hot tub contains 1600 L of water.
Graph A represents the hot tub being filled at a constant rate.
Graph B represents the hot tub being emptied at a constant rate.
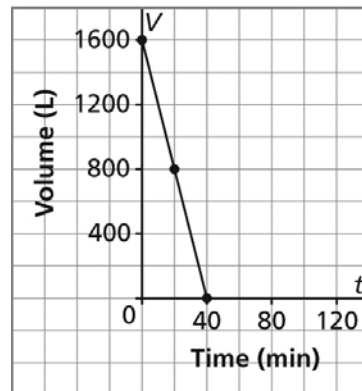
Graph A
Filling a Hot Tub

Graph B
Emptying a Hot Tub

a) Identify the dependent and independent variables.

b) Determine the rate of change of each relation, then describe what it represents.