NOTES 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

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**iii)** *y* = 25 **iv)** *y* = *x*2 *+* 25

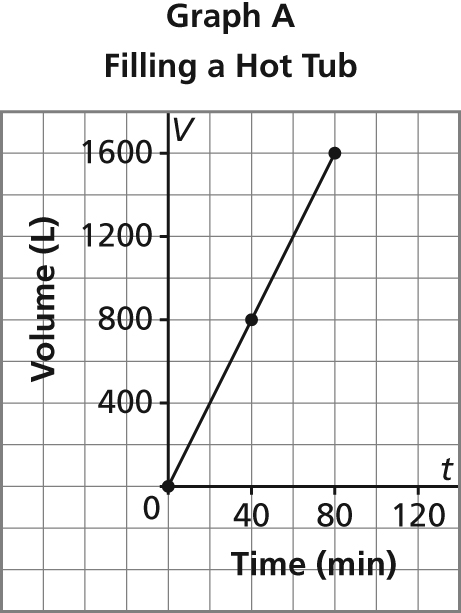
 

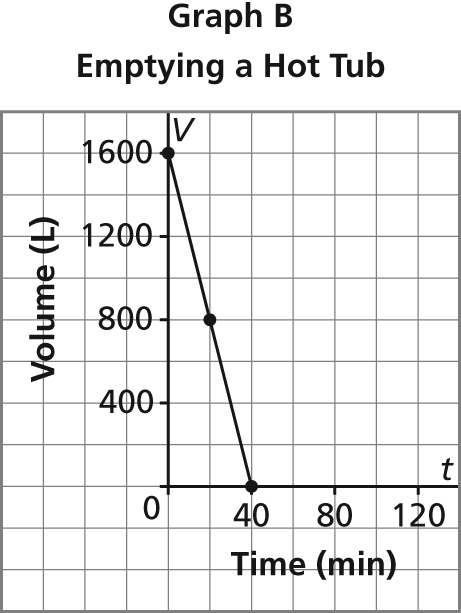
**b)** Which equations in part a represent linear relations? How do you know?

**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.

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

**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.  




**a)** Identify the dependent and independent variables.

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