

NAME: _____

3) Algebraic Modeling

- a. Using your best judgment draw a "line of best fit" on the graph. (1)
b. Determine two points on your "line of best fit" and use those points to work out the equation of your best fit line. (The equation is in the form of $y = mx + c$ where m is the gradient and c is the y-intercept). (3)

$$P_1(0, 14) \quad P_2(15, 0)$$

$$m = \frac{14 - 0}{0 - 15} = -0.93$$

$$y = mx + c$$

$$y = -0.93x + c \quad \textcircled{1}$$

Sub P_1 into Equ $\textcircled{1}$

$$14 = -0.93 \times 0 + c$$

$$\therefore c = 14$$

$$y = -0.93x + 14$$

- c. From your equation determine the value of y when $x = 8$. (1)

$$y = -0.93 \times 8 + 14$$

$$y = 6.56$$

- d. From your equation determine the value of x when $y = 14$ (1)

$$14 = -0.93x + 14$$

$$14 - 14 = -0.93x$$

$$\frac{0}{-0.93} = \frac{-0.93x}{-0.93}$$

$$0 = x$$