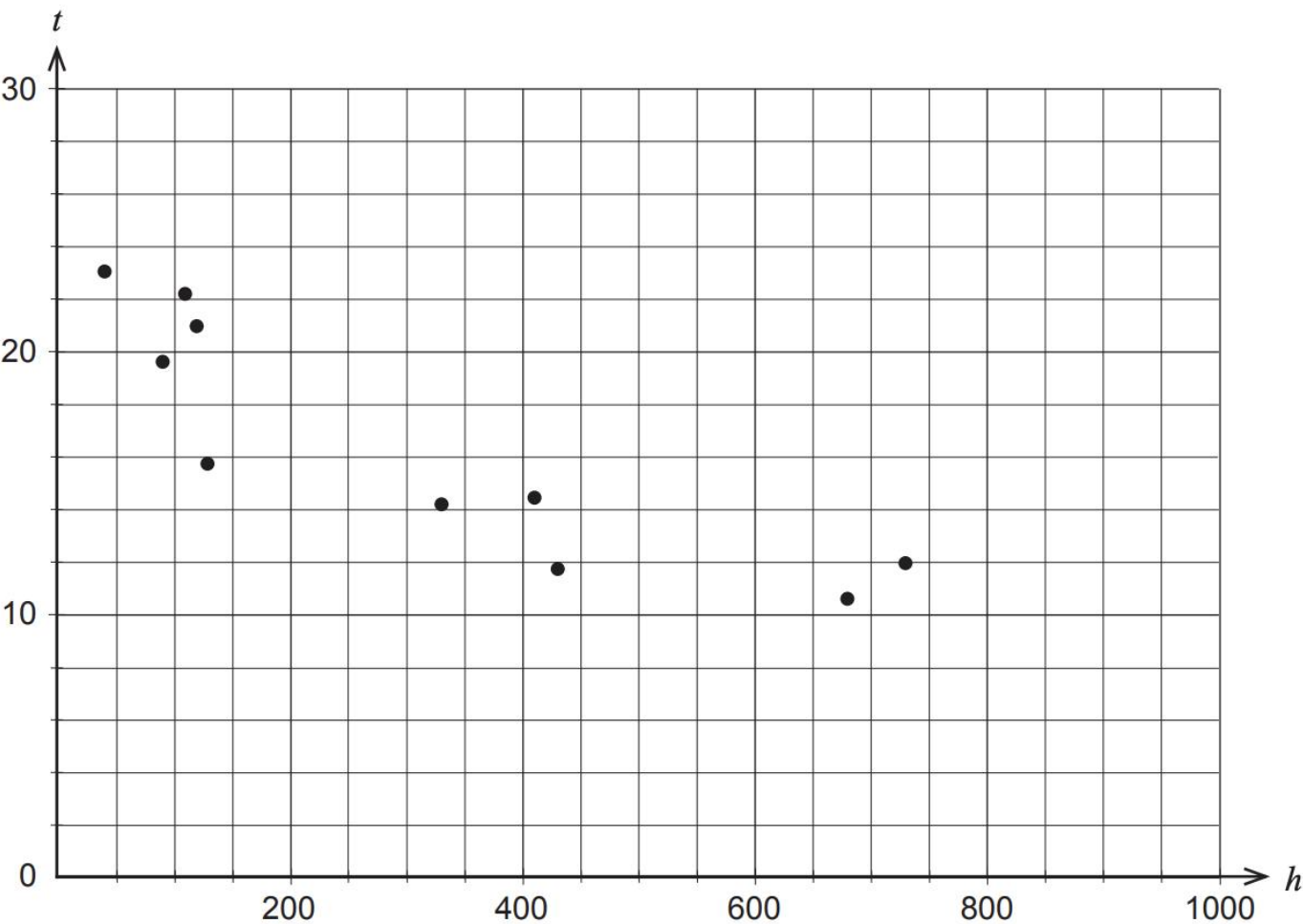


Question 12

(8 marks)

The Bureau of Meteorology recorded data taken from several weather stations. The scatterplot below shows the height, h (m), of each weather station above sea level and the mean minimum temperature, t ($^{\circ}\text{C}$), recorded at that station for the month of April.



The following table provides information for three more weather stations for the month of April.

Height of weather station above sea level, h (m)	250	60	930
Mean minimum temperature, t ($^{\circ}\text{C}$)	13.1	26.2	10.6

- (a) Plot this additional information on the scatterplot above. (2 marks)
- (b) The equation of the least-squares line for these data is $t = -0.015h + 21.476$. Draw this line on the scatterplot above. (2 marks)

- (c) The correlation coefficient (r) was determined for the collected data. Circle the value of r most likely to be the result from the list below. (1 mark)

$$r = -1.2$$

$$r = -0.8$$

$$r = -0.2$$

$$r = 0.5$$

$$r = 0.9$$

- (d) Identify whether the nature of the relationship between the height of a weather station above sea level, h , and the mean minimum temperature, t ($^{\circ}\text{C}$), is linear or non-linear. (1 mark)

- (e) A spokesperson for the Bureau of Meteorology summarised the information from parts (a)–(d), saying ‘It is evident that raising the height of a weather station above sea level causes the mean minimum temperature to drop’. Is this statement correct? Justify your decision. (2 marks)