
2 Giraffes are the world's tallest mammal and can grow to a height of 6 m. This table shows a baby giraffe's height during its first year.

Age (months)	1	2	3	4	6	8	10	12
Height (m)	1.78	1.98	2.17	2.40	2.82	3.26	3.71	4.14

a Find the mean age and height of the baby giraffe during its first year.

b Construct a scatter plot and draw a line of best fit through the mean point.

c Find the equation of your line of best fit.

d Use your equation to estimate the height of this giraffe at 9 months.

e Use your equation to estimate the height of this giraffe at 10 years.

f Explain whether your answer to part e is reliable.

(a) $\bar{x} = 5.75, \, 2.783$

(b)
Ht
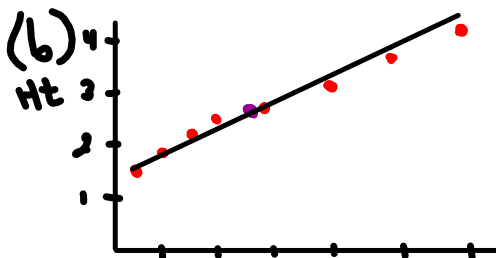
(c) $(5.75, 2.78) \quad (1, 1.78)$ Age

$m = \dfrac{2.78 - 1.78}{5.75 - 1} = \dfrac{1}{4.75}$

$m = 0.211$

$y - 2.78 = 0.211(x - 5.75)$

$\boxed{y = 0.211x - 1.57}$

(d) $y = 0.211(9) + 1.57$
$\boxed{y = 3.47}$ (interpolation)

e) $y = 0.211(120) + 1.57$
$y = 26.9$ meters

f) No → Extrapolation, Giraffes eventually stop growing

3 Gayathri has found a job in the city and now has to find an apartment in which to live. She surveys the monthly rent of several places and their distance from the city centre.

Distance (km)	3	6	10	12	15	20
Monthly rent (thousands of rupees)	60	45	32	28	18	15

a Find the mean distance of the apartments from the city centre.

b Find the mean cost of these apartments.

c Construct a scatter plot and draw a line of best fit through the mean.

d Find the equation of your line of best fit.

e Estimate the cost of an apartment which is 8 km from the city centre.

f Gayathri can afford to pay 50 000 rupees per month. Find how close to the city centre she can live.

g Explain whether you can use your line of best fit to accurately calculate the cost of an apartment 30 km from the city centre.

a) 11 km

b) 33000 rupees

c) $ (1000)
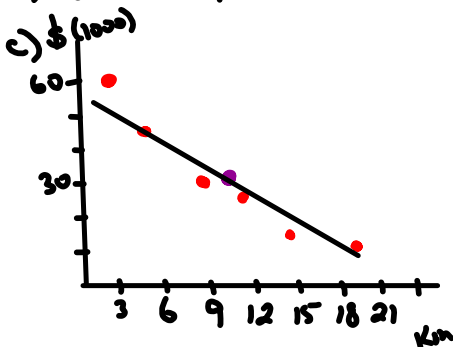
d) $(11, 33)$ And $(6, 45)$

$m = \dfrac{33-45}{11-6} = \dfrac{-12}{5} = -2.4$

$y - 33 = -2.4(x-11)$

$\boxed{y = -2.4x + 59.4}$

e) $y = -2.4(8) + 59.4$

$y = 40.2$ or $\boxed{40,200 \text{ rupees}}$

f) $50 = -2.4x + 59.4$

$-9.4 = -2.4x$

$x \approx 3.9 \text{ km} \ (4 \text{ km})$

(g) No → Extrapolation. Data is outside the range of given Data. Less Reliable.