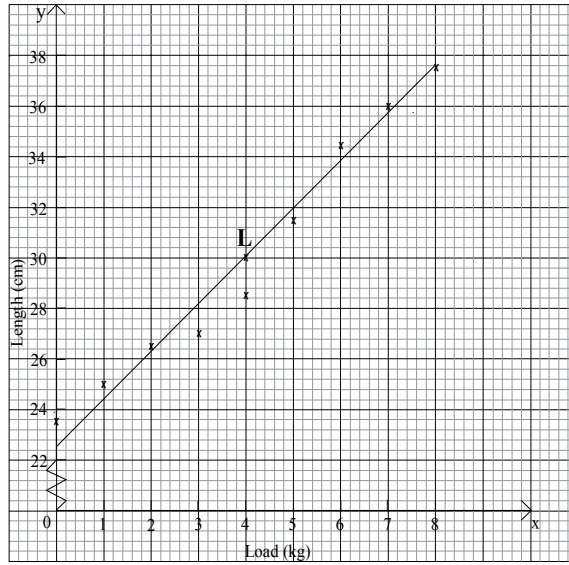


Bivariate stats 3 Answers

1)	(e)	(i) and (iii) are correct.	(A1)(A1)	[2 marks]
2)	(i)	$r = 0.667$	(A1)	[1 mark]
	(ii)	Stress rating increases as travel time increases (or reasonable equivalent e.g. y increases as x increases). <i>Do not accept "positive correlation"</i>	(R1)	[1 mark]
	(iii)	$y = 0.181x + 2.22$ for $0.181x$ and for 2.22 <i>For $y = 2.22x + 0.181$, award (A0)(A1)(ft)</i>	(A1) (A1)	[2 marks]
	(iv)	Putting $x = 45$ $0.181 \times 45 + 2.22$ $= 10.365$ (10.4) Allow 10 or 11 only if the method is shown and is correct. <i>Allow follow through only if method shown.</i>	(M1) (A1)(ft)(G2)	[2 marks]
	(v)	not reliable ... Because result is outside the data range or because the correlation coefficient not high or the sample is small or responses are subjective. <i>Award (R1) for any of the above. A correct reason must be given to award the (A1).</i>	(A1) (R1)	[2 marks]

Bivariate stats 3 Answers

3) (a)



Award **(A1)** for correct scales and labels, **(A3)** for correct points, **(A2)** for 7 or 8 correct, **(A1)** for 5 or 6 correct.

(A4)

[4 marks]

(b) (i) 4

(G1)

(ii) 2.58

(G1)

(iii) 30

(G1)

(iv) 4.78

(G1)

*If wrong version of s.d. used in (ii), can **(ft)** in (iv) (5.07).*

[4 marks]

(c) L correctly plotted on graph and named

(A1)(ft)

[1 mark]

(d) (i) $r = 0.986$ (0.987)

(G1)

(ii) (very) strong positive correlation

(R1)(ft)(R1)(ft)

[3 marks]

(e) $y = 1.83x + 22.7$ ($y = 1.825x + 22.7$)

(G1)(G1)

*Award **(G1)** for $y = 1.83x$ ($1.825x$), **(G1)** for 22.7*

[2 marks]

(f) Line drawn on graph.

(A1)(A1)(ft)

*Award **(A1)** for passing through the mean point, **(A1)** for y intercept between 22 and 23.*

[2 marks]

(g) (i) 32.6 cm

(A1)(ft)

Allow margin of error of 0.2 from value on candidate's diagram.

(ii) Not possible to find an answer as the value lies too far outside the given set of data.

(R1)

[2 marks]

Total [18 marks]

Bivariate stats 3 Answers

- 4) (a) mean of $x = 72.25$ (A1)
sd of $x = 4.41$ (A1)
mean of $y = 139.7$ (140) (A1)
sd of $y = 5.99$ (A1)
[4 marks]
- (b) $r = -0.940$ (G2)
- OR**
- $$r = \frac{-24.82}{(4.41 \times 5.99)}$$
- $$= -0.9396 (= -0.94)$$
- (M1)(A1)
[2 marks]
- (c) strong, negative correlation (A2)
- Note:** Award (A1) for negative, (A1) for strong.
- [2 marks]
- (d) $y = 232 - 1.28x$ (G3)
- OR**
- $$(y - 139.7) = -\frac{24.82}{4.41^2}(x - 72.25)$$
- $$Y = -1.28x + 232$$
- (M1)(A1)(A1)
[3 marks]
- (e) $y = 232 - 1.28 \times 75 = 136$ seconds (A1)
[1 mark]

Bivariate stats 3 Answers

- 5) (a) (i) ① (A1)
- (ii) ③ (A1)

[2 marks]

- (b) (i) ① 0.04 (A1)
- ② -0.20 (A1)
- ③ -0.85 (A1)

- (ii) 1.60 A product-moment correlation coefficient cannot be greater than 1. (R1)
- 0.90 There is no diagram with a strong positive correlation. (R1)

[5 marks]

- (c) (i) Product-moment correlation = $\frac{55.00}{6.08 \times 10.50}$ (A1)
- = 0.8615
- = 0.862 (A1)

- (ii) $\bar{t} = \frac{124}{20} = 6.2$ $\bar{w} = \frac{250}{20} = 12.5$ (both correct) (A1)

$$w - \bar{w} = \frac{S_{tw}}{S_t^2} (t - \bar{t})$$

$$(w - 12.5) = \frac{55.00}{(6.08)^2} (t - 6.2) \quad (M1)(A1)$$

$$w - 12.5 = 1.4878(t - 6.2)$$

$$w = 1.49t + 3.28 \quad (A1)(A1)$$

Note: ft from candidate's mean values

[7 marks]