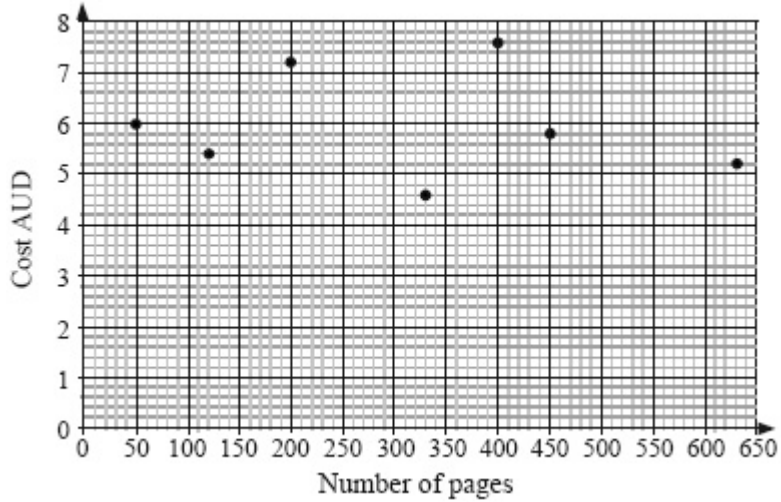


## IB Questions on Correlation Answers

1. (a) (i)  $S_x = 11.2$  (A1)  
 $r = \frac{36.7}{11.2 \times 3.5}$  (M2)  
 $= 0.936$  (3 s.f.) (A1)
- OR**
- $S_x = 11.6$  (A1)  
 $r = \frac{36.7}{11.6 \times 3.5}$  (M2)  
 $= 0.904$  (3 s.f.) (A1)
- (ii) The correlation coefficient suggests a strong positive correlation between the two variables. (R1) 5
- (b)  $y - \bar{y} = \frac{S_{xy}}{(S_x)^2}(x - \bar{x})$   
 $y - 10.6 = \frac{36.7}{11.2^2}(x - 30.4)$  (M1)  
 $y = 0.293x + 1.69$  (or  $y = 0.293x + 1.71$ ) *Allow ft from (a) (i)* (A2) 3
- (c) (i)  $y = 0.293 \times 33 + 1.69$  (M1)  
 $= 11.359$   
 $= 11$  hours (A1)
- (ii)  $8 = 0.293x + 1.69$  (M1)  
 $x = 21.54$   
 $= 22$  years (A1) 4
- [12]**
2. (a) High positive *or* high *or* positive *or* good *correlation* etc. (A1)  
*Note: For (A1) accept any correct answer.*
- (b) Correct point M(29, 31) (A1)
- (c) Suitable line which should pass through the candidate's M and have nearly as many crosses (plotted points) below it as above it. (A1)
- (d) Accept **only** value (including non-integers) obtained using candidate's line of best fit.  
(Follow through from part (c).) (A1)
- [4]**

3. (a)



(A1)(A1)(A1) 3

*Notes: (A1) for label and scales, (A2) for all points correct, (A1) for 5 or 6 correct. Award a maximum of (A2) if points are joined.*

(b)  $r = -0.141$

(G2) 2

*Note: If negative sign is missing award (G1)(G0).*

(c) “The coefficient of correlation is too low, (very) weak (linear) relationship”.  
Not a sensible thing to do, *accept* “no”.

(R1)  
(A1) 2

*Note: Do not award (R0)(A1)  
The correlation coefficient has to be mentioned in their reasoning.*

[7]

4. (a)  $y = 0.070x - 3.22$  (G3) 3

*Notes: Award (G1) for correct m value, (G1) for 3.22, (G1) for negative sign. Accept 0.07x.*

- (b)  $y = 0.070 \times 162 - 3.22$  (M1)  
 $= 8.12$   
 Therefore shoe size 8 or 9 (8.12). (A1)

**OR**

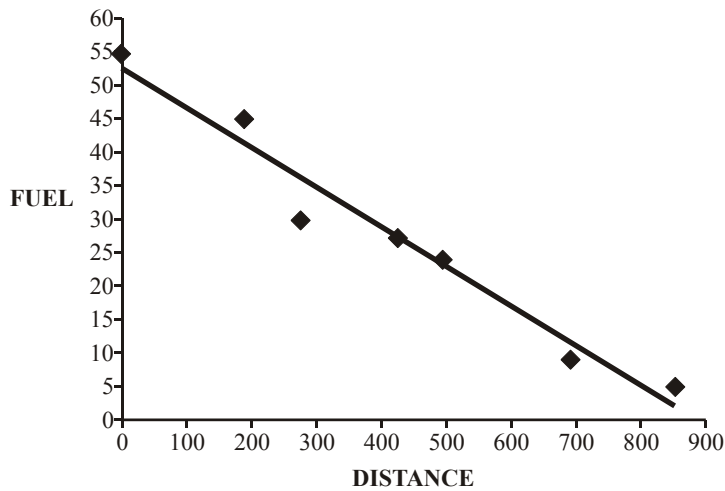
$y = 8$  or  $9$  (G2) 2

- (c)  $r = 0.681$  (A1) 1

- (d) Moderately strong, positive correlation. (A1)(A1) 2

**[8]**

5. (a)



- For all 3 points correct (A2) (C2)

*Note: If only 2 points correct award (A1).*

- (b) For straight line **with -ve gradient** for passing through the mean (A1)(A1)  
 For straight line intercept on j-axis between 50 and 55 (A1) (C3)

- (c) 32 (read answer from candidate's line) (A1) (C1)

**[6]**