Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- as one variable increases so does the other

positive correlation

2.2

- to estimate the value of one variable from a known value of the other

2.3

- the pattern shown by the data may not continue outside the range that was measured – this is extrapolation

2.4

- **no correlation**: shoe size has nothing to do with test score

2.5

- $y = 2.5 \times 6 + 40 = 15 + 40 =$ **55**

3.1

(a)

- rising to the right is positive
- the points lying CLOSE to the line makes it strong, so: **strong positive correlation**

(b)

- find 6 hours on the horizontal axis and read straight up to the line of best fit
- then read across to the score axis; the estimate is the value there

(c)

- correlation shows only that the two vary together, not that one produces the other
- a third factor could explain both – for example a student who is more motivated may both revise more AND pay more attention in class

3.2

- **negative correlation**
- as a car gets older its value generally falls, so the two move in opposite directions

3.3

- an **outlier**
- it is **ignored** when drawing the line of best fit

3.4

- gradient $m = \dfrac{85 - 45}{10 - 2} = \dfrac{40}{8} = 5$
- substitute $(2, 45)$: $45 = 5 \times 2 + c$, so $c = 35$

$$\boldsymbol{y = 5x + 35}$$

3.5

(a)

- $5x + 35 = 70$, so $5x = 35$

$x =$ **7** hours

(b)

- $y = 5 \times 14 + 35 =$ **105**
- 14 hours is outside the data (extrapolation), and 105 is more than the maximum mark of 100