Exercise 1

Paper 1 style · No calculator

1 4 marks SL 4.4 ●○○ Routine

On 15 days, the midday temperature x °C and the number y of ice creams sold at a kiosk give $r = 0.88$ and the regression line of y on x, $y = 12x + 40$. The temperatures range from 10 °C to 30 °C, and their mean is 20 °C.

(a) Describe the correlation between temperature and sales. **[1]**

(b) Use the regression line to estimate the sales on a day at 25 °C. **[1]**

(c) Explain why the line should not be used to estimate the sales on a day at 45 °C. **[1]**

(d) Find the mean number of ice creams sold per day. **[1]**

The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
© 2026 Hence

Exercise 1 — markscheme

Paper 1 style · No calculator

1 4 marks SL 4.4 ●○○ Routine

On 15 days, the midday temperature x °C and the number y of ice creams sold at a kiosk give $r = 0.88$ and the regression line of y on x, $y = 12x + 40$. The temperatures range from 10 °C to 30 °C, and their mean is 20 °C.

(a) Describe the correlation between temperature and sales. **[1]**

(b) Use the regression line to estimate the sales on a day at 25 °C. **[1]**

(c) Explain why the line should not be used to estimate the sales on a day at 45 °C. **[1]**

(d) Find the mean number of ice creams sold per day. **[1]**

MARKSCHEME (a)

strong positive (linear) correlation — **A1**

Total 1 mark

MARKSCHEME (b)

$12 \times 25 + 40 = 340$ — **A1**

Total 1 mark

MARKSCHEME (c)

45 is outside the data: extrapolation — **R1**

Total 1 mark

MARKSCHEME (d)

$12 \times 20 + 40 = 280$ — **A1**

Total 1 mark

Note The regression line passes through $(\bar{x}, \bar{y})$.