

## Unit 3 Overview Guide

### Check Your Understanding — Answer Key

For open questions, a correct response gives the same values with the reasoning in the student's own words. Trend-line predictions are read from a reasonable line of best fit, so any answer inside the accept band earns credit.

| #  | Answer                                                                                                                                                                            |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | All 10 points plotted correctly; positive (linear) association — as practice increases, speed tends to increase                                                                   |
| 2  | B                                                                                                                                                                                 |
| 3  | No association — the points show no pattern; a shoe size tells you nothing about the quiz score                                                                                   |
| 4  | C                                                                                                                                                                                 |
| 5  | Non-linear — the heights rise and then fall, following a curve rather than a straight line                                                                                        |
| 6  | A (continues the upward trend; B, C, D fall far off the pattern)                                                                                                                  |
| 7  | Answers vary — any two points that continue the downward trend, e.g. (11, 4) and (12, 3); chosen because they lie close to the line the data already follows                      |
| 8  | Positive; Negative; None; Nonlinear                                                                                                                                               |
| 9  | D                                                                                                                                                                                 |
| 10 | All 10 points plotted correctly; negative (linear) association — as temperature rises, cocoa sales tend to fall                                                                   |
| 11 | B (trend at age 10 is $\approx 70\%$ ; A, C, D sit far from the pattern)                                                                                                          |
| 12 | Linear — the points cluster around a straight line that rises at a steady rate                                                                                                    |
| 13 | Negative association — every time the weeks increase, the battery life decreases, so the points would fall from left to right                                                     |
| 14 | Not correct — an association does not require the points to lie on a line; points that rise from left to right while clustering around a trend show a positive linear association |
| 15 | Reasonable trend line drawn through the middle of the cloud; prediction at 35 minutes $\approx 75$ (accept 71–78)                                                                 |
| 16 | C (trend gives $\approx 49$ at $85^\circ\text{F}$ ; A reads the nearest data point instead of the trend)                                                                          |
| 17 | A (trend gives $\approx \$340$ – $350$ at 30 months; B reads nearby low points, not the trend)                                                                                    |
| 18 | Reasonable trend line drawn through the cloud; about 8 bags — on the line, a yield of 24 kg sits above $x \approx 8$ (accept 7–9)                                                 |
| 19 | $y = 2.5(20) + 12 = \$62$ ; $87 = 2.5x + 12$ gives $x = 30$ hours                                                                                                                 |
| 20 | D (the data rise about 2 for each 1 across from a start near 15; testing a few points eliminates A, B, C)                                                                         |

| #  | Answer                                                                                                                                                                                                                                                                            |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21 | (a) reasonable trend line drawn; $\approx 38$ bags at $88^\circ\text{F}$ (accept 34–40) (b) the slope (about 0.5) means the store sells about one more bag of ice for every $2^\circ\text{F}$ increase in temperature (about half a bag per degree)                               |
| 22 | Trend estimate $\approx 70$ (accept 66–73). The student’s method is not reliable — a single nearby point (such as the low point at (30, 60)) can sit far from the overall pattern; the trend line uses all the data, so it gives a steadier estimate                              |
| 23 | Prediction $\approx 45$ push-ups (accept 41–50). Less reliable because 90 weeks is far outside the data, which only reaches 40 weeks — and the program itself ends at 40, so there is no evidence the pattern continues                                                           |
| 24 | Not correct — a trend line follows the overall direction of the data and balances the points above and below it; it does not need to pass through any particular number of points. A well-drawn line here leaves about half the points on each side without touching most of them |
| 25 | C                                                                                                                                                                                                                                                                                 |