Scatter Plots and Lines of Fit

Choose one answer per question. Circle A, B, C, or D.

1. A scatter plot uses x for packs opened and y for stickers collected. What does the point (3, 8) mean?
   A. 8 stickers from 3 packs
   B. 3 stickers from 8 packs
   C. 8 stickers from 8 packs
   D. 3 stickers from 3 packs

2. A team records bench lengths of 2, 5 and 7 feet with corresponding seat counts of 1, 3 and 4. If x is length and y is seats, which point belongs to the 5-foot bench?
   A. (5, 4)
   B. (3, 5)
   C. (5, 3)
   D. (7, 3)

3. The points (2, 3), (4, 6), (4, 9) and (6, 11) are on a scatter plot. What are the y-values for the two points directly above x = 4?
   A. 3 and 6
   B. 6 and 9
   C. 4 and 4
   D. 9 and 11

4. A reading group records (minutes read, pages finished) as (5, 3), (10, 6), (15, 8) and (20, 12). Which direction do these points follow?
   A. A downward then upward curve
   B. Negative association
   C. No association
   D. Positive association

5. A cooling tray gives (minutes elapsed, temperature) pairs of (1, 34), (3, 29), (5, 24) and (7, 20). What association appears?
   A. Positive association
   B. Negative association
   C. No association
   D. An upward then downward curve

6. A scatter plot contains (1, 2), (1, 7), (4, 2) and (4, 7). What does the plot show about direction?

A. The same two y-values occur at both x-values.
B. Every larger x-value has a larger y-value.
C. Every larger x-value has a smaller y-value.
D. The larger x-value has only one y-value.

7. The points are (1, 4), (2, 7), (3, 18), (4, 13) and (5, 16). Four follow a rise of 3 in y for each step of 1 in x. Which point breaks that pattern?

A. (5, 16)
B. (2, 7)
C. (4, 13)
D. (3, 18)

8. Set A contains (1, 3), (2, 5), (3, 7) and (4, 9). Set B contains (1, 3), (2, 6), (3, 5) and (4, 10). Which set is more tightly aligned with an upward straight line?

A. Both sets fit an upward line exactly
B. Set B
C. Set A
D. Neither set has an upward trend

9. A scatter plot has points (2, 9), (4, 11), (7, 19) and (8, 20). A model uses $y = 2x + 4$. What y-value does it predict at $x = 6$?

A. 16
B. 12
C. 15
D. 20

10. A model uses points (4, 10), (7, 16), (9, 20) and (12, 26). Which prediction would extend beyond the observed x-values?

A. The prediction at $x = 12$
B. The prediction at $x = 5$
C. The prediction at $x = 8$
D. The prediction at $x = 16$

11. A model predicts $y = 3x + 2$. One observed point is (5, 16). What is the residual, calculated as observed minus predicted?

A. 17
B. 1
C. -1
D. -17

12. The points are (0, 10), (1, 7), (2, 6), (3, 7) and (4, 10). Which description would a single sloping line miss?

A. The values rise at every step.
B. The values fall and then rise.
C. The values fall at every step.
D. The values stay the same.

13. A fountain model gives y = 4x + 3, where x is minutes and y is liters collected. The fitted line contains (1, 7) and (3, 15). How much does the model add for 2 more minutes?

A. 11 liters
B. 4 liters
C. 7 liters
D. 8 liters

14. The observed points are (1, 4), (3, 8) and (5, 11). For each model, add the absolute differences between observed and predicted y-values. Which model has the smallest total?

A. y = 2x + 1
B. y = 2x
C. y = 3x + 1
D. y = x + 4

15. An ice rink records (skate rentals, cocoa cups sold) on four days as (20, 8), (30, 13), (45, 20) and (60, 26). Which conclusion fits the data?

A. Each skate rental adds exactly one cup sold.
B. Renting skates makes a visitor buy cocoa.
C. Rentals and cocoa sales rise together, possibly because more people visited.
D. Cocoa sales are unrelated to rental counts in these data.