Year 10 · Statistics: Picturing Data

Name: _____ Date: _____

This sheet helps you choose the right graph, pick sensible scales, and read patterns from data. You'll also draw a line of best fit to make predictions, a skill you'll use lots next year!

Warm-up

1. Name the best visualisation to show how many students at Avondale College travel to school by bus, car, bike, or walking (a category variable with counts).

2. A dot plot of shoe sizes has these dots: size 7 (2 dots), size 8 (5 dots), size 9 (3 dots), size 10 (1 dot). How many people are in the data set, and what is the most common (modal) shoe size?

3. For a scatter plot investigating whether hours studied predicts a test score, which variable goes on the x-axis and which on the y-axis?

4. A data set of daily temperatures ranges from 6°C to 27°C. Suggest a sensible scale for the vertical axis of a graph.

Practice

5. A café in Avondale records the number of flat whites sold each day for a week: Mon 42, Tue 38, Wed 55, Thu 47, Fri 63, Sat 71, Sun 29. Which visualisation best shows the pattern across the week, and what does it show?

6. Twenty Year 10 students recorded their reaction times (seconds) in an experiment. Explain why a histogram, not a bar graph, is the right choice, and describe how the bars differ.

7. Here are the maths test marks (out of 20) for two classes. Class A: 12, 14, 15, 15, 16, 18, 19. Class B: 8, 11, 13, 15, 17, 18, 20. Find the median of each class and state which class performed better on average.

8. A survey asks Year 10 students whether they own a bike (Yes/No) and whether they are Junior or Senior. Results: Junior Yes 18, Junior No 12, Senior Yes 9, Senior No 21. Draw a two-way table and find the proportion of Juniors who own a bike.

9. A student measures the height (cm) of a bean plant each week: Week 0: 2, Week 1: 5, Week 2: 9, Week 3: 14, Week 4: 20. On a scatter plot she draws a straight line of best fit that passes close to (0, 2) and (4, 20). Use this line to predict the height at Week 5.

10. A shop owner has this data linking the daily high temperature (°C) to ice creams sold: (18, 22), (20, 30), (23, 41), (25, 52), (28, 66). Describe the relationship you would see on a scatter plot and explain how a line of best fit helps.

Challenge

11. A teacher records study hours (x) and test score out of 100 (y) for six students: (1, 45), (2, 52), (3, 61), (4, 68), (5, 74), (6, 82). Draw a line of best fit, estimate its equation, and use it to predict the score for a student who studies 7 hours. Comment on how reliable this prediction is.

12. An investigation collects each Year 10 student's arm span (cm) and height (cm). Explain (a) which visualisation is appropriate and why, (b) how to choose axis scales if arm spans range 140–185 cm and heights range 145–190 cm, and (c) what a line of best fit would tell you.