Year 8 · Statistics: Picture the Data

Name: _____ Date: _____

This sheet helps you choose the best graph for different kinds of data, read what graphs are telling you, and spot the odd data points we call outliers. Have a ruler handy for the graphs!

Warm-up

1. Name the type of graph that is best for showing how a single number changes over time (for example, daily temperature in Avondale over one week).

2. A class recorded their favourite lunch: 8 chose pies, 5 chose sushi, 4 chose sandwiches, 3 chose salad. Is this data categorical or numerical?

3. Look at this dot plot of goals scored by a netball team in 6 games: 2, 3, 3, 4, 4, 12. Which value looks like an outlier?

4. True or false: an outlier pulls the mean towards itself but has little effect on the median. Explain in one sentence.

Practice

5. Mele surveyed 20 students at Vertex Academy about how they travel to the centre: Walk 7, Bus 6, Car 5, Bike 2. Describe how you would draw a bar graph for this, including what each axis shows.

6. A shop tracked ice-cream sales (in dollars) each month from January to June: $900, $760, $540, $420, $300, $250. What graph should you use, and what trend does it show?

7. Year 8 students were asked their favourite sport, split by boys and girls. Boys: Rugby 10, Football 6, Netball 2. Girls: Rugby 4, Football 5, Netball 9. What kind of graph best compares the two groups, and why?

8. Here are the heights (cm) of 9 plants in a school garden: 22, 24, 25, 25, 26, 27, 28, 29, 61. (a) Find the median. (b) Find the mean. (c) Explain what the outlier does to each.

9. Aroha made a time-series graph of her weekly savings and noticed one week jumped from about $15 up to $140, then went back to normal. Give one sensible reason this is NOT an error, and say whether she should delete it.

10. A café owner has this data and wants ONE graph: the number of customers each hour from 8am to 12pm (8am: 12, 9am: 20, 10am: 35, 11am: 18, 12pm: 40). What graph type fits best, and what does the pattern suggest?

Challenge

11. A class tracked recycling collected (kg) over 5 weeks for two rooms. Room A: 8, 9, 10, 11, 12. Room B: 2, 3, 4, 5, 46. (a) Which room has an outlier and what is it? (b) Compare the medians of the two rooms. (c) Which room truly recycles more consistently, and why can the mean be misleading here?

12. A student wants to show, in ONE graph, how many students in each of Years 7, 8 and 9 answered 'Yes' or 'No' to using the school bus. Data, Year 7: Yes 30, No 10; Year 8: Yes 20, No 20; Year 9: Yes 15, No 25. (a) Name a suitable graph and explain your choice. (b) Describe what a stacked bar graph would show that a clustered one might not. (c) State one clear pattern in the data.