

WA6MPSS3

Statistics

Core + Challenge

Statistical Investigations

I can plan an investigation, collect and graph data, and explain what it shows.

Name: _____ Date: _____ Score: _____ / 58

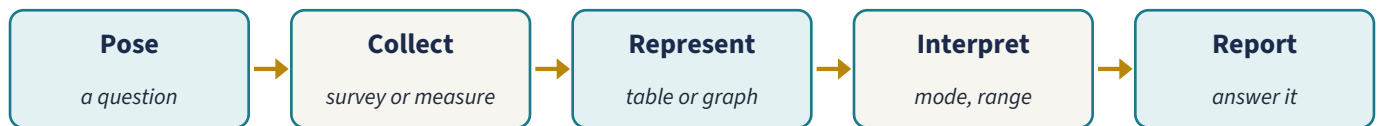
Key idea

A statistical investigation has five steps: **pose** a question, **collect** data, **represent** it, **interpret** it and **report**.

Discrete data is **counted** (number of pets). **Continuous** data is **measured** (height, time, temperature).

Use a **line graph** for data that changes **over time**. Use a **side-by-side column graph** to **compare** two groups.

Data **varies**: different people, different days, small samples and measuring errors all change the results.



A

Warm up *count, sort and plot*

/ 16 marks

Write **discrete** (counted) or **continuous** (measured). 1 mark each.

1 Goals in a netball game

2 Time to run 100 m

3 Height of a gum tree

4 People on a Transperth bus

Which method is best: **survey**, **observe** or **measure**? 1 mark each.

5 Favourite footy team of Year 6 students

6 How many cars pass the school gate in 10 minutes

7 Mass of each student's school bag

8 Temperature on the oval every hour

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Travel to school: **W** walk, **C** car, **B** bus, **K** bike. Count each way and write the total. 1 mark each.

C B B W K C W C W C W W C C C C W W B B K K B C

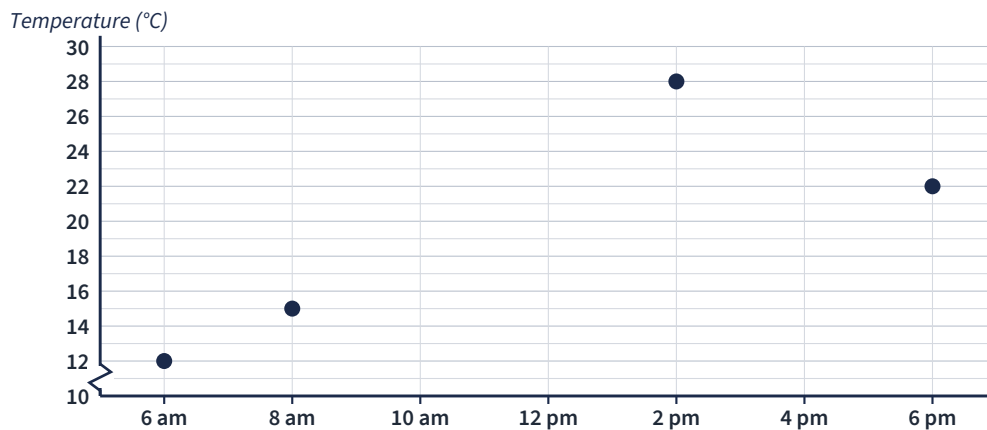
9 Walk (W)

10 Car (C)

11 Bus (B)

12 Bike (K)

Kings Park temperature every 2 hours. Plot the missing points, then join all the points. 1 mark each.



13 Plot 10 am: 21 °C

14 Plot 12 pm: 25 °C

15 Plot 4 pm: 27 °C

16 The **biggest** rise was between which times?

B Practise *use the skill*

/ 23 marks

- 1 Leila wants to know whether Year 6 students sleep **more** on weekends than on school nights. **a)** Write a survey question she could ask. **b)** She will record the number of **hours** each student slept. Is this data **discrete** or **continuous**? Explain. [2 marks]

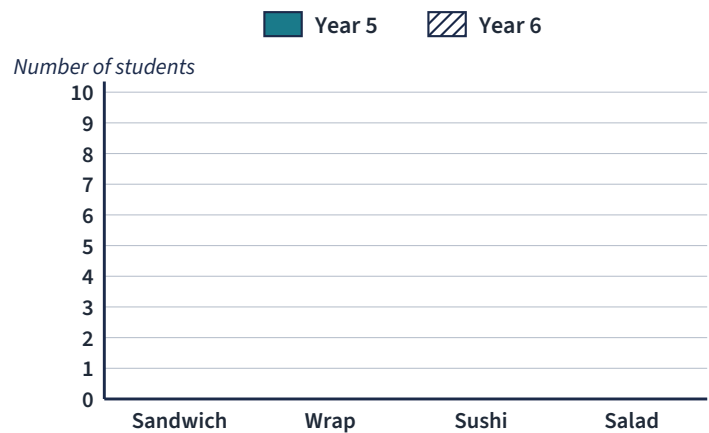
Answer: _____

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- 2 A survey asked Year 5 and Year 6, “What do you usually have for lunch?” Draw a **side-by-side column graph** of the results. Follow the key. Then name the foods that were more popular with Year 6 than with Year 5. [3 marks]

Lunch	Year 5	Year 6
Sandwich	8	6
Wrap	5	9
Sushi	7	4
Salad	3	5

Foods: _____

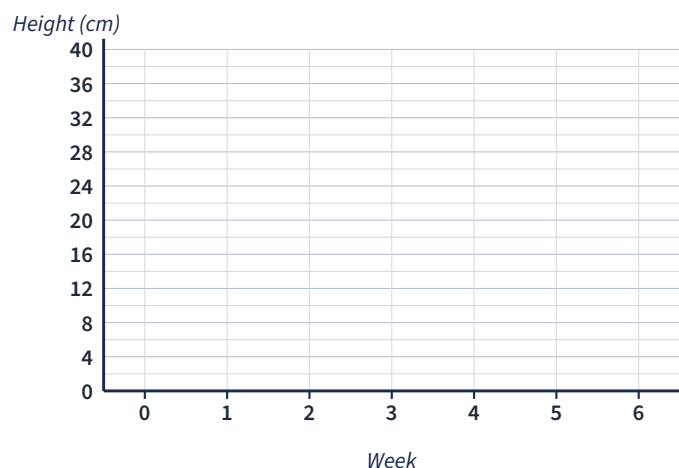


- 3 Mia measured her sunflower every week. **a)** Draw a **line graph** of her data. **b)** Between which two weeks did it grow the **most**? **c)** Use your graph to estimate its height after $3\frac{1}{2}$ weeks. [3 marks]

Week	0	1	2	3	4	5	6
cm	4	8	14	24	30	34	36

b) _____

c) _____

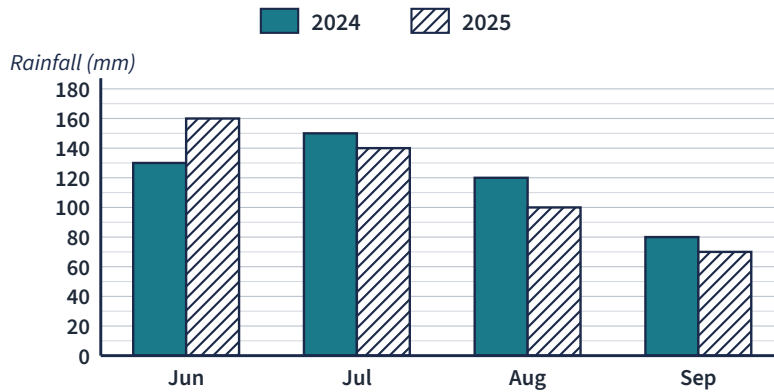


- 4 Four groups measured the length of the same classroom with a tape measure. They got 8.2 m, 8.4 m, 8.3 m and 8.25 m. **a)** Give **two** reasons why the measurements are different. **b)** How could they get a more reliable result? [2 marks]

Answer: _____

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- 5 The graph compares Perth's winter rainfall in two years. **a)** In which month was the difference between the years **biggest**? **b)** Which year was wetter from June to September? Show your working. **c)** Give one reason rainfall varies from year to year. [3 marks]

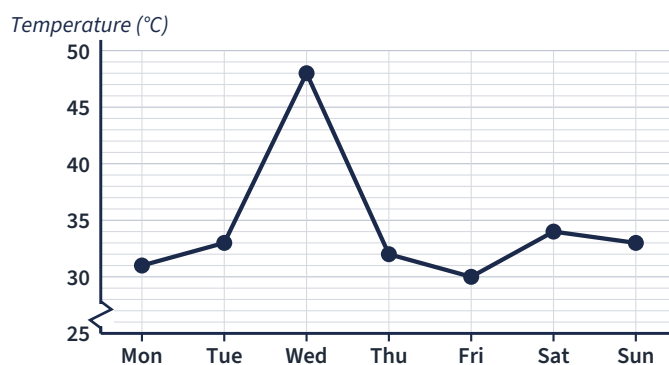


- a)** _____
b) _____
c) _____

- 6 Mia wants to find the favourite sport of the **600** students at her school. Who should she ask? Circle one and explain. **A** her 5 best friends **B** the netball team **C** 10 students picked at random from every class **D** only Year 6 [2 marks]

Answer: _____

- 7 Zac recorded the temperature on his balcony at 3 pm each day. **a)** Which reading looks **wrong**? **b)** What could have caused it? **c)** What should he do? [2 marks]



Answer: _____

8 Complete the plan for each investigation.

[3 marks]

Question	Data type	How to collect	Best graph
1. How does the temperature change during a school day?		measure every hour	
2. Do Year 5 and Year 6 students own different numbers of pets?	discrete		
3. How tall are our tomato plants each week?			line graph

9 Twenty-five students were asked, “How many people live in your home?” Their answers are below. **a)** Complete the tally table. **b)** What is the **mode**? **c)** What is the **range**?

[3 marks]

3 4 6 4 2 3 5 4 4 4 7 4 3 3 5 6 2 2 4 5 4 3 4 5 3

People	Tally	Frequency
2		
3		
4		
5		
6		
7		

b) _____

c) _____

C Think it through *explain your thinking*

/ 10 marks

1 Ben says, “I should use a **line graph** to show the favourite fruit of my class.” Do you agree with Ben? Explain.

[2 marks]

2 **True or false?** “If I ask the same survey question on a different day, I will get **exactly** the same results.” Explain.

[2 marks]

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- 3 **Always, sometimes or never true?** “Different people measuring the same object get exactly the same measurement.” Explain. [2 marks]

Circle one: **Always** / **Sometimes** / **Never**

- 4 Which is the **odd one out**? time to swim 50 m, height of a student, number of brothers and sisters, temperature at noon. Explain. [2 marks]

- 5 Ella surveyed Year 6 about how they got to school on a **rainy** Monday. “Car” was by far the most popular. Why might her results not show a **normal** week? How could she improve her investigation? [2 marks]

D Challenge *stretch yourself*

/ 9 marks

- 1 In a reaction test, a ruler is dropped and caught. The distance it falls is recorded (a **smaller** distance means a **faster** reaction). **a)** Find the mode and range for each class. **b)** Which class reacted faster? Use the data. **c)** An 11th Year 4 result was lost. With it, the Year 4 range is **15** and the mode is still **22**. Find **all** the possible lost results. [3 marks]

Distance (cm)	1	2	3	4	5	6	7	8	9	10
Year 6	12	15	10	15	18	15	11	14	20	13
Year 4	18	22	25	20	22	30	16	22	19	26

Answer: _____

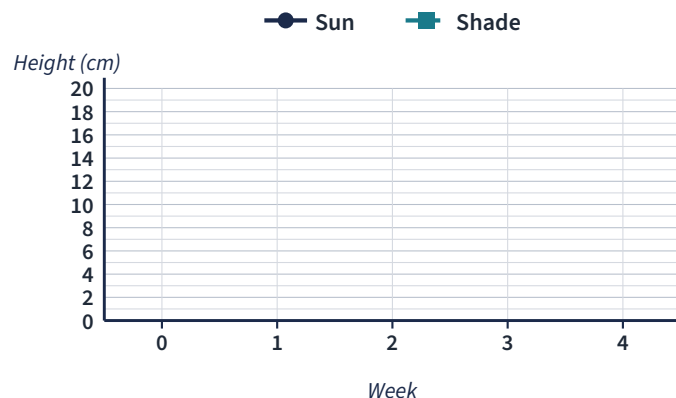
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- 2 Twelve students' times to run 100 m (seconds): 14.2, 15.8, 16.1, 14.9, 17.3, 15.5, 16.8, 15.1, 14.6, 16.4, 15.9, 18.0. **a)** Complete the grouped table. **b)** Why is the mode of the single times no help? Which **group** is the mode? **c)** What is the range of the times? [3 marks]

Time (s)	Number of students
14.0 to 14.9	
15.0 to 15.9	
16.0 to 16.9	
17.0 to 17.9	
18.0 to 18.9	

- 3 Two bean plants were grown, one in the **sun** and one in the **shade**. Their heights (cm) are in the table. **a)** Draw **both** lines on the graph. Follow the key. **b)** How much taller was the sun plant at week 4? **c)** Give one reason, other than sunlight, why the results might not be fair. [3 marks]

Week	0	1	2	3	4
Sun	2	5	9	14	18
Shade	2	3	5	7	8



b) _____

c) _____

How did I go?

Warm up ____ / 16 Practise ____ / 23 Think it through ____ / 10 Challenge ____ / 9 **Total ____ / 58**

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