

WA7MPSP4

Probability and statistics

Core + Challenge

Venn Diagrams and Stem-and-Leaf Plots

I can represent and interpret data in Venn diagrams and stem-and-leaf plots, and use them to answer questions.

Name: _____ Date: _____ Score: _____ / 57

Key idea

Venn diagram: each circle is a category; the **overlap** is 'both'; outside the circles is 'neither'. Each person is counted **once**.

Sport total = sport only + both. Total = only A + both + only B + neither.

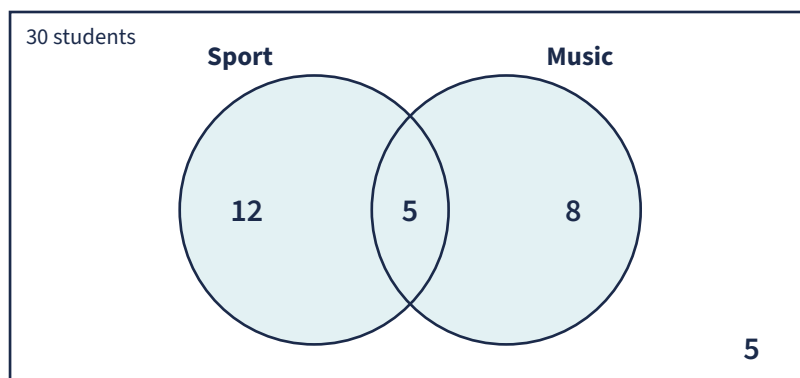
Stem-and-leaf plot: the stem is the tens digit, the leaf is the units digit. Key: $3 \mid 5 = 35$. Always order the leaves.

Stem-and-leaf plots keep the **actual values**, so you can find the median, mode and range.

A Fluency *practise the skill*

/ 16 marks

Use the Venn diagram (Q1–8) and the stem-and-leaf plot (Q9–16) below.



Stem	Leaf
1	2 5
2	1 3 3 8
3	0 4 5 5 5
4	1 7

Key: $3 \mid 5 = 35$

- Venn: total students _____
- Venn: how many play sport? _____
- Venn: how many do music? _____
- Stem-and-leaf: number of values _____
- Stem-and-leaf: smallest value _____
- Stem-and-leaf: largest value _____

Venn Diagrams and Stem-and-Leaf Plots · WA7MPSP4

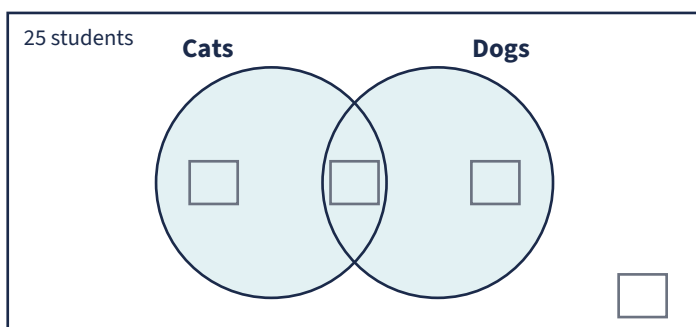
4. Venn: how many do both? _____
5. Venn: how many do neither? _____
6. Venn: sport but not music _____
7. Venn: music only _____
8. Venn: P(random student does both) _____
12. Stem-and-leaf: range _____
13. Stem-and-leaf: mode _____
14. Stem-and-leaf: median _____
15. Stem-and-leaf: values of 30 or more _____
16. Stem-and-leaf: values in the 20s _____

B

Core *apply the skill to problems*

/ 23 marks

- 1 In a class of 25 students, 14 like cats, 11 like dogs and 4 like both. Complete the Venn diagram and find how many like neither. [3 marks]



- 2 Ages of people at a party: 23, 31, 45, 27, 38, 42, 29, 35, 31, 50. Draw an ordered stem-and-leaf plot with a key, and find the median. [3 marks]

.....

.....

.....

.....

Answer: _____

- 3 Use the Sport/Music Venn diagram. A student is chosen at random. What is the probability they play sport? [2 marks]

.....

Answer: _____

Venn Diagrams and Stem-and-Leaf Plots · WA7MPSP4

- 4 For the numbers 1 to 20, let A = multiples of 3 and B = even numbers. Which numbers go in the overlap? How many numbers are in neither? [3 marks]

.....

.....

Answer: _____

- 5 Use the stem-and-leaf plot. How many values are greater than 30? [2 marks]

.....

Answer: _____

- 6 Classify each as categorical or numerical data: (a) favourite sport (b) height in cm (c) number of siblings (d) eye colour [2 marks]

.....

- 7 Rewrite this stem-and-leaf row in order: 4 | 7 2 9 1 5. What values does it show (key 4 | 7 = 47)? [2 marks]

.....

Answer: _____

- 8 Give one advantage of a stem-and-leaf plot over a bar chart for test scores. [2 marks]

.....

Answer: _____

- 9 In a survey of 40 people, 22 drink coffee, 15 drink tea and 7 drink both. How many drink neither? [2 marks]

.....

.....

Answer: _____

- 10 Using the Sport/Music Venn diagram, what percentage of students do music only? [2 marks]

.....

Answer: _____

Venn Diagrams and Stem-and-Leaf Plots · WA7MPSP4

C

Reasoning *explain, justify and check*

/ 9 marks

- 1 Explain why a stem-and-leaf plot needs a key. [2 marks]

.....

.....

- 2 In a Venn diagram, why is the number in the overlap only counted once when finding the total? [2 marks]

.....

.....

- 3 Leo read $3 \mid 5$ (key $3 \mid 5 = 35$) as 5.3. Explain his mistake. [2 marks]

.....

.....

- 4 Can a region of a Venn diagram be empty? Give an example. [3 marks]

.....

.....

D

Challenge *multi-step and problem-solving*

/ 9 marks

- 1 In a class of 30, 18 play sport, 15 play music and 4 do neither. How many do both? [3 marks]

.....

.....

Answer: _____

- 2 Five values are 11, 14, 2?, 25, 30 (the ? is a missing leaf). Their mean is 20. Find the missing value. [2 marks]

.....

.....

Answer: _____

Venn Diagrams and Stem-and-Leaf Plots · WA7MPSP4

- 3 In a Venn diagram of 40 students, 'sport only' is twice 'music only', 'both' is 6 and 'neither' is 4. Find sport only and music only. [2 marks]

.....

.....

Answer:

- 4 Create a data set of 8 two-digit values for a stem-and-leaf plot with median 25 and range 30. Draw the plot. [2 marks]

.....

.....

.....

Answer:

How did I go?

Fluency ____ / 16 Core ____ / 23 Reasoning ____ / 9 Challenge ____ / 9 **Total ____ / 57**

Stuck on a section? Our Year 7 tutors can show you exactly what to practise next. **Book a free trial class at edulift.com.au**