MEMORANDUM

Name: ..... Class: .....

Date: .....

MARK ____ / 36

Answer all questions. Show all your working — marks are awarded for method as well as the final answer. **Teacher copy: accept any correct equivalent method.**

1 The mean of 45, 52, 61, 48, 54 and x is 52. Solve for x. (3)

$$\frac{45 + 52 + 61 + 48 + 54 + x}{6} = 52 \ (1)$$

$$260 + x = 52 \times 6 = 312 \ (1)$$

$$\boldsymbol{x = 312 - 260 = 52} \ (1) \quad ✓✓✓ (3)$$

2 What is the difference between a population and a sample? (2)

The **population** is the whole group; the **sample** is the smaller part actually surveyed. ✓✓ (2)

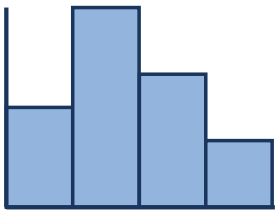
3 Why is surveying only your friends about school food biased? (2)

They are not **representative** of the whole school. ✓✓ (2)

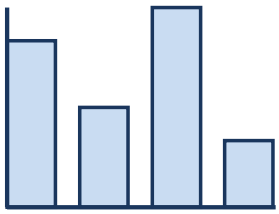
4 What is wrong with the intervals 0–10, 10–20, 20–30? (2)

They **overlap** — 10 and 20 each fit two intervals. ✓✓ (2)

5 How do a histogram and a bar graph differ? (2)



histogram
bars touch

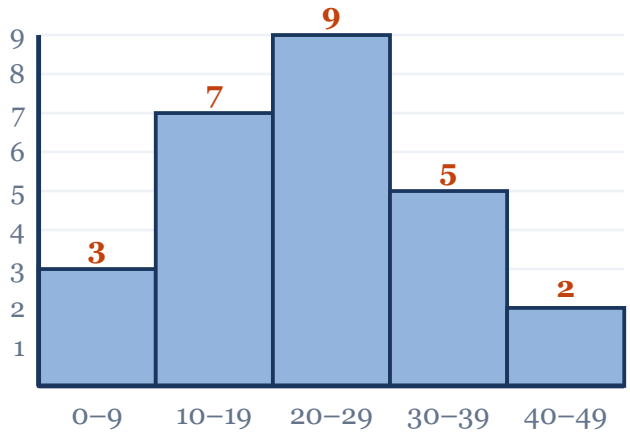


bar graph
bars have gaps

Histogram bars **touch** (continuous data); bar-graph bars have **gaps** (separate categories). ✓✓ (2)

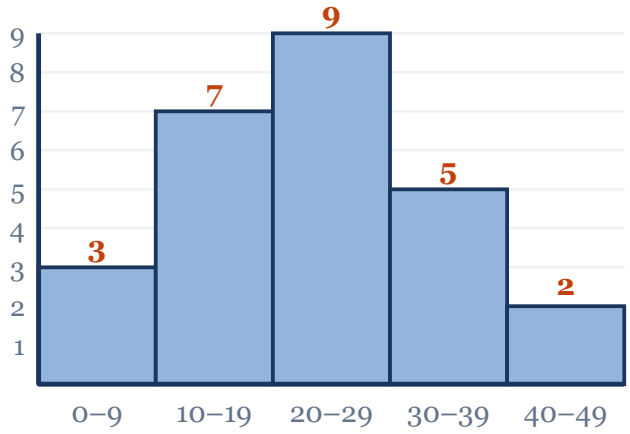
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6 In the histogram above, which is the modal class? (1)



> **20–29**, with a frequency of 9 ✓ (1)

7 In the histogram above, how many values are there in total? (2)



> $3 + 7 + 9 + 5 + 2 = \mathbf{26}$ ✓✓ (2)

8 Find the mean of R8 000, R9 000, R9 500, R10 000 and R80 000. (3)

> $116\,500 \div 5 = \mathbf{R23\,300}$ ✓✓✓ (3)

9 Find the median of that same salary data. (2)

> **R9 500** ✓✓ (2)

10 Which average is fairer for that salary data, and why? (2)

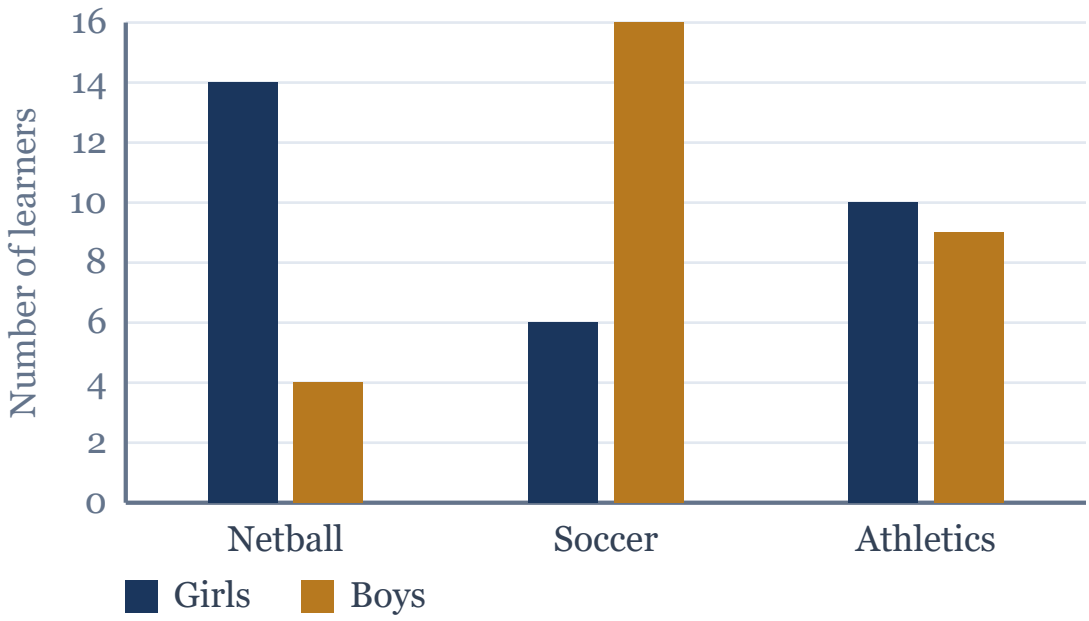
> The **median** — the R80 000 outlier pulls the mean far above what almost everyone earns. ✓✓ (2)

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11 Give TWO reasons why a double bar graph is better than two separate bar graphs for comparing boys and girls. (2)

> Both groups share one scale so the comparison is fair ✓; the pairs sit side by side so differences can be read directly ✓ (2)

12 The double bar graph below shows the sports played by a group of learners. State the difference between the number of girls and the number of boys who play netball, and one thing the graph does NOT tell you. (2)



> Difference = 10 ✓; it does not show the total surveyed / whether learners play more than one sport ✓ (2)

13 Explain how two separate bar graphs could be used to mislead a reader. (2)

> If the two graphs use different vertical scales ✓, a smaller quantity can be drawn taller than a larger one, so the comparison looks the opposite of the truth ✓ (2)

14 In a spelling test the boys' mean was 71% and the girls' mean was 78%. Write a conclusion that would earn full marks. (2)

> The girls scored higher, with a mean of 78% against the boys' 71% ✓ — a difference of 7 percentage points, for the learners in this test only ✓ (2)

15 A shop's sales were 48, 54, 60 and 66 items over four weeks. Predict week 5 and state the assumption you are making. (3)

> The difference is a constant 6 ✓; 66 + 6 = 72 items ✓; this assumes the trend of +6 a week continues ✓ (3)

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16 A learner surveys 20 friends and reports that "most learners at the school play soccer". Give TWO reasons to question this conclusion. (2)

> The sample is only 20 learners, far too few for the whole school ✓; they are all the learner's friends, so they are not representative — friends tend to share interests ✓ (2)

17 A bar graph's vertical axis starts at 40 instead of 0. Explain how this could mislead a reader. (2)

> The bars only show the part above 40, so small differences are stretched to look large ✓; a reader glancing at the heights would think one group is far bigger than another when the real gap is small ✓ (2)

TOTAL: 36 marks

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