

Name _____

Date _____

Stage 7 End-of-unit test 6 — mark scheme

23 questions · 40 marks · calculators are not allowed · allow about 45 minutes

- 1 What type of data is **eye colour**? [1]

- ☐ categorical
☐ discrete
☐ continuous

Answer: categorical

Categorical — it is a word or a label, not a number.

- 2 What type of data is **the number of goals scored**? [1]

- ☐ categorical
☐ discrete
☐ continuous

Answer: discrete

Discrete — it is a number you count, so only whole values are possible.

- 3 What type of data is **the time taken to run 100 m**? [1]

- ☐ categorical
☐ discrete
☐ continuous

Answer: continuous

Continuous — it is a number you measure, so any value in a range is possible and it depends on how accurately you measure.

- 4 How many learners took part altogether? [2]

Pet	Frequency
dog	12
cat	9
fish	5
rabbit	3
none	11
Total	40

Answer: 40

$12 + 9 + 5 + 3 + 11 = 40$.

- 5 How many learners have a pet of some kind? [2]

Pet	Frequency
dog	12
cat	9
fish	5
rabbit	3
none	11
Total	40

Answer: 29

$$40 - 11 = 29.$$

- 6 Which pet is the most common? Give the word. [1]

Pet	Frequency
dog	12
cat	9
fish	5
rabbit	3
none	11
Total	40

Answer: dog

12 is the largest frequency.

- 7 How many learners are shorter than 160 cm? [2]

Height h (cm)	Frequency
$140 \leq h < 150$	4
$150 \leq h < 160$	11
$160 \leq h < 170$	9
$170 \leq h < 180$	6

Answer: 15

$$4 + 11 = 15.$$

- 8 How wide is each class interval, in cm? [1]

Height h (cm)	Frequency
$140 \leq h < 150$	4
$150 \leq h < 160$	11
$160 \leq h < 170$	9
$170 \leq h < 180$	6

Answer: 10

$$150 - 140 = 10 \text{ cm.}$$

9 Why must class intervals not overlap? [2]

- ☐ It looks untidy
- ☐ Some values would belong to two groups at once
- ☐ The total would be wrong
- ☐ There is no reason

Answer: Some values would belong to two groups at once

Writing $150 \leq h < 160$ gives every value exactly one home.

10 Which of these is a good statistical question? [2]

- ☐ What is my shoe size?
- ☐ Which shoe size is most common in Year 7?
- ☐ Are big feet better?
- ☐ How many shoe sizes exist?

Answer: Which shoe size is most common in Year 7?

Its answer varies, so data is needed.

11 A questionnaire offers 0–5, 5–10, 10–15. What is wrong? [2]

- ☐ Nothing
- ☐ The groups overlap
- ☐ The groups are too wide
- ☐ There are too few groups

Answer: The groups overlap

5 and 10 each fit into two boxes.

12 A frequency table has rows 12, 9, 5 and one missing value. The total is 40. What is the missing frequency? [2]

Answer: 14

$40 - 26 = 14$.

13 What is a population, in statistics? [1]

- ☐ Everyone in a country
- ☐ Every member of the group being studied
- ☐ The people you ask
- ☐ The largest category

Answer: Every member of the group being studied

It might be one year group.

14 What happens as the sample size increases? [2]

- ☐ The result gets less reliable
- ☐ The result generally gets more reliable
- ☐ Nothing changes
- ☐ Bias disappears

Answer: The result generally gets more reliable

One unusual answer matters less. Bias is a separate problem.

15 Does a larger sample remove bias? [2]

- ☐ Yes
- ☐ No

Answer: No

Bias is about who is chosen, not how many.

16 You survey favourite sports at the football club. What is wrong? [2]

- ☐ Nothing
- ☐ The sample is biased towards football fans
- ☐ The sample is too large
- ☐ Sport is continuous data

Answer: The sample is biased towards football fans

Only people who already like football can be chosen.

17 What kind of sampling is **choosing every 10th name on the register**? [1]

- ☐ random
- ☐ systematic
- ☐ convenience
- ☐ biased

Answer: systematic

A fixed rule selects the members.

18 A school has 750 learners and takes a sample of 1 in 25. How many learners are sampled? [2]

Answer: 30

$750 \div 25 = 30$.

19 In a sample of 60 learners, 24 play an instrument. Estimate how many of the 900 learners in the school do. [3]

Answer: 360

$24 \div 60 = 0.4$, and $0.4 \times 900 = 360$.

20 Of 250 people asked, 40% walk to work. How many people is that? [2]

Answer: 100

40% of 250 = 100.

21 A sample of 45 is taken from 900 people. What percentage of the population is that? [2]

Answer: 5

$45 \div 900 = 0.05 = 5\%$.

22 A TV show asks viewers to phone in. Why might the result mislead? [2]

- ☐ The lines are slow
- ☐ Only people who feel strongly will call
- ☐ Too many call
- ☐ Calls cost money

Answer: Only people who feel strongly will call

Self-selection is a common source of bias.

23 A survey is carried out only on a weekday morning. Name the problem in one word. [2]

Answer: bias

People at work cannot be sampled.

Total: 40 marks