

# GCSE Maths Statistics (Higher): check-up and exam-style questions: answers

GCSE Maths - Statistics - Higher - Test yourself

**Answers.** Final answers to the worksheet questions. Full step-by-step solutions for every question are free at [websink.site/gcse/maths/ch24-statistics/higher/check-up-and-exam-style-questions/](https://websink.site/gcse/maths/ch24-statistics/higher/check-up-and-exam-style-questions/)

## Exercise 24Z Check-up (non-calculator) Non-calculator

- 1 Is the number of cars in a car park categorical, discrete or continuous data?

**Answer:** Discrete

- 2 Work out the mean of 8, 5, 9, 12 and 6.

**Answer:** 8

- 3 Work out the median of 11, 4, 9, 2, 7 and 15.

**Answer:** 8

- 4 Here are some numbers: 3, 5, 3, 8, 5, 3. Write down (a) the mode, (b) the range.

(a) Mode

**Answer:** 3

(b) Range

**Answer:** 5

- 5 The table shows the number of pets owned by 10 students.

| Pets     | 1 | 2 | 3 | 4 |
|----------|---|---|---|---|
| Students | 2 | 5 | 2 | 1 |

Work out the mean number of pets.

**Answer:** 2.2

- 6 A pie chart is drawn for 30 students who each chose one sport: football 12, netball 8, rugby 6, tennis 4. Work out the angle for each sport.

**Answer:** Football 144°; Netball 96°; Rugby 72°; Tennis 48°

- 7 A school has 90 boys and 60 girls. A stratified sample of 30 students is taken. How many boys and how many girls are in the sample?

**Answer:** Boys 18, Girls 12

- 8 25 deer are caught, marked and released. Later 40 deer are caught and 5 are marked. Estimate the number of deer in the forest.

**Answer:** 200

- 9 The scatter graph shows the height of a candle and the time it has been burning. As the time increases, the height decreases and the points are close to a straight line. Describe the correlation.

**Answer:** Strong negative correlation

- 10 The table shows the ages of 20 people.

| Age                    | Frequency |
|------------------------|-----------|
| $0 < a \leq 10$ years  | 6         |
| $10 < a \leq 20$ years | 10        |
| $20 < a \leq 30$ years | 4         |

Work out an estimate for the mean age.

**Answer:** 14 years

### Exercise 24X Exam-style questions Non-calculator

- 1 The ages of six people are 24, 31, 19, 27, 35 and 22. Work out the mean age. [2 marks]

**Answer:** 26.3

- 2 The two-way table shows how 65 students travel to school. Complete the table.

|         | Walk | Bus | Car | Total |
|---------|------|-----|-----|-------|
| Year 10 | 18   | 12  | ?   | 35    |
| Year 11 | ?    | 9   | 7   | 30    |
| Total   | 32   | ?   | 12  | 65    |

- (a) Year 10, car [3 marks]

**Answer:** 5

- (b) Year 11, walk

**Answer:** 14

- (c) Total, bus

**Answer:** 21

- 3 Forty people chose a favourite drink: tea 14, coffee 10, juice 12, water 4. Draw an accurate pie chart. (Show the angle for each drink.) [4 marks]

**Answer:** Tea  $126^\circ$ ; Coffee  $90^\circ$ ; Juice  $108^\circ$ ; Water  $36^\circ$

- 4 The table shows the number of goals scored by a team in 20 matches.

| Goals   | 0 | 1 | 2 | 3 | 4 |
|---------|---|---|---|---|---|
| Matches | 4 | 7 | 6 | 2 | 1 |

Work out the mean number of goals.

[3 marks]

**Answer:** 1.45

- 5 In a lake, 60 fish are caught, marked and returned. The next day 50 fish are caught and 10 of them are marked. (a) Estimate the number of fish in the lake. (b) State one assumption you made. [4 marks]

(a) Estimate

**Answer:** 300

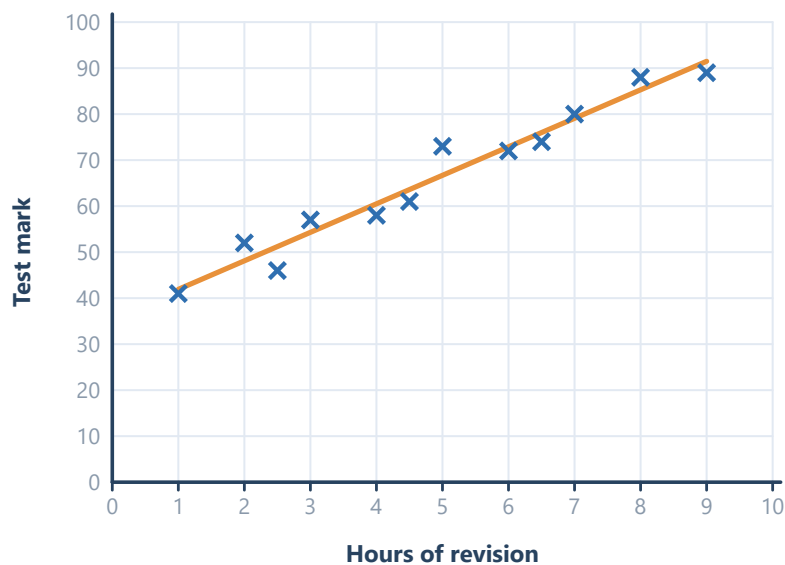
(b) Assumption

**Answer:** For example: the marked fish mixed evenly with the others, or no fish were born, died or moved.

- 6 A college has 240 students in Year 12 and 160 students in Year 13. A stratified sample of 50 students is taken. Work out the number of students from each year group in the sample. [3 marks]

**Answer:** Year 12 30, Year 13 20

- 7 The scatter graph shows the revision hours and the test marks of 12 students, with a line of best fit. (a) Describe the correlation. (b) Use the line of best fit to estimate the test mark of a student who revises for 6 hours. (c) Explain why the line should not be used to estimate the mark for 14 hours. [5 marks]



(a) Correlation

**Answer:** Strong positive correlation

(b) Estimate for 6 hours

**Answer:** about 73

(c) Why not 14 hours

**Answer:** 14 hours is outside the range of the data (extrapolation), and the line would give a mark over 100.

- 8 The table shows the heights of 40 students.

| Height                | Frequency |
|-----------------------|-----------|
| $140 < h \leq 150$ cm | 6         |
| $150 < h \leq 160$ cm | 14        |
| $160 < h \leq 170$ cm | 15        |

$$170 < h \leq 180 \text{ cm}$$

5

(a) Write down the modal class. (b) Work out an estimate for the mean height.

[5 marks]

(a) Modal class

**Answer:**  $160 < h \leq 170 \text{ cm}$

(b) Estimated mean

**Answer:** 159.75 cm

9 The numbers of text messages sent by two students in six days are: Hana: 12, 15, 13, 18, 16, 14. Zoe: 20, 11, 25, 9, 22, 23. Compare the number of messages sent using the mean and the range. [4 marks]

**Answer:** On average, Zoe has the higher messages (mean 18.3 compared with 14.7). Hana is more consistent (smaller range: 6 compared with 16), so Zoe is more spread out.

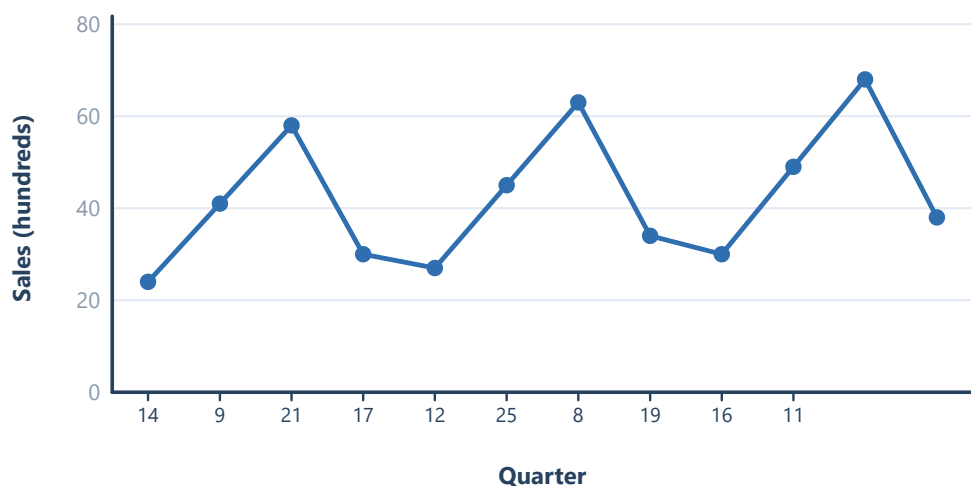
10 The marks of 15 students are: 34, 41, 28, 35, 47, 52, 38, 41, 29, 44, 33, 41, 56, 38, 49. Draw an ordered stem-and-leaf diagram and include a key. [3 marks]

**Answer:**

| Stem | Leaf        |
|------|-------------|
| 2    | 8 9         |
| 3    | 3 4 5 8 8   |
| 4    | 1 1 1 4 7 9 |
| 5    | 2 6         |

Key: 3 | 4 means 34 marks

11 The line graph shows the ice cream sales (hundreds) in each quarter of three years. (a) What were the sales in Q2 of Year 3? (b) Describe the seasonal pattern. (c) Estimate the sales in Q3 of Year 4, and say why your estimate may be wrong. [4 marks]



(a) Q2 of Year 3

**Answer:** 49 hundred

(b) Seasonal pattern

**Answer:** Sales are highest in Q3 (summer) and lowest in Q1 (winter) every year.

- (c) Estimate for Q3 of Year 4

**Answer:** 73 hundred

- 12 Tom wants to find out how often people in his town go to the cinema. He asks the first 20 people who leave the cinema one evening. (a) Give one reason why his sample may be biased. (b) Suggest a better way to choose a sample. [2 marks]

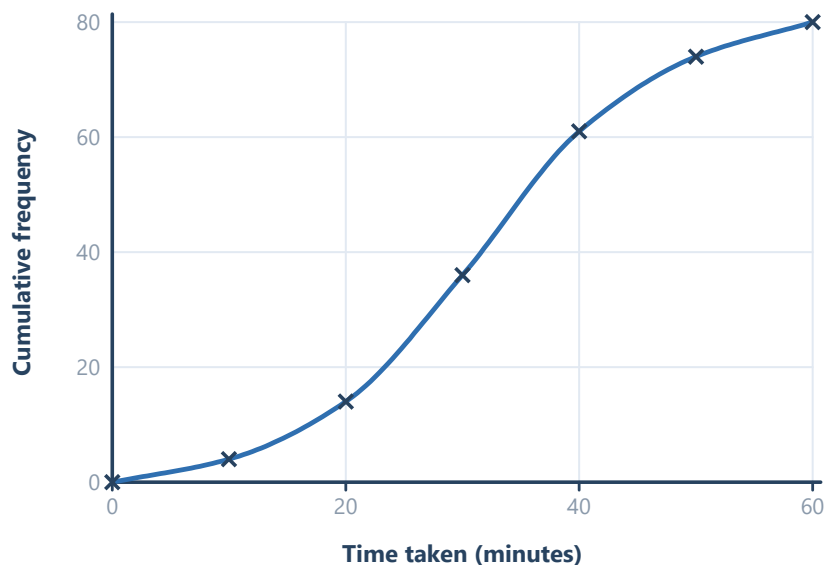
- (a) Reason for bias

**Answer:** The people leaving the cinema go to the cinema more than a typical person, so the sample is not representative.

- (b) Better method

**Answer:** Choose people at random from the whole town, for example from the electoral register using random numbers.

- 13 The cumulative frequency graph shows the times taken by 80 workers. (a) Estimate the median. (b) Estimate the interquartile range. (c) Estimate the number of workers who took more than 45 minutes. [5 marks]



- (a) Median

**Answer:** 31.5 min

- (b) Interquartile range

**Answer:** 16 min

- (c) More than 45 minutes

**Answer:** 11

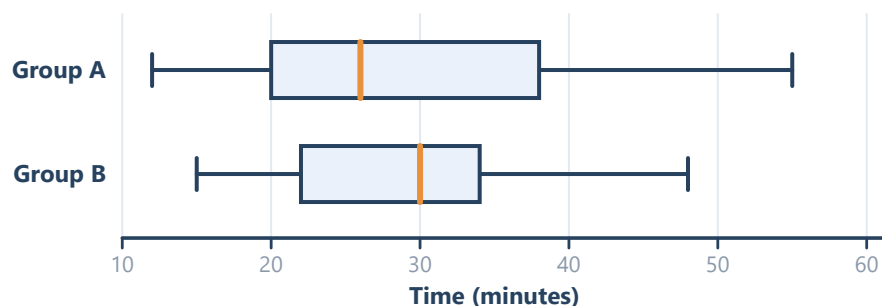
- 14 The box plots show the times, in minutes, taken by two groups to solve a puzzle.

Group A: smallest 12, Q1 20, median 26, Q3 38, largest 55.

Group B: smallest 15, Q1 22, median 30, Q3 34, largest 48.

Compare the two groups.

[4 marks]



**Answer:** Group B took longer on average (median 30 compared with 26) but was more consistent (IQR 12 compared with 18).

**15** The table shows the times that 80 people spent reading.

| Time                 | Frequency |
|----------------------|-----------|
| $0 < t \leq 10$ min  | 8         |
| $10 < t \leq 20$ min | 14        |
| $20 < t \leq 40$ min | 30        |
| $40 < t \leq 50$ min | 16        |
| $50 < t \leq 70$ min | 12        |

(a) Work out the frequency density for each class. (b) Estimate the number of people who read for between 30 and 40 minutes. (c) Estimate the median time. [7 marks]

(a) Frequency densities

**Answer:** 0.8, 1.4, 1.5, 1.6, 0.6

(b) Between 30 and 40 minutes

**Answer:** 15

(c) Median

**Answer:** 32 min

**16** Here are eight numbers: 12, 14, 15, 17, 18, 20, 22, 60. (a) Work out the interquartile range. (b) Use the rule "more than  $1.5 \times \text{IQR}$  from a quartile" to show that 60 is an outlier. [4 marks]

(a) IQR

**Answer:** 6.5

(b) Outlier

**Answer:** 60