

KS3 – Statistical Diagrams

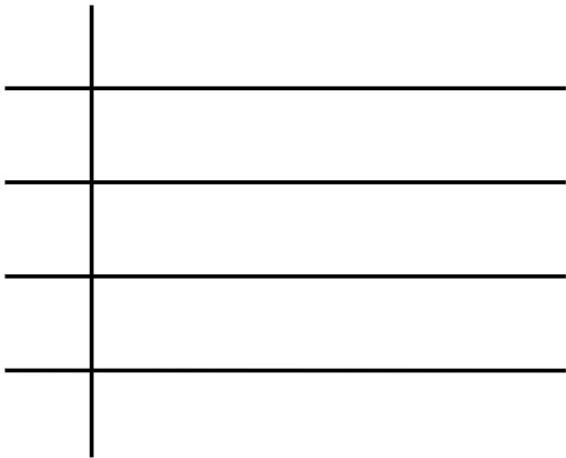
Section A – Stem & Leaf

Q1 (6 marks)

The ages of 15 people are:

12, 15, 18, 21, 24, 17, 13, 26, 22, 19, 14, 28, 25, 16, 23

Construct an ordered stem-and-leaf diagram. Include a key.



Key

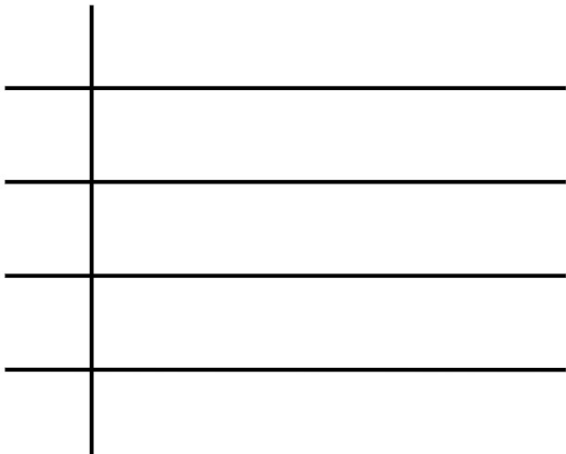


Q2 (6 marks)

The test scores are:

34, 27, 41, 38, 29, 45, 32, 36, 40, 28, 33, 39, 31, 44, 35

Construct an ordered stem-and-leaf diagram and include a key.
Then state the median and range.



Key



Q3 (4 marks)

A set of journey times is:

21, 24, 24, 27, 30, 32, 35, 35, 35, 38, 41

- a) State the mode.

- b) State the median.

- c) Find the range.

- d) Explain why a key is necessary on a stem-and-leaf diagram.

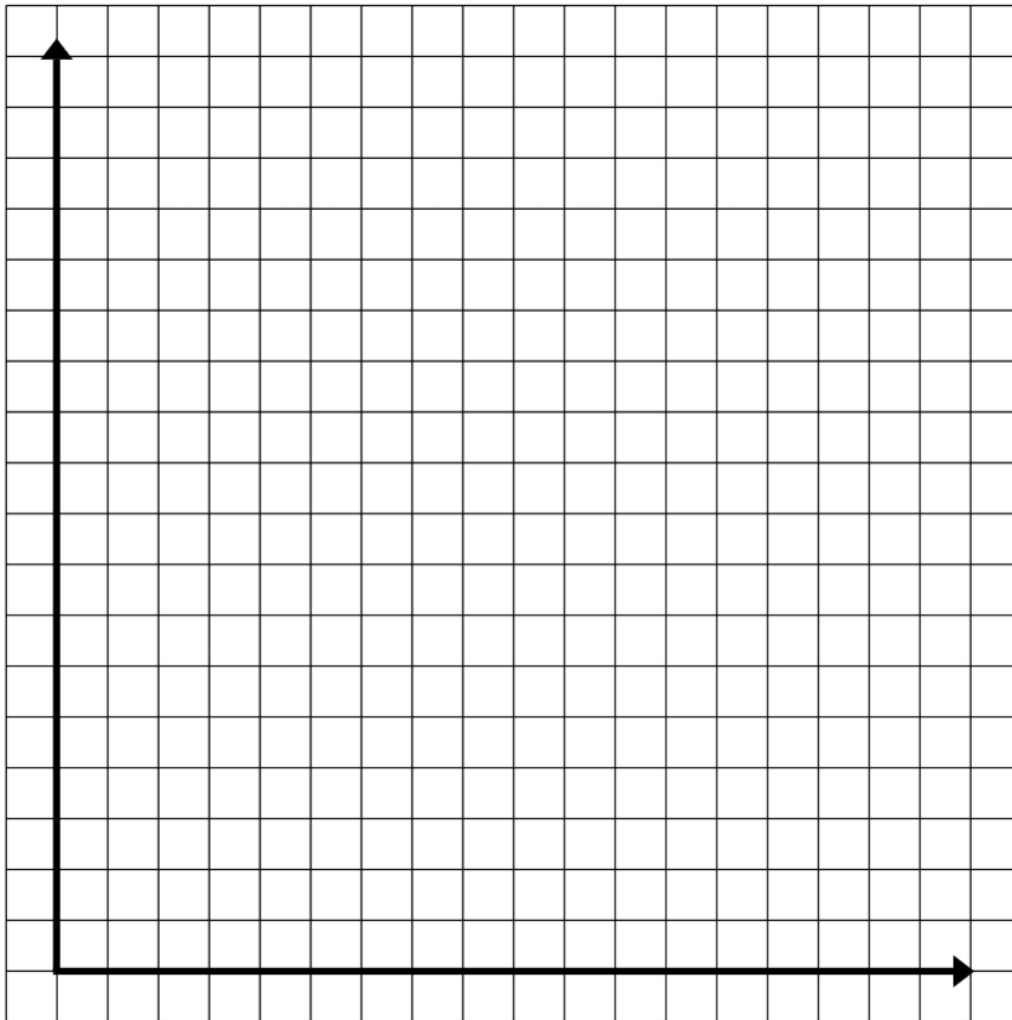
Section B – Scatter Graphs

Q4 (6 marks)

The table gives hours of revision x and test score y for eight students:

(2, 5), (3, 6), (4, 7), (5, 8), (6, 9), (7, 11), (8, 10), (9, 12)

Plot the points on a scatter graph. Label the horizontal axis Hours of revision and the vertical axis Test score. Use the grid intervals as 1 unit. Draw a line of best fit and describe the correlation.

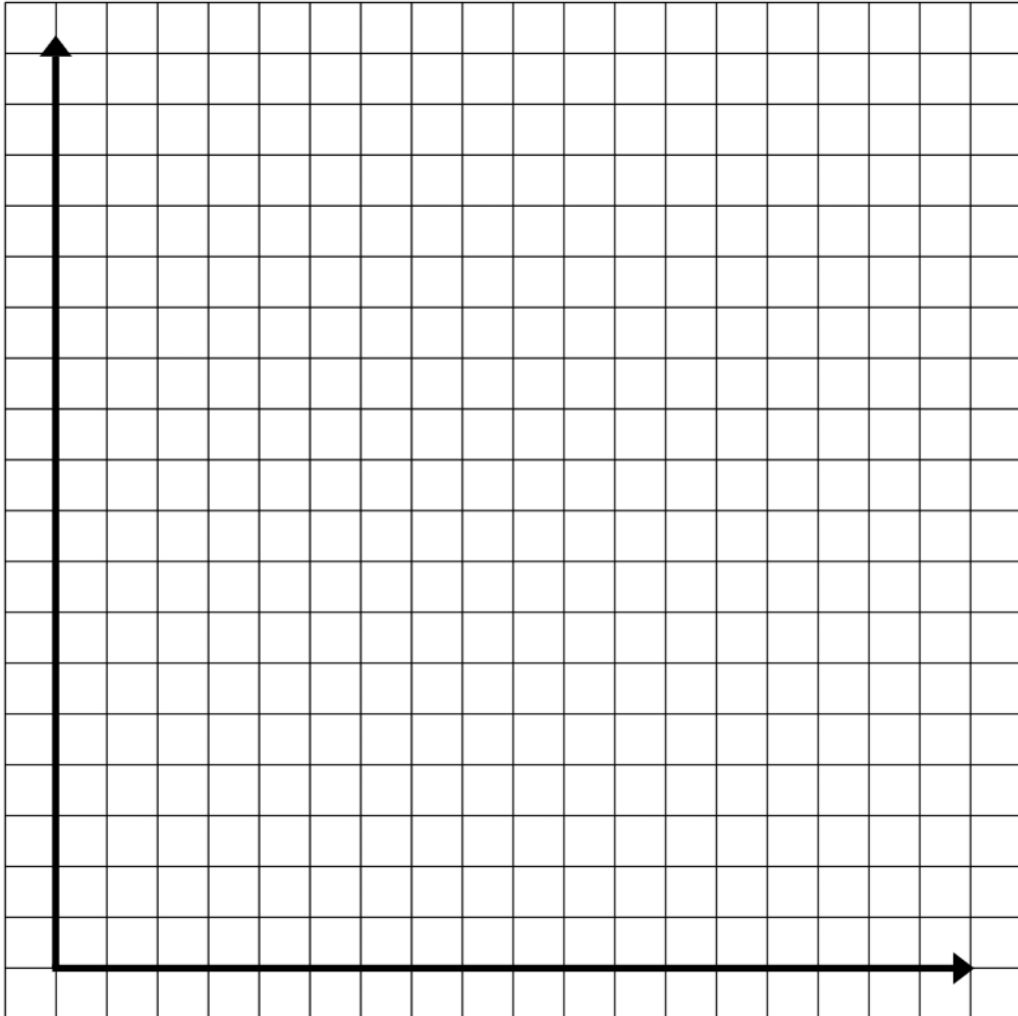


Q5 (5 marks)

The points on a scatter graph are:

(2, 13), (4, 12), (5, 10), (7, 9), (8, 7), (10, 6), (12, 4)

Plot the points. Label the horizontal axis x and vertical axis y . Use the grid intervals as 1 unit. Draw a line of best fit and describe the correlation.



Q6 (4 marks)

Answer these questions about scatter graphs.

- a) What does positive correlation mean?

- b) What does negative correlation mean?

- c) What does no correlation mean?

- d) Does correlation prove that one variable causes the other?

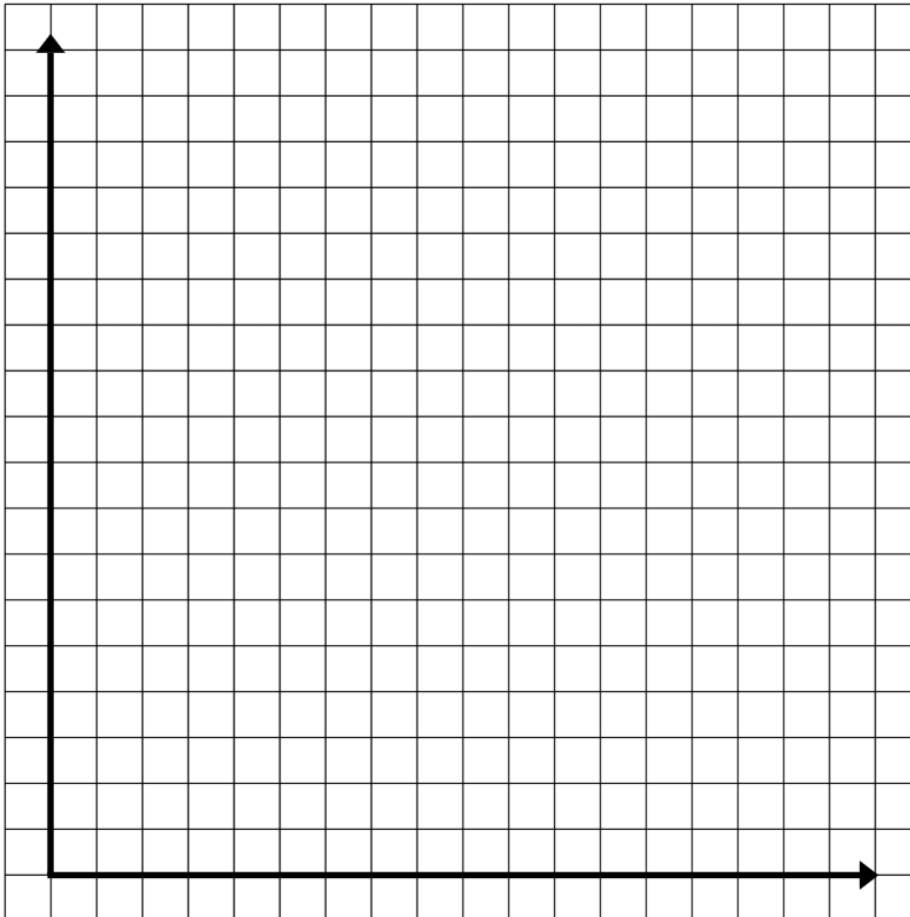
Section C – Frequency Polygons

Q7 (6 marks)

The grouped data show journey times.

Journey time, t (minutes)	Frequency
$0 \leq t < 5$	2
$5 \leq t < 10$	6
$10 \leq t < 15$	10
$15 \leq t < 20$	7
$20 \leq t < 25$	3

Calculate the midpoint of each class. Plot midpoint against frequency and join consecutive points with straight lines. Label the horizontal axis Journey time (minutes) and vertical axis Frequency. Choose a suitable scale using the grid.



Q8 (5 marks)

A frequency polygon is to represent these grouped heights:

Height, h	Frequency
$0 \leq h < 3$	2
$3 \leq h < 6$	5
$6 \leq h < 9$	9
$9 \leq h < 12$	6
$12 \leq h < 15$	3

- a) Write the five class midpoints.
- b) Write the five coordinates that should be plotted.
- c) State the highest point of the frequency polygon.

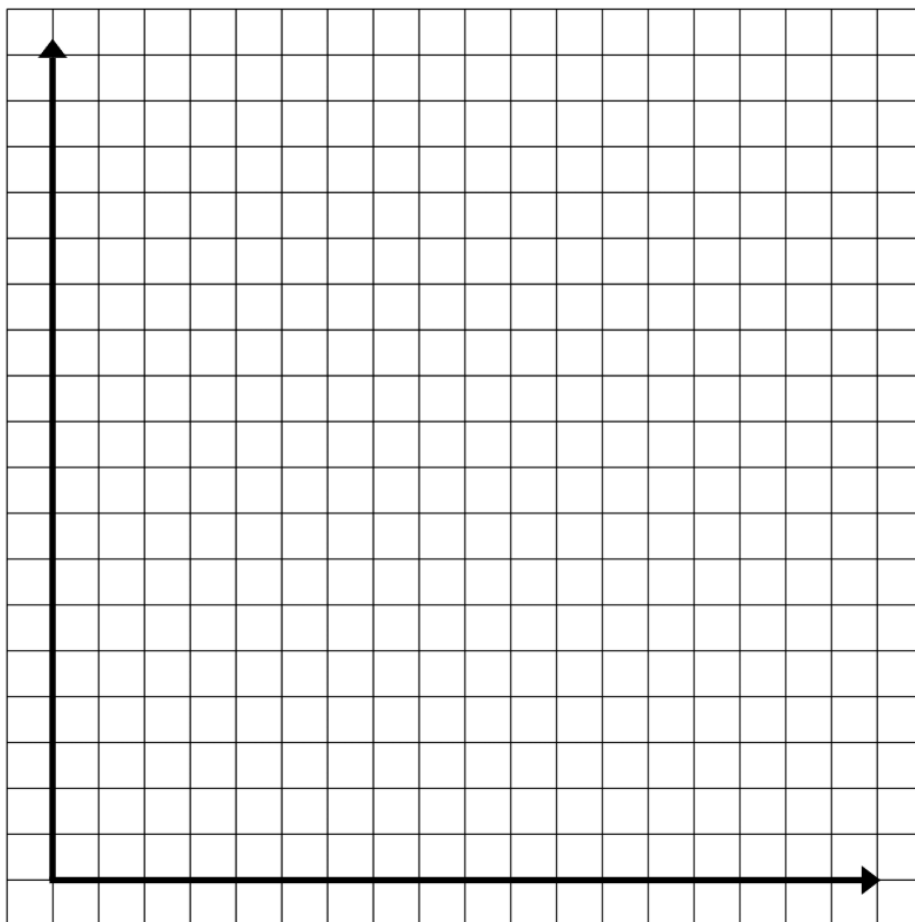
Section D – Histograms

Q9 (6 marks)

The grouped data have equal class widths.

Value, x	Frequency
$0 \leq x < 3$	4
$3 \leq x < 6$	8
$6 \leq x < 9$	12
$9 \leq x < 12$	7
$12 \leq x < 15$	3

Draw a histogram. Label the horizontal axis Value and vertical axis Frequency. Use class boundaries 0, 3, 6, 9, 12 and 15. Choose a suitable vertical scale. The bars must touch.



Q10 (5 marks)

A histogram has unequal class widths. Use frequency density = frequency $\div$ class width.

Value, x	Frequency
$0 \leq x < 2$	6
$2 \leq x < 5$	12
$5 \leq x < 10$	10

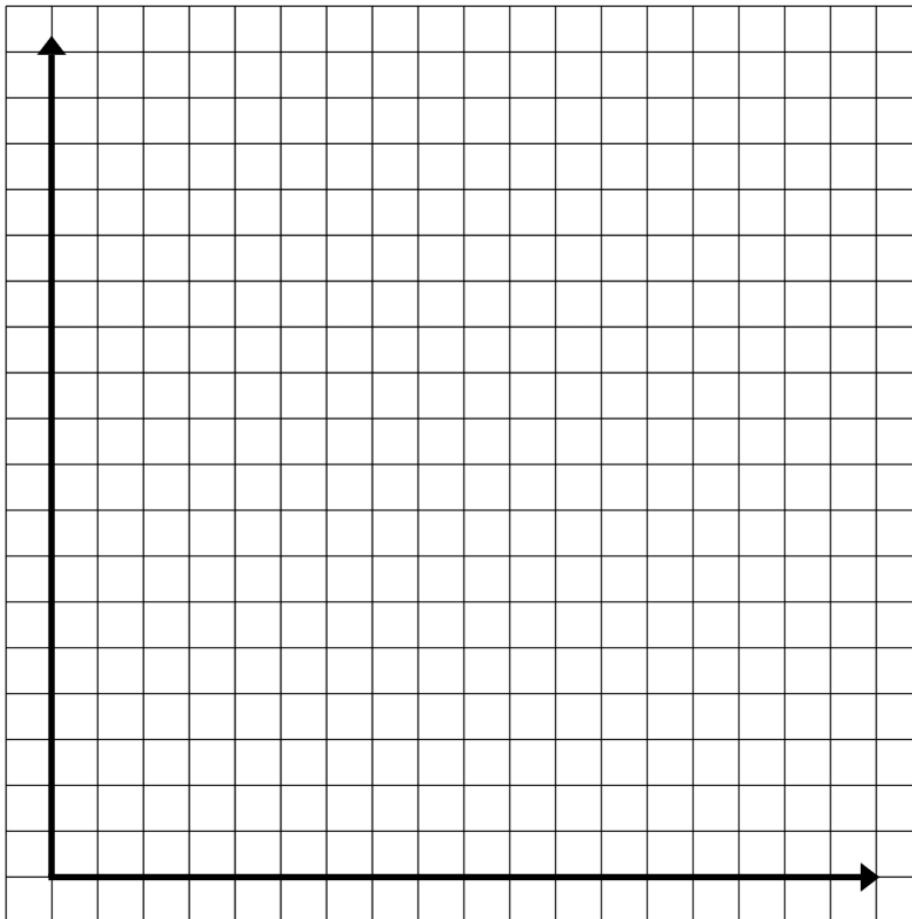
Calculate the frequency density for each class.

Q11 (5 marks)

Use the data below to draw a histogram with unequal class widths.

Value, x	Frequency
$0 \leq x < 3$	6
$3 \leq x < 6$	9
$6 \leq x < 12$	12

First calculate each frequency density. Label the horizontal axis Value and vertical axis Frequency density. Choose suitable scales. Bars must touch.



Section E – Box Plots

Q12 (5 marks)

For the ordered data:

3, 5, 7, 8, 9, 11, 13, 15, 18

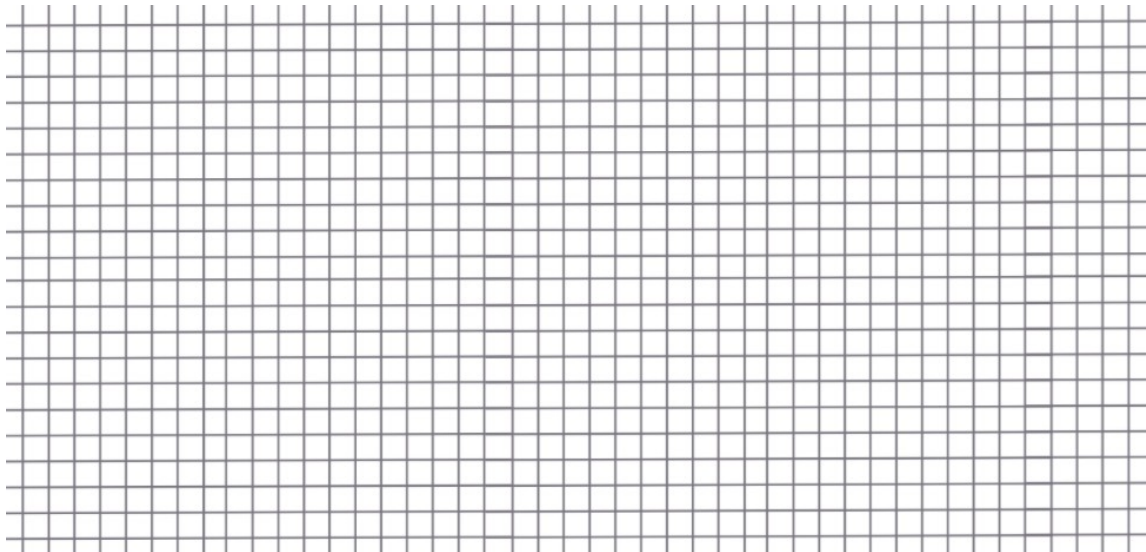
- a) State the minimum.
- b) Find the lower quartile.
- c) Find the median.
- d) Find the upper quartile.
- e) State the maximum.

Q13 (6 marks)

The ordered data are:

4, 6, 7, 9, 10, 12, 14, 16, 18, 20, 22

Find the five-number summary. Then draw a box plot on a scale from 0 to 24. Label the scale clearly.



Q14 (5 marks)

Two groups have these five-number summaries:

Group A: min 2, lower quartile 5, median 8, upper quartile 11, max 14

Group B: min 1, lower quartile 4, median 8, upper quartile 13, max 15

a) Find the range of Group A.

b) Find the interquartile range of Group A.

c) Find the range of Group B.

d) Find the interquartile range of Group B.

e) Which group has the more consistent middle 50%? Explain.

Total: ____ / 74

Percentage: ____%