GCSE Mathematics

Charts & Diagrams

Questions

Pearson Edexcel GCSE & iGCSE Mathematics

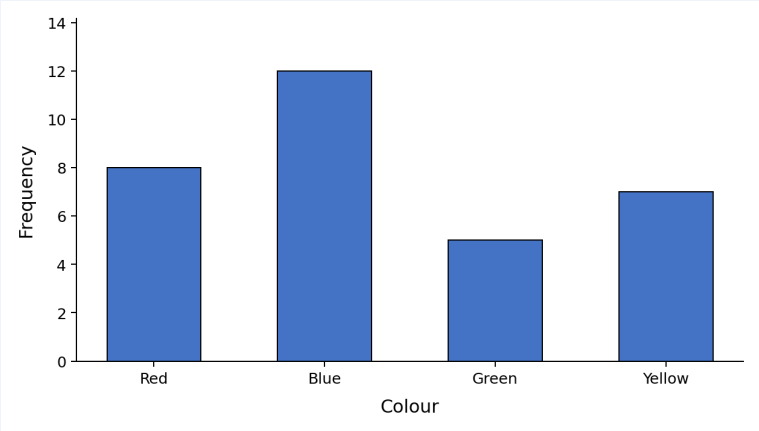
Section A — Foundation

Worked Examples

[Fluency]

Draw a bar chart for the data.

Colour	Red	Blue	Green	Yellow
Frequency	8	12	5	7



[Reasoning]

40 students chose a subject: Sport=18, Music=12, Drama=10.
Find the angle for each sector in a pie chart.

$\text{Sport} = \frac{18}{40} \times 360 = 162°$ $\text{Music} = 108°$ $\text{Drama} = 90°$

[Problem Solving]

Read the stem and leaf diagram.

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

Key: 1 \| 2 = 12

Median = 5th value = **23** Range = 34–12 = **22**

[Fluency]

1.

Sport	Football	Tennis	Swimming	Basketball
Frequency	15	8	12	5

Draw a bar chart to represent the data.
Label axes clearly.

(3 marks)

[Fluency]

2.

Subject	Maths	English	Science	History	Art
Students	12	8	10	6	4

Draw a pie chart to represent the data.
Show your calculations for each angle.

(4 marks)

[Fluency]

3.

Stem and Leaf Diagram

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

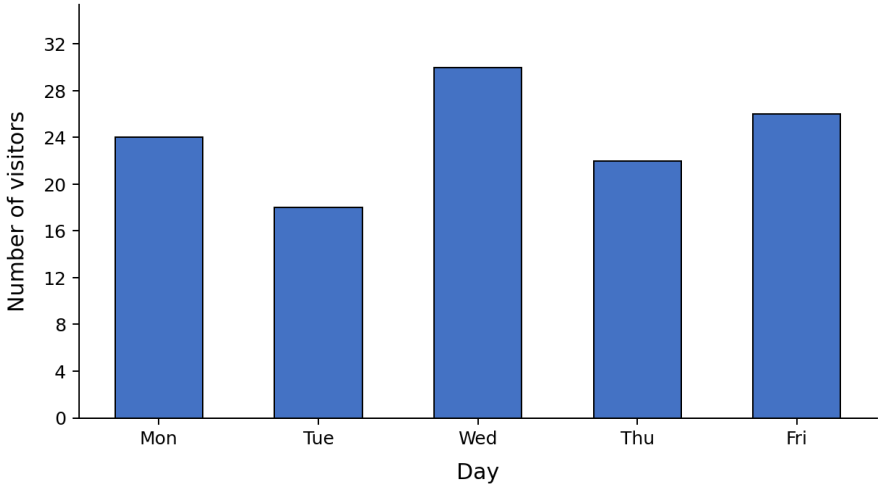
Key: 1 | 2 = 12

Use the diagram to find:
(a) The median. (1)
(b) The range. (1)
(c) The mode. (1)

(3 marks)

[Reasoning]

4.



(a) On which day were there the most visitors? (1)

(b) Find the total number of visitors for the week. (1)

(c) Find the mean number of visitors per day. (2)

(4 marks)

[Reasoning]

5.

Grade	A	B	C	D
Frequency	9	15	12	4

Calculate the angle for each sector and draw a pie chart.

(4 marks)

[Reasoning]

6.

Ages of customers

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

Key: 2 | 2 = 22

(a) Find the median age. (1)

(b) Find the interquartile range. (2)

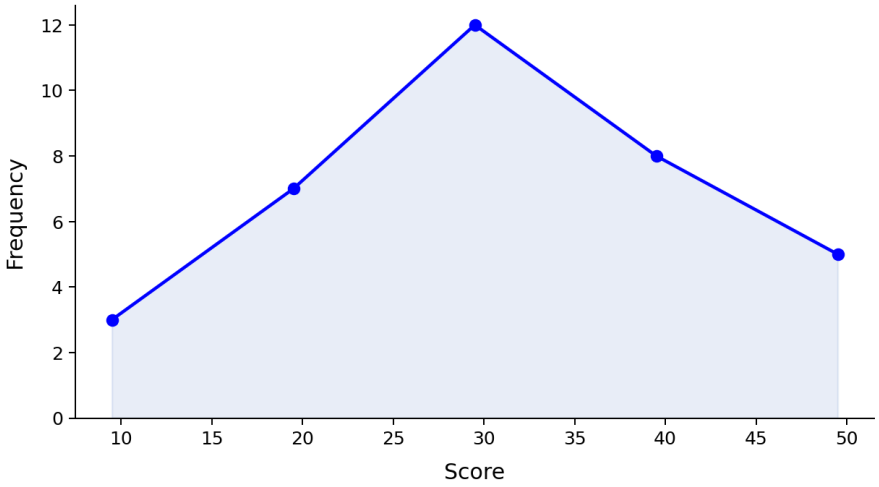
(c) What fraction of customers are aged under 35? (2)

(5 marks)

[Reasoning]

7.

The frequency polygon below shows the test scores of a class.



(a) How many students scored between 20 and 29? (1)

(b) How many students are in the class? (1)

(c) In which class interval do most students fall? (1)

(3 marks)

[Problem Solving]

8.

Two classes sit the same test. Their results are shown in the back-to-back stem and leaf diagram.

Class A

Stem	Leaf
5	2 5 8
6	1 4 7
7	0 2 5

Key: 5 | 2 = 52

Class B

Stem	Leaf
4	8
5	3 6
6	0 3 8
7	1 4 8

Key: 4 | 8 = 48

Compare the distributions of the two classes.

(4 marks)

Section B — Higher

Worked Examples

[Fluency]

A pie chart shows that 72° represents 8 people. How many people does 135° represent?

$$1 \text{ person} = \frac{72°}{8} = 9° \quad \Rightarrow \quad 135° = \frac{135}{9} = 15 \text{ people}$$

[Reasoning]

Describe the correlation shown in a scatter graph where points go from bottom-left to top-right.

Positive correlation — as x increases, y increases.

[Problem Solving]

What is the difference between a bar chart and a frequency polygon?

Bar chart: discrete data, bars with gaps. Frequency polygon: midpoints connected by straight lines, shows distribution shape.

[Fluency]

1.

In a pie chart, a sector of 72° represents 8 people.

(a) How many people does the whole pie chart represent? (2)

(b) How many people does a sector of 135° represent? (2)

(4 marks)

[Fluency]

2.

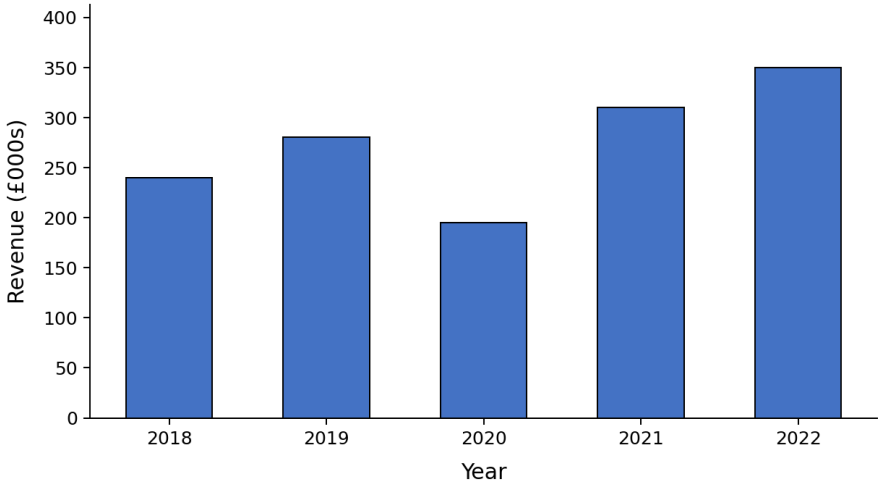
Class	0–19	20–39	40–59	60–79	80–99
Frequency	3	7	12	8	5

Draw a frequency polygon for the data.

(3 marks)

[Reasoning]

3.



(a) Describe the overall trend. (1)

(b) In which year was revenue lowest? (1)

(c) Calculate the percentage increase from 2018 to 2022. (2)

(4 marks)

[Reasoning]

4.

A back-to-back stem and leaf diagram shows exam scores for Group A and Group B.

Group A

Stem	Leaf
4	5 8
5	2 5 7
6	1 4 8
7	2 5

Key: 4 \| 5 = 45

Group B

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

Key: 3 \| 8 = 38

Compare the median and range of the two groups.

(4 marks)

[Problem Solving]

5.

A pictogram shows the number of books sold each month.
Each symbol ■ represents 20 books.

Jan: ■■■ Feb: ■■■■½ Mar: ■■½

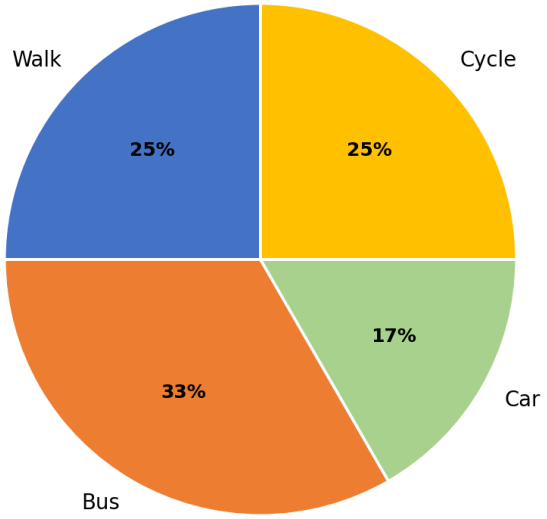
(a) How many books were sold in February? (1)
(b) The total for April is 70 books. Draw the correct symbols for April. (2)
(c) Find the mean number of books sold per month over the four months. (2)

(5 marks)

[Problem Solving]

6.

The pie chart shows how 120 students travel to school.



(a) Find the number of students who travel by bus. (2)

(b) What angle represents students who walk? (2)

(c) What percentage of students travel by car? (2)

(6 marks)