

Pictograms, Bar Charts and Vertical Line Charts

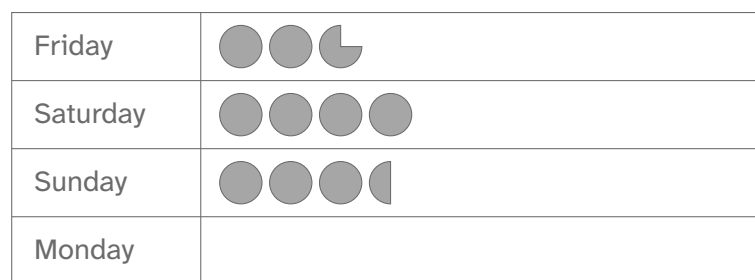
Solutions

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Each question is shown in grey, followed by the working, one step per line. The final answer is in a box. *Marks* shows how the marks are usually given in the exam, and **Tip** points out a common mistake.

1 (4 marks)

The pictogram shows the number of cups of coffee sold at a station kiosk on Friday, Saturday and Sunday.



Key:  represents 12 cups

(a) Write down the number of cups of coffee sold on Friday.

Each circle represents 12 cups.

Friday has 2 whole circles and three-quarters of a circle.

$$\text{Three-quarters of a circle} = \frac{3}{4} \times 12 = 9 \text{ cups}$$

$$2 \times 12 + 9 = 33$$

Answer: 33

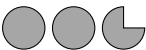
(b) On Monday, 18 fewer cups of coffee were sold than on Saturday.
Show this information on the pictogram.

$$\text{Saturday: } 4 \times 12 = 48 \text{ cups}$$

Monday: $48 - 18 = 30$ cups

$$30 \div 12 = 2\frac{1}{2}$$

So draw 2 whole circles and half a circle.

Friday	
Saturday	
Sunday	
Monday	

Key:  represents 12 cups

Answer: $2\frac{1}{2}$ circles

- (c) Each cup of coffee costs £2
Work out the total amount of money taken for coffee on these four days.

Friday: 33 cups

Saturday: 48 cups

Sunday: $3\frac{1}{2} \times 12 = 42$ cups

Monday: 30 cups

Total: $33 + 48 + 42 + 30 = 153$ cups

Money: $153 \times 2 = £306$

Answer: £306

Tip: Find the number of cups for **every** day first, including Monday from part (b), then multiply the total by £2.

Marks: 1 mark for finding the total number of cups (153). 1 mark for £306.

2 (3 marks)

The table shows how some students travel to school.

Method	Bus	Car	Walk	Cycle
Frequency	14	9	17	4

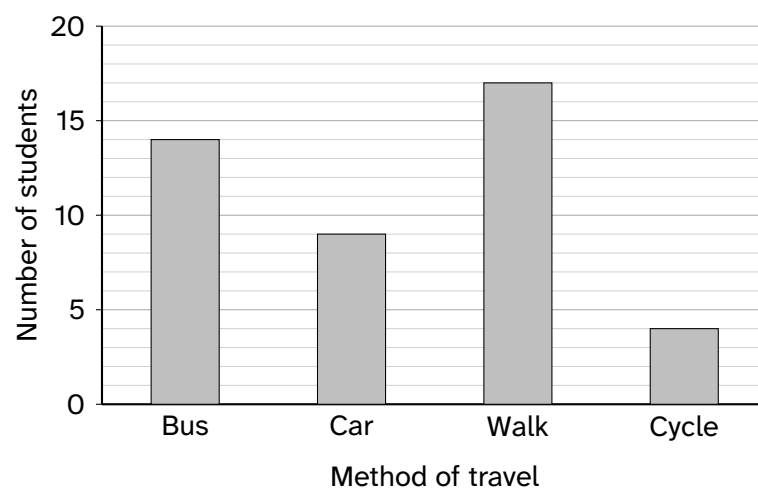
Draw a suitable diagram to show this information.

Draw a bar chart.

Each small square on the vertical scale is 1 student.

Draw bars of heights 14, 9, 17 and 4.

Make all the bars the same width, with equal gaps.



Answer: Bar chart with heights 14, 9, 17, 4

Tip: If you draw your own axes, use an even scale starting at 0, put the numbers on the grid lines (not in the spaces), and label both axes.

Marks: 3 marks for a fully correct bar chart. 2 marks for three correct bars. 1 mark for two correct bars.

3 (3 marks)

The bar chart shows the distance Ffion cycled each week for four weeks.

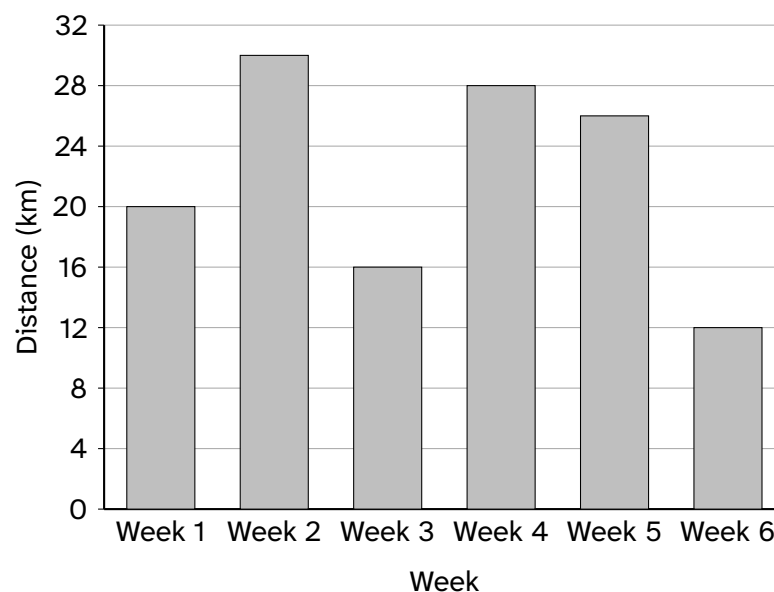
- (a) In week 5, Ffion cycled 26 km.
In week 6, Ffion cycled 12 km.
Use this information to complete the bar chart.

Each square on the scale is 4 km.

Week 5: 26 is half a square above 24, so draw a bar up to 26.

Week 6: draw a bar up to 12.

Use the same width as the other bars.



Answer: Bars at 26 and 12

Tip: Half a square is $4 \div 2 = 2$ km, not 0.5 km.

Marks: 1 mark for each correct bar.

- (b) Write down the distance Ffion cycled in week 2.

Each square on the scale is 4 km.

The week 2 bar is half a square above 28.

Half a square = $4 \div 2 = 2$ km

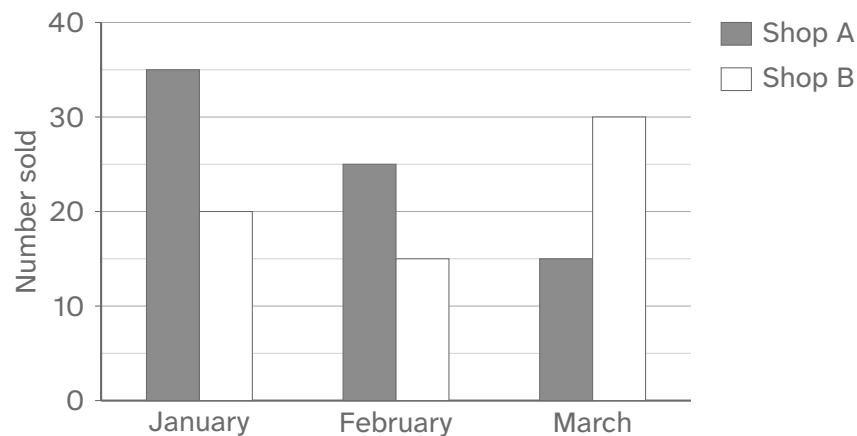
$$28 + 2 = 30 \text{ km}$$

Answer: 30 km

Tip: Always work out what one square is worth before reading a bar. Here it is 4 km, so the bar is not at 28.5.

4 (3 marks)

The dual bar chart shows the number of bikes sold by two shops in three months.



- (a) In which month did Shop *B* sell more than Shop *A*?

Compare the two bars for each month.

In March, Shop *B* sold 30 and Shop *A* sold 15.

Answer: March

- (b) Work out the difference between the total sales of the two shops over the three months.

Shop *A* total: $35 + 25 + 15 = 75$

Shop *B* total: $20 + 15 + 30 = 65$

Difference: $75 - 65 = 10$

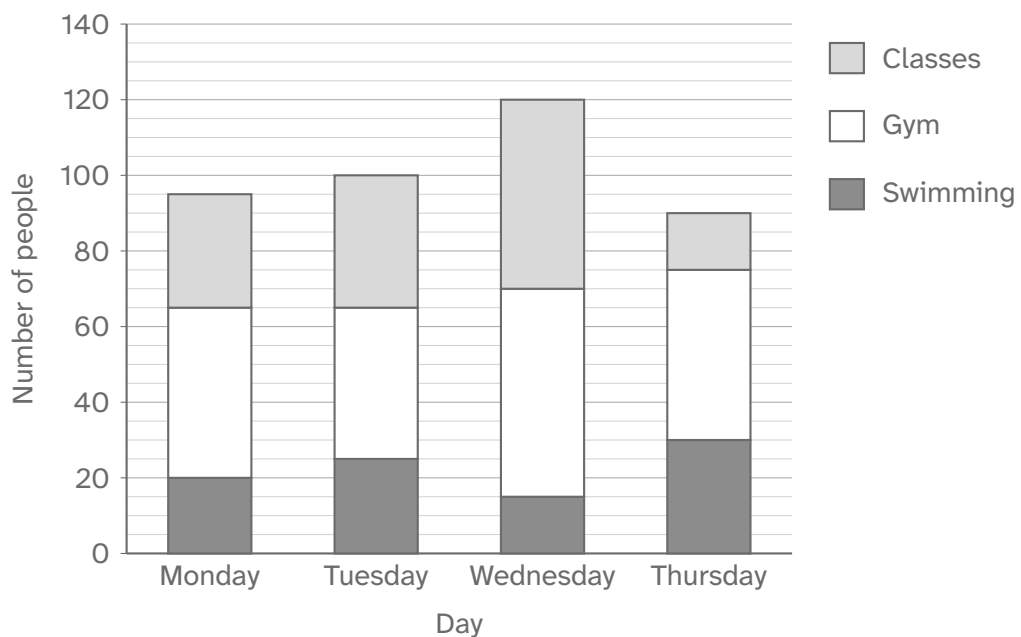
Answer: 10

Marks: 1 mark for one correct total. 1 mark for 10.

5 (4 marks)

The composite bar chart shows the number of people using a leisure centre on four days.

Each person did one activity: swimming, gym or classes.



- (a) Write down the number of people who used the gym on Tuesday.

The gym is the middle section of each bar.

On Tuesday it goes from 25 up to 65.

$$65 - 25 = 40$$

Answer: 40

Tip: The middle section does not start at 0. Subtract where it starts from where it ends.

- (b) On which day did the most people use the leisure centre?

The total for each day is the top of the whole bar.

Monday 95, Tuesday 100, Wednesday 120, Thursday 90

Answer: Wednesday

- (c) What fraction of the people who used the leisure centre on Thursday went swimming?

Give your fraction in its simplest form.

Read the Thursday bar:

Swimming: 0 to 30, so 30

Total on Thursday: top of the bar, 90

Fraction swimming = $\frac{30}{90}$

Divide top and bottom by 30: $\frac{1}{3}$

Answer: $\frac{1}{3}$

Tip: The fraction is swimming out of the **total** for Thursday, not out of the gym or classes only.

Marks: 1 mark for $\frac{30}{90}$ (or an equivalent fraction). 1 mark for $\frac{1}{3}$.

6 (4 marks)

The pictogram is not finished. It shows information about the number of people who went on boat trips on Friday and on Saturday.

Friday	
Saturday	
Sunday	
Monday	

Key:  represents people

On Saturday, 20 people went on boat trips.

On Sunday, 12 more people went on boat trips than on Friday.

On Monday, half as many people went on boat trips as on Sunday.

Use this information to complete the pictogram and the key.

Saturday has $2\frac{1}{2}$ circles for 20 people.

So 1 circle represents $20 \div 2\frac{1}{2} = 8$ people.

Key: 1 circle = 8 people

Friday: $3 \times 8 = 24$ people

Sunday: $24 + 12 = 36$ people, so $36 \div 8 = 4\frac{1}{2}$ circles

Monday: $36 \div 2 = 18$ people, so $18 \div 8 = 2\frac{1}{4}$ circles

Friday	
Saturday	
Sunday	
Monday	

Key:  represents 8 people

Answer: Key 8 people; Sunday $4\frac{1}{2}$ circles; Monday $2\frac{1}{4}$ circles

Tip: $2\frac{1}{2}$ circles is 20 people, so 5 half-circles is 20 and one half-circle is 4. Do not divide 20 by 2.

Marks: 1 mark for the key (8 people). 1 mark for Sunday (36 people or $4\frac{1}{2}$ circles). 1 mark for Monday (18 people). 1 mark for both rows drawn correctly.

7 (5 marks)

A school shop sells pencils for 30p each, rulers for 50p each, pens for 80p each and notebooks.

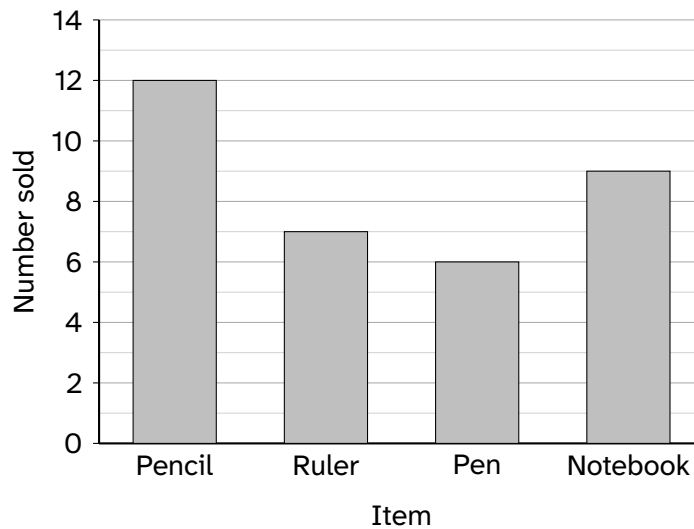
The bar chart shows the number of pencils (12) and the number of rulers (7) sold on one day.

On the same day, 6 pens and 9 notebooks were sold.

(a) Use this information to complete the bar chart.

Pen: draw a bar up to 6.

Notebook: draw a bar up to 9 (halfway between 8 and 10).



Answer: Bars at 6 and 9

Marks: 1 mark for each correct bar.

- (b) The shop took £23.60 altogether for these items.

Work out the cost of one notebook.

Work out the money for the other items (in pence):

Pencils: $12 \times 30 = 360\text{p}$

Rulers: $7 \times 50 = 350\text{p}$

Pens: $6 \times 80 = 480\text{p}$

Total without notebooks: $360 + 350 + 480 = 1190\text{p}$

$\text{£}23.60 = 2360\text{p}$, so notebooks: $2360 - 1190 = 1170\text{p}$

One notebook: $1170 \div 9 = 130\text{p} = \text{£}1.30$

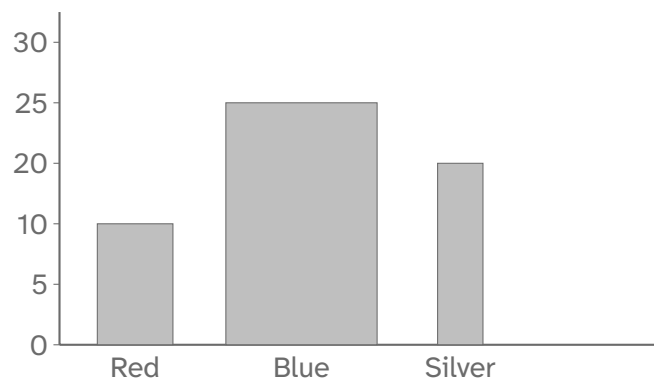
Answer: £1.30

Tip: Work in pence to avoid decimal mistakes, then change back: $130\text{p} = \text{£}1.30$, not £130.

Marks: 1 mark for the money for pencils, rulers and pens (1190p or £11.90). 1 mark for $2360 - 1190$ (1170p or £11.70). 1 mark for £1.30.

8 (2 marks)

Kim drew this bar chart to show the colours of some cars.



Write down two things that are wrong with this bar chart.

Any two of these:

The bars are different widths.

There is no label on the vertical axis.

The vertical scale is not even: it goes 0, 5, 10, 20, 25, 30 (it jumps from 10 to 20).

Answer: Different bar widths; no axis label; uneven scale

Tip: Be specific. “The scale jumps from 10 to 20” is better than “the scale is wrong”.

Marks: 1 mark for each different correct criticism.