

Pie Charts

Solutions

For AQA GCSE Mathematics (8300) • 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 (1 mark)

A sector of a pie chart has an angle of 120°

What fraction of the data does this sector represent?

Circle your answer.

Options: $\frac{1}{12}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$

A full pie chart is 360° .

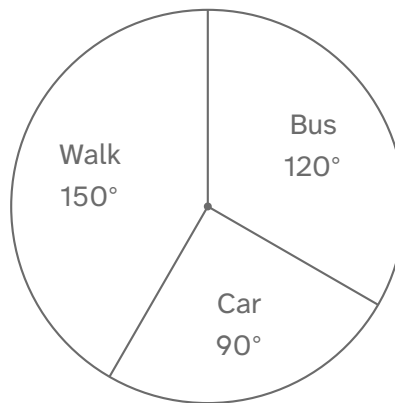
$$\frac{120}{360} = \frac{1}{3}$$

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

Tip: Write the angle as a fraction of 360° , then simplify. The whole pie chart is 360° , not 100.

2 (5 marks)

The pie chart shows how 72 students travel to school.



- (a) Write down the modal way of travelling.

The mode is the one chosen most often.

In a pie chart, that is the sector with the largest angle.

Walk has the largest angle (150°).

Answer: Walk

- (b) How many of the students travel by car?

The angle for car is 90°.

$\frac{90}{360}$ of the students travel by car.

$$\frac{90}{360} \times 72 = 18$$

Answer: 18

Marks: 1 mark for $\frac{90}{360} \times 72$. 1 mark for 18.

- (c) How many more students walk than go by bus?

360° represents 72 students.

So 1 student is $360 \div 72 = 5^\circ$.

Walk: $150 \div 5 = 30$ students

Bus: $120 \div 5 = 24$ students

$$30 - 24 = 6$$

Answer: 6

Marks: 1 mark for 30 or 24. 1 mark for 6.

3 (3 marks)

36 people were asked to choose their favourite drink.

Drink	Tea	Coffee	Juice
Frequency	12	15	9

Draw a pie chart to show this information.

36 people share 360° .

$$360 \div 36 = 10^\circ \text{ per person}$$

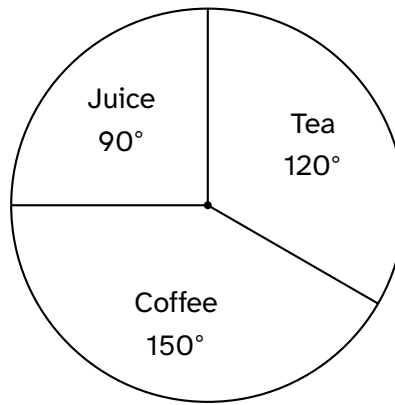
$$\text{Tea: } 12 \times 10 = 120^\circ$$

$$\text{Coffee: } 15 \times 10 = 150^\circ$$

$$\text{Juice: } 9 \times 10 = 90^\circ$$

$$\text{Check: } 120 + 150 + 90 = 360^\circ \checkmark$$

Draw the angles with a protractor and label each sector.



Answer: Angles 120, 150, 90

Tip: Show how you worked out the angles, and label every sector with its drink. Unlabelled sectors lose a mark.

Marks: 1 mark for $360 \div 36$. 1 mark for all three angles. 1 mark for the pie chart drawn accurately and labelled.

4 (2 marks)

In a pie chart, the angle for people who chose red is 72°
18 people chose red.
How many people are shown in the pie chart altogether?

The whole pie chart is 360° .

$$360 \div 72 = 5$$

So the whole chart is 5 times the red sector.

$$18 \times 5 = 90$$

Answer: 90

Marks: 1 mark for $360 \div 72$ (or $72 \div 18 = 4^\circ$ per person). 1 mark for 90.

5 (1 mark)

60 people were asked to choose their favourite colour.

15 people chose blue.

Kai draws a pie chart to show the results.

He says,

“The angle for blue is 15° because each person is worth 1° .”

Is Kai correct? Tick a box.

Give a reason for your answer.

No.

The 360° is shared between 60 people, not 360 people.

Each person is worth $360 \div 60 = 6^\circ$.

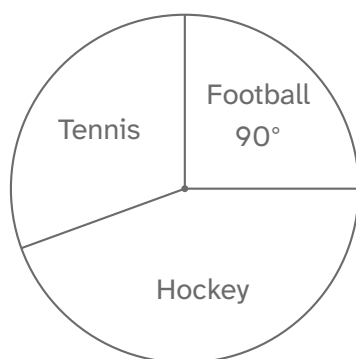
Blue: $15 \times 6 = 90^\circ$

Answer: No, each person is 6° , so blue is 90°

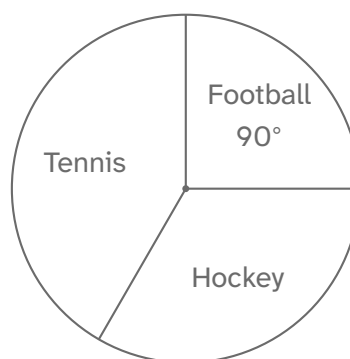
Tip: Each person is worth 1° only when exactly 360 people are in the pie chart. Always work out $360 \div$ total first.

6 (1 mark)

Two pie charts show the favourite sport of students at school *A* and at school *B*.
School *A* has 200 students. School *B* has 400 students.
The angle for football is 90° in both pie charts.



School *A*



School *B*

Tom says, “The same number of students chose football in each school.”

Is Tom correct? Tick a box.

Give a reason for your answer.

No.

The schools have different numbers of students.

$$\text{School A: } \frac{90}{360} \times 200 = 50$$

$$\text{School B: } \frac{90}{360} \times 400 = 100$$

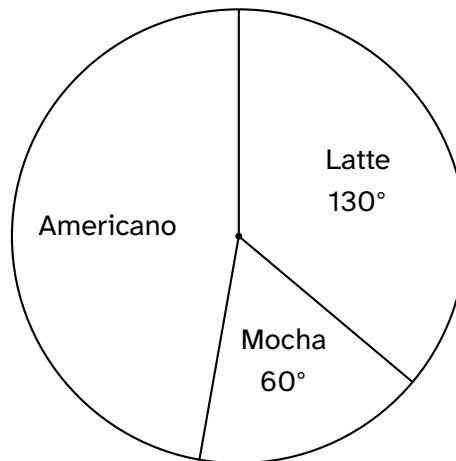
The same angle does not mean the same number of students.

Answer: No, different totals (50 and 100)

Tip: A pie chart shows proportions, not numbers. You can only compare numbers if you know the totals.

7 (3 marks)

The pie chart shows the types of coffee sold by a café one morning.



Not drawn accurately

The café sold 85 Americanos.

How many coffees did the café sell altogether?

Angles in a pie chart add up to 360° .

Angle for Americano = $360 - 130 - 60 = 170^\circ$

170° represents 85 coffees.

So 1 coffee is $170 \div 85 = 2^\circ$.

Altogether: $360 \div 2 = 180$ coffees

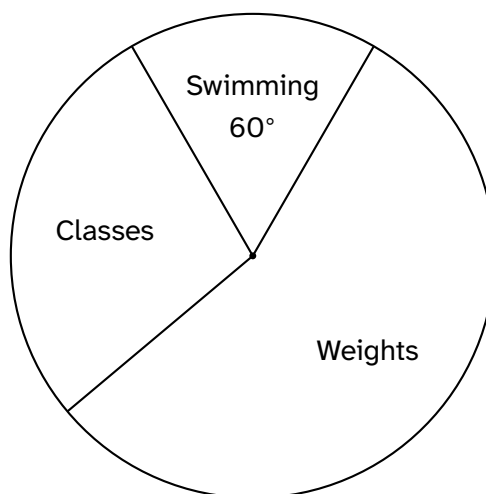
Answer: 180

Tip: First find the missing angle, then work out how many degrees one coffee is worth.

Marks: 1 mark for $360 - 130 - 60 = 170$. 1 mark for $170 \div 85 = 2$ (or $\frac{85}{170}$). 1 mark for 180.

8 (3 marks)

The members of a sports club each chose their favourite activity.
The pie chart shows information about their choices.



Not drawn accurately

Twice as many members chose weights as chose classes.

48 members chose swimming.

Work out the number of members who chose classes.

Weights and classes together: $360 - 60 = 300^\circ$

Weights is twice classes, so share 300° in the ratio 2:1.

$300 \div 3 = 100$, so classes is 100° (and weights is 200°).

60° represents 48 members, so 1° represents $48 \div 60 = 0.8$ members.

Classes: $100 \times 0.8 = 80$ members

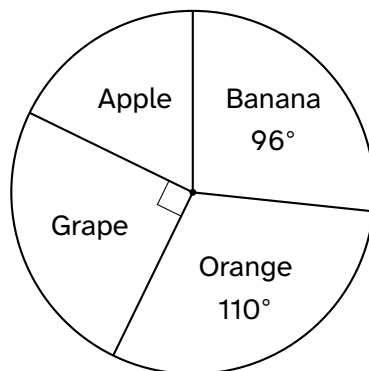
Answer: 80

Tip: "Twice as many" means the weights angle is twice the classes angle, so split the 300° into 3 equal parts, not 2.

Marks: 1 mark for $360 - 60 = 300$. 1 mark for 100° for classes. 1 mark for 80.

9 (4 marks)

Some people were asked to choose their favourite fruit.
The pie chart shows information about the results.



Not drawn accurately

120 people chose Banana.

How many people chose Apple?

The Grape sector is marked as a right angle, so it is 90° .

Angle for Apple = $360 - 96 - 110 - 90 = 64^\circ$

96° represents 120 people.

So 1° represents $120 \div 96 = 1.25$ people.

Apple: $64 \times 1.25 = 80$ people

Answer: 80

Tip: Look for the right-angle symbol. It tells you the Grape sector is 90° .

Marks: 1 mark for $360 - 96 - 110 - 90$. 1 mark for 64° . 1 mark for $\frac{64}{96} \times 120$ (or equivalent). 1 mark for 80.