

Pie Charts

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

A pie chart will show 20 people's answers. What angle represents one person?

Step 1 · The whole circle stands for all 20 people

$$360^\circ$$

Step 2 · Divide

$$360 \div 20 = 18^\circ$$

Answer: 18° per person

Check: $20 \times 18^\circ = 360^\circ$ ✓

2. Now try one with the steps

Draw a pie chart: tea 12, coffee 8, juice 10, water 6

Step 1 · Total frequency

Step 2 · Angle for one person

Step 3 · Angles

Step 4 · Check the total, then draw each sector with a protractor from a starting radius

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. A pie chart shows 60 people. How many degrees represent each person? [1]

2. What do the angles in a pie chart add up to? [1]

3. A sector of a pie chart has an angle of 180° . What fraction of the total is it? [1]

4. In a pie chart of 30 students, 12 like football. What angle is the football sector? [1]
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5. In a pie chart of 45 people, 9 chose red. What angle is the red sector? [1]
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6. A pie chart represents 120 people. One sector is 90° . How many people does it represent? [1]
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7. Three sectors of a pie chart are 95° , 125° and 70° . What is the fourth angle? [1]
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8. A survey of 40 pets: dogs 14, cats 10, fish 4, other 12. What angle should the cats sector be? [2]
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9. A pie chart represents 72 people. One sector is 140° . How many people does it represent? [2]
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10. A sector of 72° shows what percentage of the total? [1]
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11. In a pie chart, a sector of 54° represents 15 people. How many people were surveyed altogether? [2]
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12. In a pie chart, 'walk' is 160° and 'bus' is 110° . Everyone else came by car. 18 people came by car. [3]
How many people were surveyed?
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-
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13. Class A (30 pupils) has a 120° sector for blue. Class B (24 pupils) has a 150° sector for blue. [3]
Which class has more pupils who chose blue?
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14. Explain why a pie chart would be a poor choice for showing how the temperature changed over a week. [1]

4. Before you hand it in

With 4 categories, giving every sector $360 \div 4 = 90^\circ$

Divide 360° by the TOTAL frequency to get the angle for one item, then multiply by each frequency.

Angles of 121° , 79° , 101° and 61° that add to 362°

Always check the total is exactly 360° before drawing. If you rounded, adjust the largest sector so the total is right.

Saying more people in Class B chose blue because its blue sector is bigger

Work out the actual numbers: $\text{angle}/360 \times \text{total}$ for each chart. A bigger angle from a smaller group can be the same number of people, or fewer.

Drawing each new sector from the vertical line instead of from the end of the last sector

Draw one radius, measure the first angle from it, then measure the next angle from the line you just drew, and so on round the circle.