

Charts and Graphs

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

40 people chose their favourite pet. 12 chose dogs. Find the pie chart angle for dogs.

Step 1 · Find the fraction

$$12 \div 40 = 0.3$$

Step 2 · Multiply by 360°

$$0.3 \times 360^\circ = 108^\circ$$

Answer: 108°

Check: $108^\circ \div 360^\circ = 0.3 = 12/40$ ✓

2. Now try one with the steps

A line graph shows a puppy's mass: 2 kg at 2 months, 4 kg at 4 months, 7 kg at 6 months. Describe the trend.

Step 1 · Look at the direction of the line

Step 2 · Look at the steepness

Step 3 · Describe in context

Answer:

3. Practice

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

1. A pie chart shows 4 categories. One category has an angle of 90° . What fraction of the total does it represent? [2]

2. 30 students were asked their favourite colour. 9 chose blue. What angle should represent blue on a pie chart? [2]

3. What type of chart is best for showing how a value changes over time? [1]

4. A pie chart represents 60 people. One sector has an angle of 60° . How many people does it represent? [3]
- _____
- _____
- _____
5. Explain why a bar chart, not a pie chart, would be best for comparing the populations of 5 different cities. [3]
- _____
- _____
- _____
6. A survey of 144 people's favourite season: Spring 36, Summer 54, Autumn 27, Winter 27. Find the pie chart angle for Summer. [3]
- _____
- _____
- _____
7. In a pictogram, one symbol stands for 4 cars. How many cars do $3\frac{1}{2}$ symbols stand for? [1]
- _____
8. A bar chart shows 12 visitors on Monday, 8 on Tuesday and 15 on Wednesday. How many more visitors were there on Wednesday than on Tuesday? [1]
- _____
9. Which type of chart would you use to compare the favourite sports of boys and girls side by side? [1]
- _____
10. In a composite bar chart, the bar for Year 7 is 40 students tall, and the boys' section is 15. How many girls are there? [1]
- _____
11. A pie chart shows 25% of students cycle to school. What angle is the cycling sector? [1]
- _____

12. A pie chart represents 72 people. How many degrees represent each person? [1]
-
-
13. A pie chart represents 90 people. One sector has an angle of 120° . How many people does it represent? [2]
-
-
14. In a pie chart of 50 students, the 'walk' sector is 144° . How many students walk? [2]
-
-
15. A line graph shows the temperature was 8°C at 9am and 14°C at noon, rising steadily. Estimate the temperature at 10:30am. [2]
-
-
16. School A has 200 students and School B has 600. In pie charts of favourite sport, football is 90° for School A and 60° for School B. Which school has more students who chose football? [3]
-
-
-
17. A bar chart's vertical axis starts at 50 instead of 0. Why could this be misleading? [2]
-
-

4. Before you hand it in

Calculating pie chart angles by dividing 360° by the number of categories, regardless of their values

Pie chart angles are PROPORTIONAL to the data values, not equal. The angle = (category value $\div$ total) $\times 360^\circ$. Only equal if all categories have the same value.

Joining bars together in a bar chart, or drawing a continuous line through bar chart data

Bar charts show separate, distinct categories — bars should NOT touch. Line graphs show continuous data (like time) — connecting points with a line shows the trend.

Numbering the frequency axis 0, 5, 10, 20, 50

The steps on an axis must be equal (for example 0, 5, 10, 15, 20). Otherwise a bar twice does not mean twice