



Bar charts and pie charts

About 55 minutes Calculator allowed 41 marks

Date _____

A Do Now

The first question is what today's lesson needs. The others bring back earlier topics.

- | | |
|---|--|
| <p>A1 Needed today [2 marks]</p> <p>$\frac{7}{11}$ of a number is 56. What is the number?</p> | <p>A2 Last lesson [2 marks]</p> <p>At a school trip, 300 students were asked if they chose the museum. 40% of them are boys. $\frac{3}{8}$ of the boys chose the museum. 83 of the girls did not. How many of the 300 students chose the museum?</p> |
|---|--|

Answer

Answer

- | | |
|---|---|
| <p>A3 Maths skill [2 marks]</p> <p>Find the distance between the points $(-4, 4)$ and $(-28, -6)$.</p> | <p>A4 Maths skill [2 marks]</p> <p>Given that $45 \times 16 = 720$, work out 0.45×16.</p> |
|---|---|

Answer

Answer

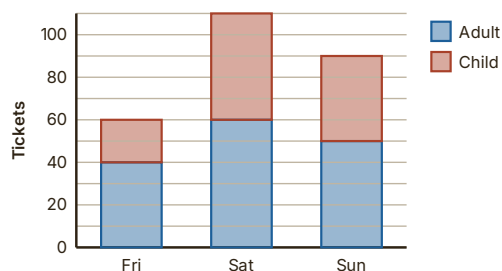
B Example, then your turn

Your teacher works through each example with you. Then try the one beside it.

EXAMPLE 1

The composite bar chart shows the adult and child tickets sold at a cinema on three days.

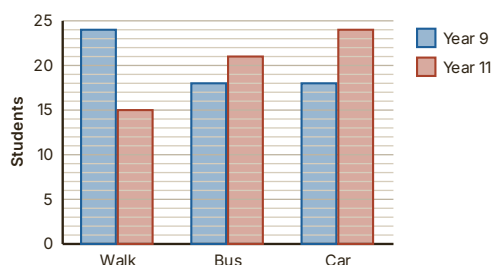
(a) How many child tickets were sold on Saturday? (b) What percentage of Sunday's tickets were for children?



Hint A section's height is its top minus its bottom.

EXAMPLE 2

The chart shows how 60 Year 9 students and 60 Year 11 students travel to school. Compare how the two year groups travel to school.



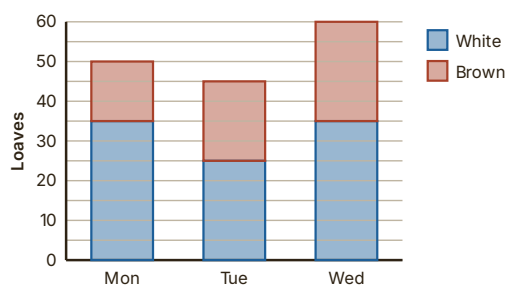
Hint Both groups have 60 students, so the numbers can be compared.

EXAMPLE 3

72 members of a gym said which class they like best: yoga 30, spin 18, boxing 15, pilates 9. Work out the angle of each sector of a pie chart.

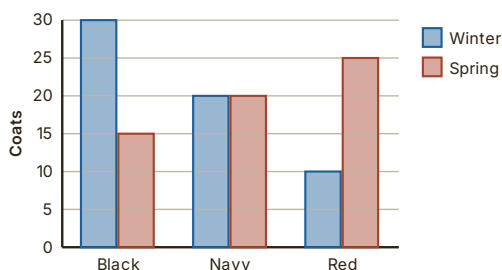
Hint Share the 360° between the 72 members.

B1 The chart shows the loaves of bread a bakery sold. On which day was the greatest proportion of the loaves brown? You must show your working.



Answer

B2 A shop sold 60 coats in winter and 60 coats in spring. Compare the colours of the coats sold in the two seasons.



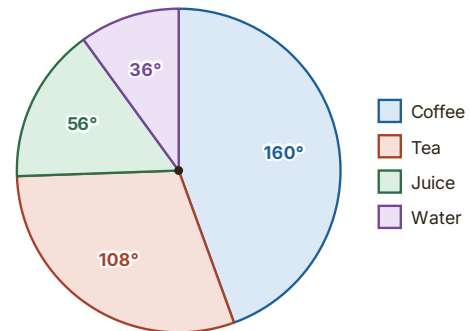
B3 180 shoppers said how they paid: card 75, phone 42, cash 39, voucher 24. Work out the angle of each sector of a pie chart.

Answer

EXAMPLE 4

A pie chart shows how some workers travel to work. Its sectors are car 150° , bus 96° , train 66° and cycle 48° . 32 of the workers cycle. (a) How many workers are in the survey? (b) How many travel by bus?

Hint 48° stands for 32 workers. How many workers does 1° stand for?

B4 The pie chart shows the drinks chosen at a meeting. 27 people chose water. How many people chose tea? [2 marks]

Answer

EXAMPLE 5

A pie chart shows the lunch choices of the 450 students at School A. Its radius is 3 cm. A comparative pie chart shows the 800 students at School B. Work out its radius.

Hint The AREA is in proportion to the total, so the radius is in proportion to the square root of the total.

B5 A pie chart of the 2400 visitors to a museum in 2023 has radius 5 cm. A comparative pie chart shows the 4200 visitors in 2024. Work out its radius. Give your answer to 1 decimal place. [2 marks]

Answer

EXAMPLE 6

Comparative pie charts show how students travel to two schools. School P has 640 students and a bus sector of 90° . School Q has 360 students and a bus sector of 120° . Jade says, "More students at School Q travel by bus, as its sector is bigger." Is Jade correct? Give a reason.

Hint The angle is the proportion. Work out the numbers.

B6 Comparative pie charts show the films seen at two cinemas. North sold 900 tickets, with a comedy sector of 80° . South sold 540 tickets, with a comedy sector of 120° . Sam says South sold more comedy tickets, as its sector has the larger angle. Is Sam correct? Give a reason. [3 marks]

C Practice

C1 A café records the bowls of soup it sells in each month of a year. Ffion wants a diagram that shows how sales change during the year. Is a pie chart suitable? Give a reason.

[2 marks]

C2 Comparative pie charts show the pets owned by families in two villages. The chart for Ashton has radius 4 cm and shows 640 families. The chart for Burley has radius 5 cm. How many families does it show?

[2 marks]

Answer

C3 A percentage composite bar, 10 cm long, shows the sports chosen by 60 people: rugby 18, football 27, cricket 15. Work out the length of each section.

[2 marks]

Answer

C4 In a pie chart of the 150 cars a garage sold, the electric sector is 72° . The garage says 25% of its cars sold were electric. Is it correct? Show your working.

[2 marks]

D Exam-style questions

D1 Visitors to two parks rated their visit. A pie chart of the 360 visitors to North Park has radius 6 cm. Its sector for Excellent is 135° . A comparative pie chart is drawn for the 490 visitors to South Park.

(a) Work out the radius of the pie chart for South Park. [2 marks]

Answer

(b) 147 visitors to South Park rated it Excellent. Work out the angle of the Excellent sector for South Park. [2 marks]

Answer

(c) Ben says, "Fewer visitors rated South Park Excellent, as its sector is smaller." Is Ben correct? Give a reason. [2 marks]

Total for D1: 6 marks

D2Mia has the number of bird species a nature reserve recorded in each season of 2015 and of 2025. Give one advantage and one disadvantage of a composite bar chart, one bar for each year, rather than a multiple bar chart.[2 marks]

EExtension

No route is given. The hints are at the end of the sheet. Use one at a time.

E1A pie chart of the 400 books in a school library has radius 5 cm. Its fiction sector is 108° . A comparative pie chart for a town library has radius 6 cm, and its fiction sector is 75° . How many fiction books are in the town library? [4 marks]

Answer

Extension hints

Cover these with paper. Uncover one at a time.

- E1Hint 1Find the total number of books in the town library from the two radii.
- Hint 2The total is $400 \times \left(\frac{6}{5}\right)^2 = 576$.
- Hint 3Fiction: $\frac{75}{360} \times 576 = 120$, the same as the school's 120: the two sectors have the same area, $7.5\pi \text{ cm}^2$.

How did it go?

Colour one circle on each line: not yet, nearly, yes.

- I can read composite and multiple bar charts and compare in context.
- I can work out pie chart angles and comparative pie chart radii.
- I can say which group has more from comparative pie charts.