Name _____ Date _____

16.4 Reading charts and graphs — worksheet

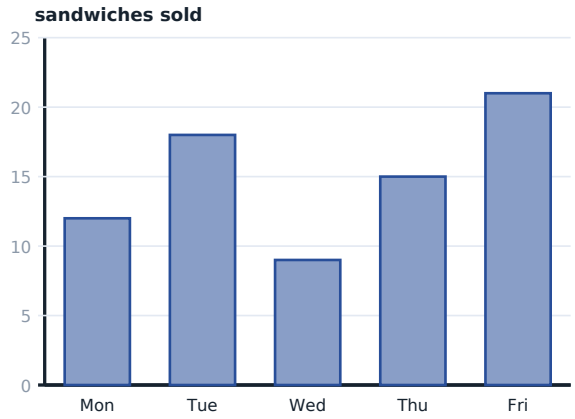
Read and interpret bar charts, line graphs and pie charts, and recognise when a chart is misleading. · 64 questions · Show your working.

Remember

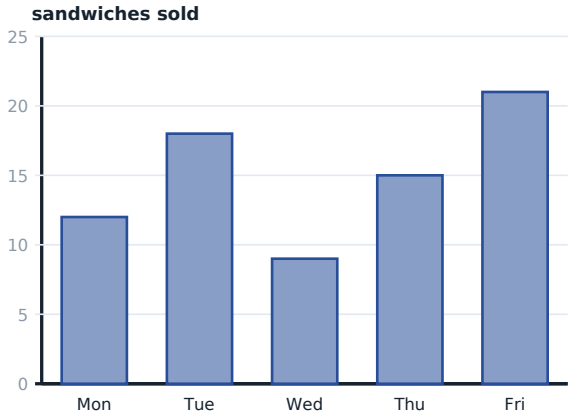
- A **bar chart** compares separate categories. Read the height against the scale.
- A **line graph** shows how something changes over time. The joined points show the **trend**.
- A **pie chart** shows **shares of a whole**. The sectors must total **360°**.
- In a pie chart of N people, **one person is worth 360 ÷ N degrees**.
- To go the other way: **people = angle ÷ (360 ÷ N)**.
- A percentage becomes an angle by taking that percentage of 360°.
- A bar chart's scale should **start at zero**. If it does not, the differences look bigger than they are.
- A pie chart alone does not tell you **how many** people were asked — the total must be stated.
- Always read the numbers from the scale, never judge by the picture alone.

A · Fluency — Reading bars, lines and sectors.

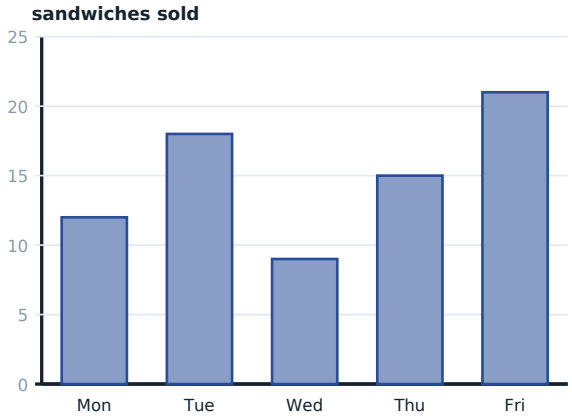
1 Which day has the highest bar? Give the label.



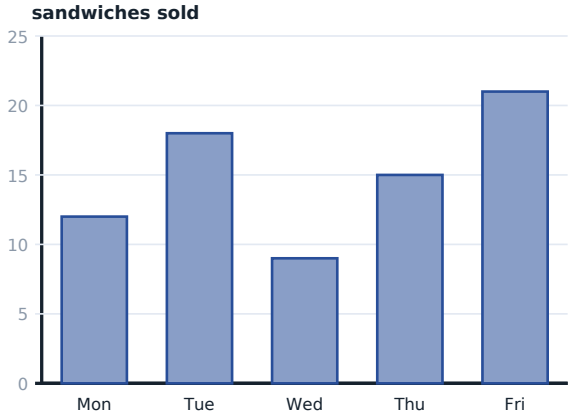
2 Which day has the lowest bar? Give the label.



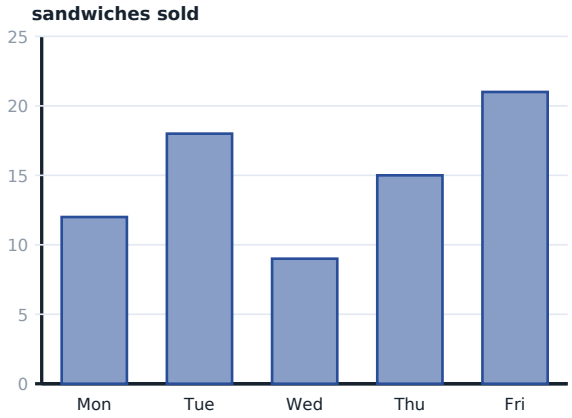
3 What is the value of the bar for **Tue**?



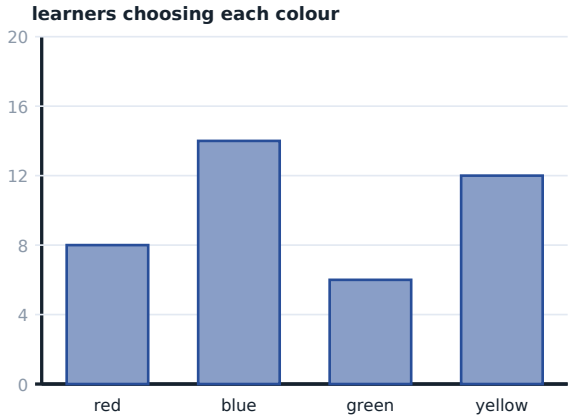
4 What is the total of all the bars?



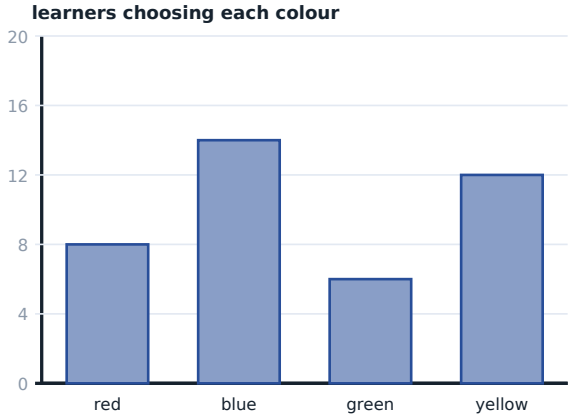
5 How much taller is the bar for **Fri** than the bar for **Wed**?



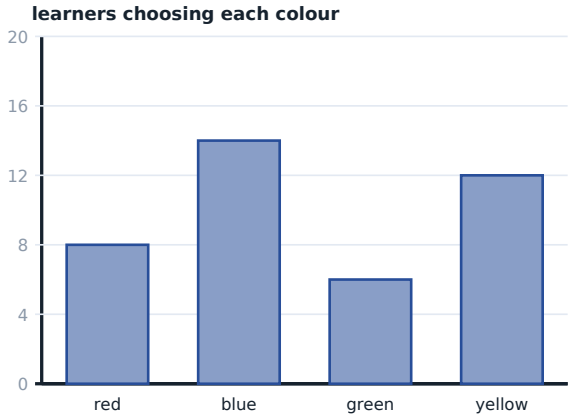
6 Which colour has the highest bar? Give the label.



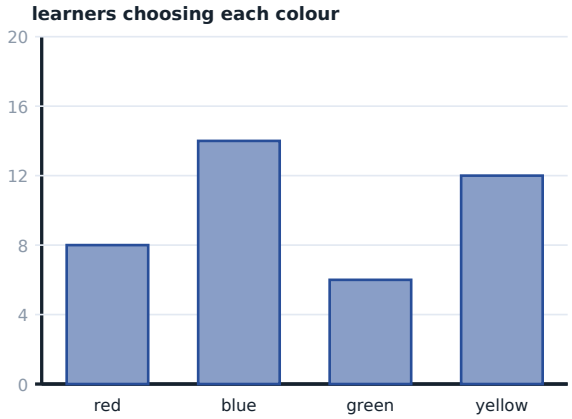
7 Which colour has the lowest bar? Give the label.



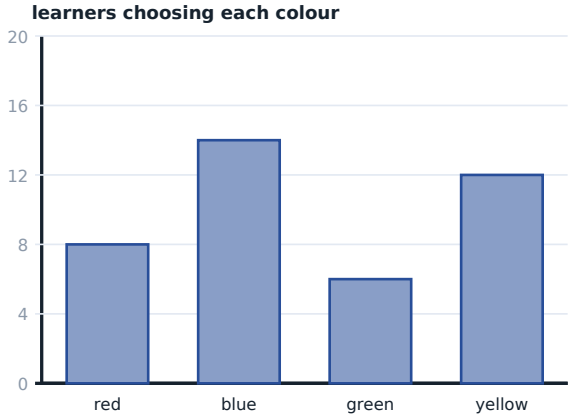
8 What is the value of the bar for **blue**?



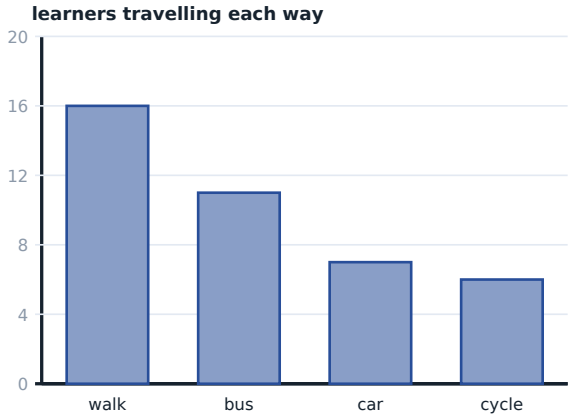
9 What is the total of all the bars?



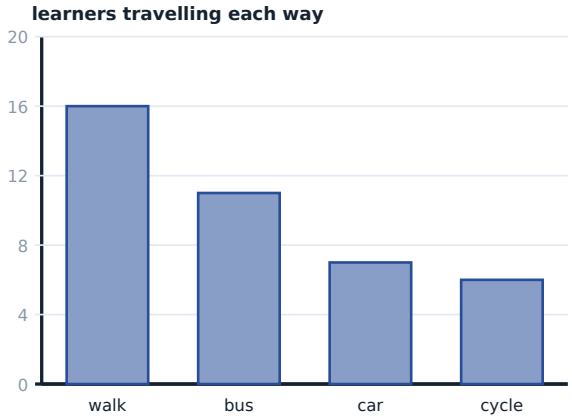
10 How much taller is the bar for **blue** than the bar for **green**?



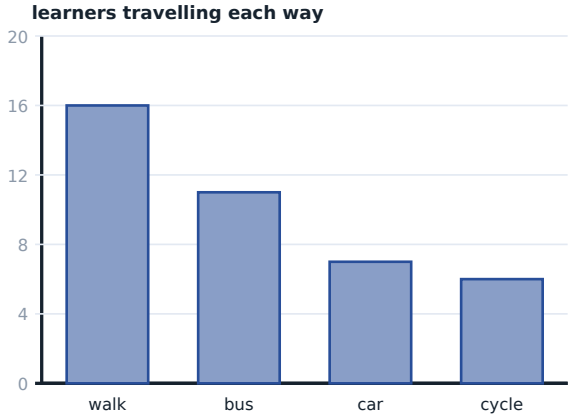
11 Which method has the highest bar? Give the label.



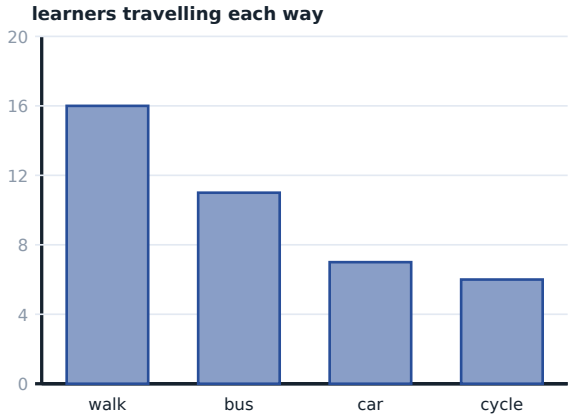
12 Which method has the lowest bar? Give the label.



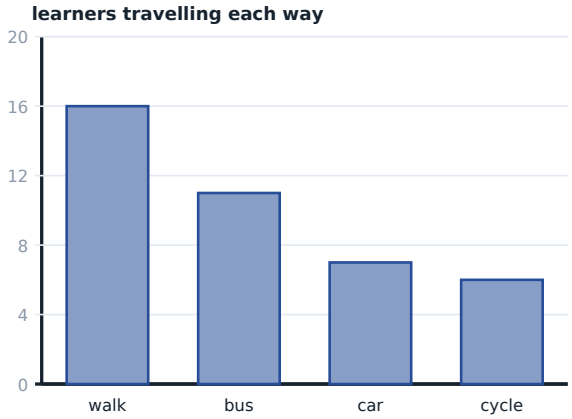
13 What is the value of the bar for **bus**?



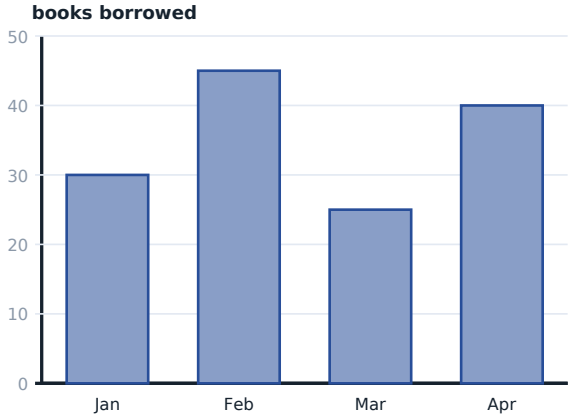
14 What is the total of all the bars?



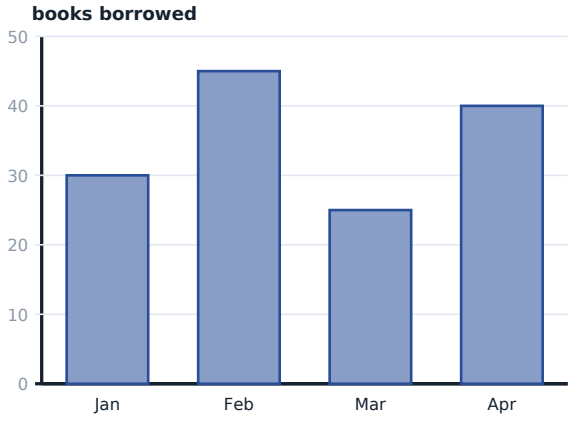
15 How much taller is the bar for **walk** than the bar for **cycle**?



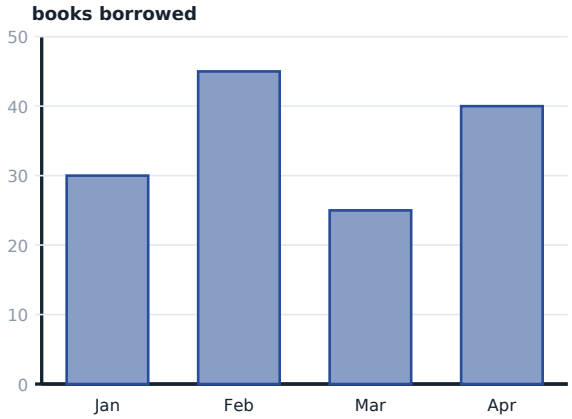
16 Which month has the highest bar? Give the label.



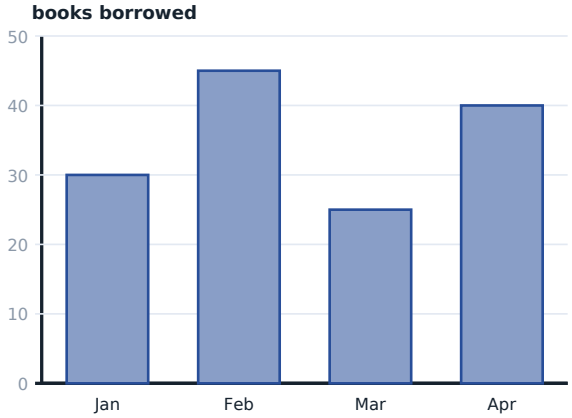
17 Which month has the lowest bar? Give the label.



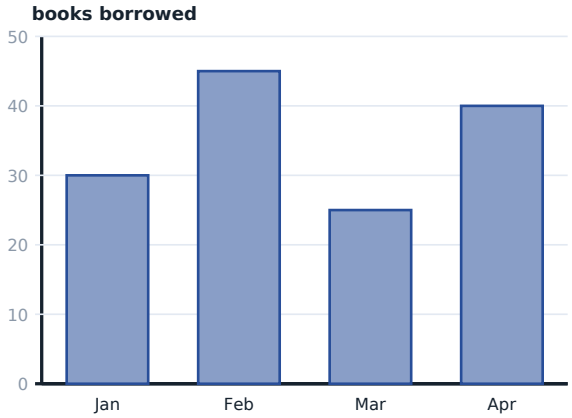
18 What is the value of the bar for **Feb**?



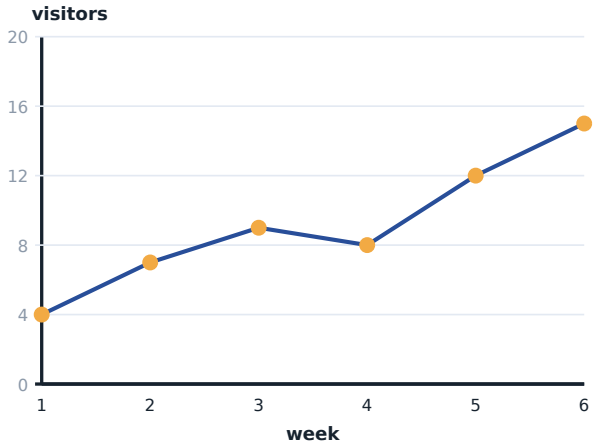
19 What is the total of all the bars?



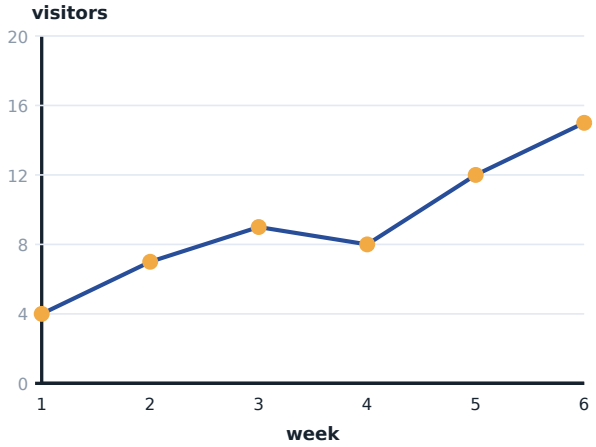
20 How much taller is the bar for **Feb** than the bar for **Mar**?



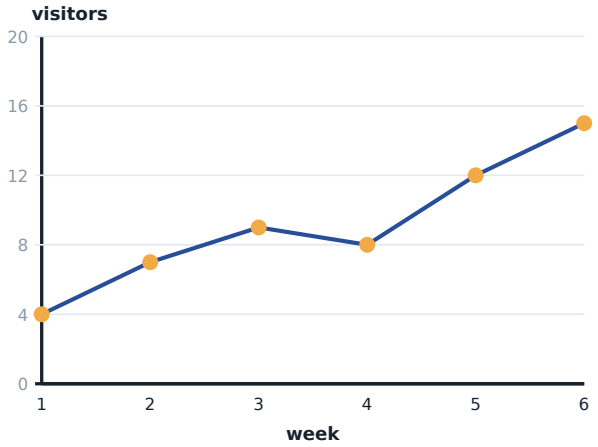
21 What is the value at **week 1**?



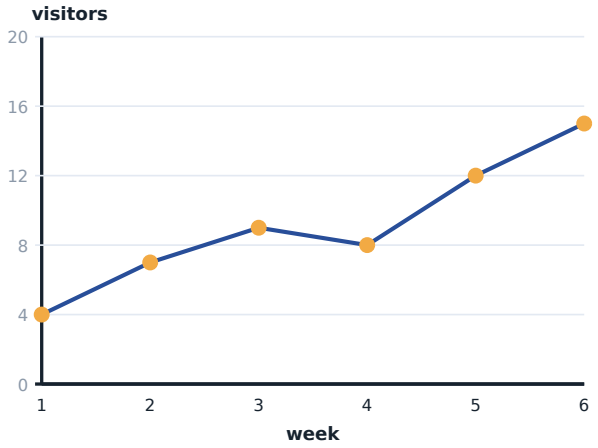
22 What is the highest value shown?



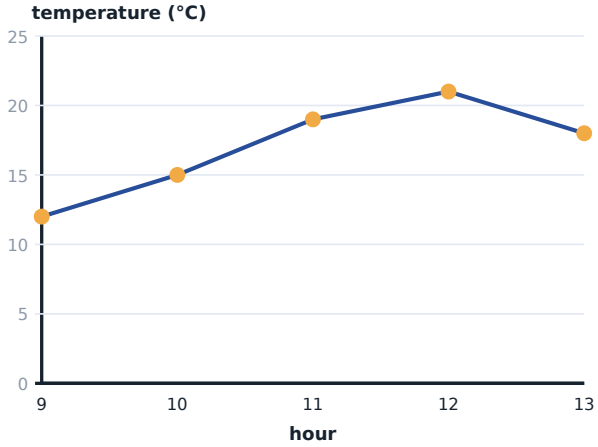
23 Between how many pairs of neighbouring points does the line **rise**?



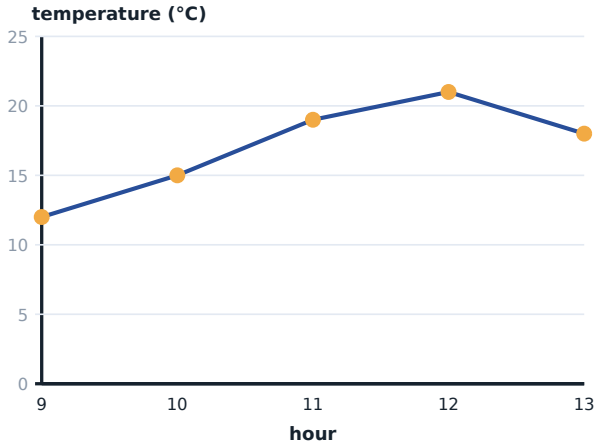
24 What is the difference between the highest and the lowest value?



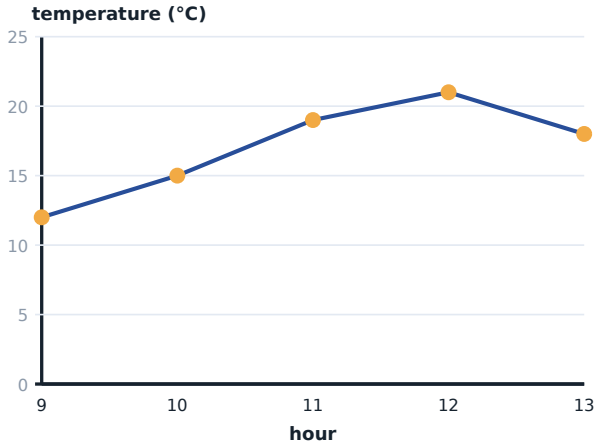
25 What is the value at **hour 9**?



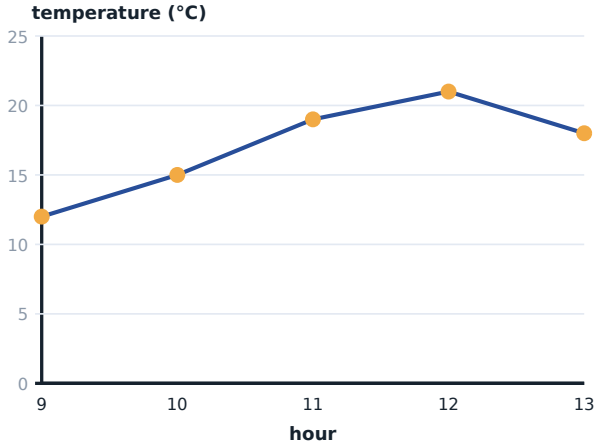
26 What is the highest value shown?



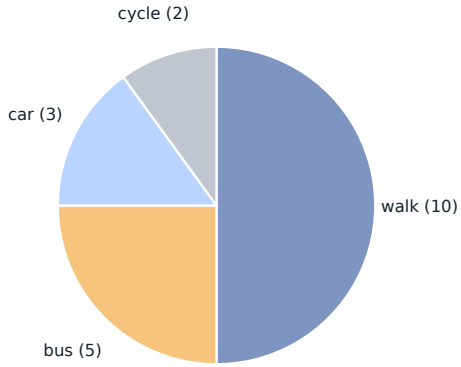
27 Between how many pairs of neighbouring points does the line **rise**?



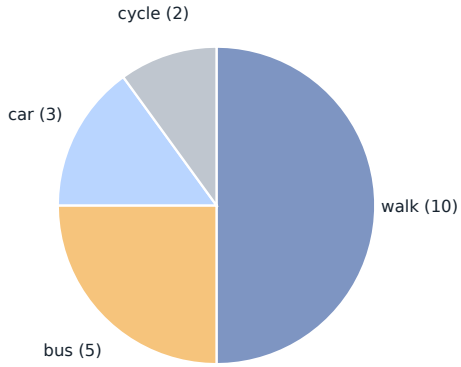
28 What is the difference between the highest and the lowest value?



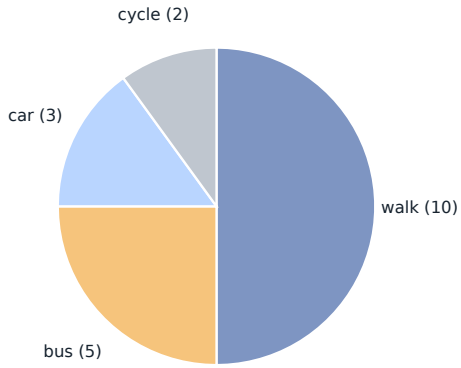
29 In this pie chart of 20 people, what angle does the **walk** sector have, in degrees?



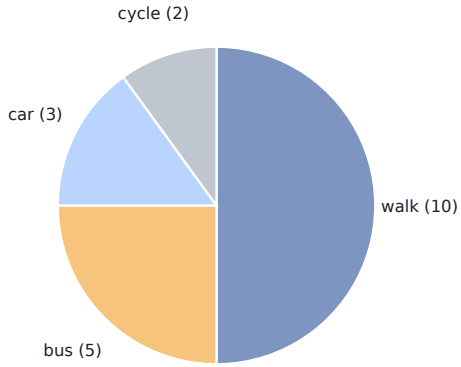
30 In this pie chart of 20 people, what angle does the **bus** sector have, in degrees?



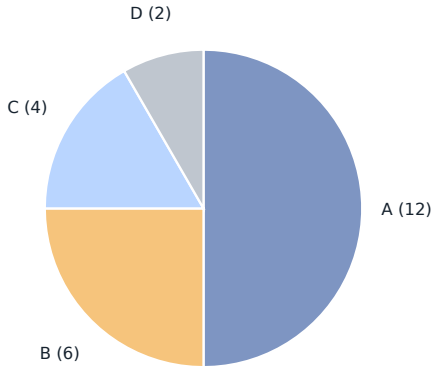
31 In this pie chart of 20 people, what angle does the **car** sector have, in degrees?



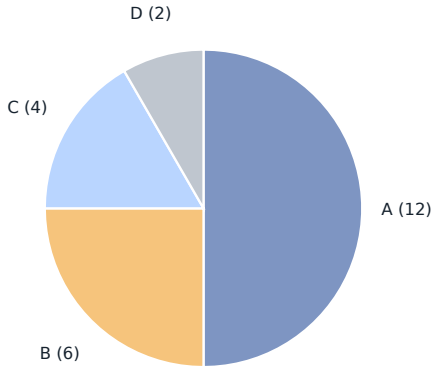
32 In this pie chart of 20 people, what angle does the **cycle** sector have, in degrees?



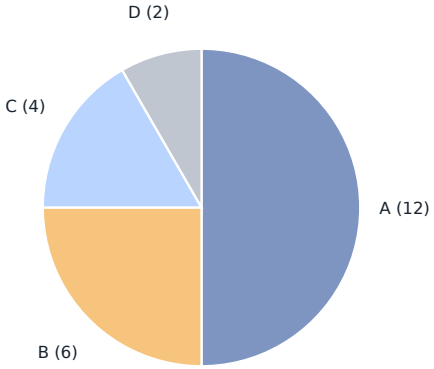
33 In this pie chart of 24 people, what angle does the **A** sector have, in degrees?



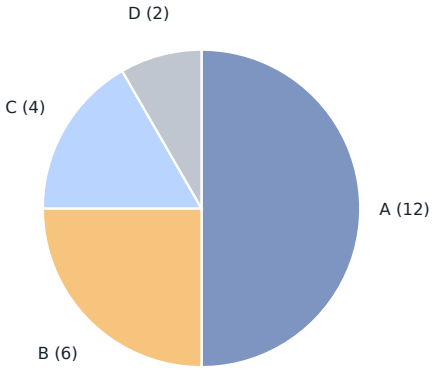
34 In this pie chart of 24 people, what angle does the **B** sector have, in degrees?



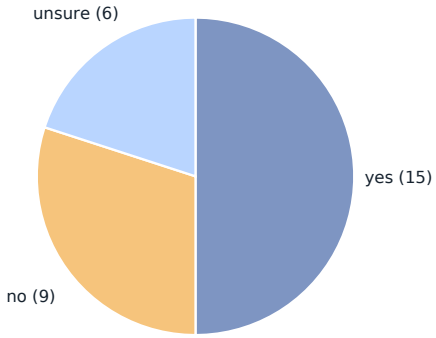
35 In this pie chart of 24 people, what angle does the **C** sector have, in degrees?



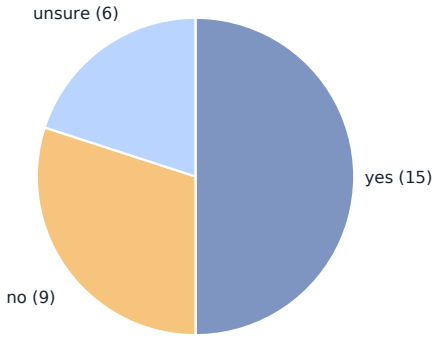
36 In this pie chart of 24 people, what angle does the **D** sector have, in degrees?



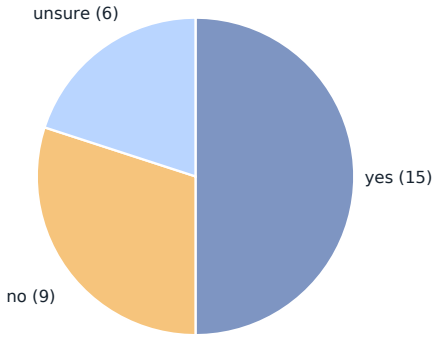
37 In this pie chart of 30 people, what angle does the **yes** sector have, in degrees?



38 In this pie chart of 30 people, what angle does the **no** sector have, in degrees?



39 In this pie chart of 30 people, what angle does the **unsure** sector have, in degrees?



B · Reasoning — What each chart is for, and how one can mislead.

40 What must every bar chart have?

- ☐ Colours
- ☐ Labelled axes and a scale that starts at zero
- ☐ Exactly five bars
- ☐ A title only

41 In a pie chart, what does the whole circle represent?

- ☐ 100 people
- ☐ The largest category
- ☐ The whole data set
- ☐ 360 categories

42 A pie chart shows 20 people. What angle is one person worth?
- ☐ 18°
- ☐ 20°
- ☐ 36°
- ☐ 360°

43 Which chart is best for showing how something changes over time?
- ☐ pie chart
- ☐ bar chart
- ☐ line graph
- ☐ tally chart

44 Which chart is best for comparing separate categories?
- ☐ line graph
- ☐ bar chart
- ☐ pie chart
- ☐ none of them

45 Should a bar chart's vertical scale always start at zero?
- ☐ Yes
- ☐ No

46 The sectors of a pie chart must add to …
- ☐ 100°
- ☐ 180°
- ☐ 360°
- ☐ the number of people

47 A pie chart shows that 40% chose blue. What is its angle?
- ☐ 40°
- ☐ 144°
- ☐ 180°
- ☐ 360°

48 Can you tell from a pie chart alone how many people were asked?
- ☐ Yes
- ☐ No

49 Two bar charts use different vertical scales. Comparing their bar heights directly is …
- ☐ fine
- ☐ misleading, because the scales differ
- ☐ impossible
- ☐ the best method

C · Challenge — Angles both ways, and totals from charts.

50 A pie chart of 60 people has a sector of 90°. How many people does it represent?

51 A pie chart of 24 people has a sector for 9 people. What is its angle, in degrees?

52 A pie chart has sectors of 120°, 90° and 60°. What is the angle of the fourth sector, in degrees?

53 In a pie chart, one category is 25% of the total. What is its angle, in degrees?

54 A bar chart shows 12, 18, 9, 15 and 21 sandwiches. What is the mean number sold per day?

55 A line graph of visitors shows 4, 7, 9, 8, 12, 15 over six weeks. Between which two consecutive weeks did the number fall? Give the earlier week number.

56 A pie chart of 36 people has a sector of 150°. How many people is that?

D · Word problems — Libraries, buses, shops and truncated scales.

57 A bar chart shows 30, 45, 25 and 40 books borrowed over four months. How many were borrowed altogether?

58 In that chart, how many more books were borrowed in the busiest month than the quietest?

59 A pie chart shows how 30 learners travel to school. The bus sector is 96°. How many take the bus?

60 A shop's sales over five days were 20, 24, 18, 30 and 28. What is the mean daily sales figure?

61 A line graph of temperature reads 12, 15, 19, 21 and 18 °C over five hours. What is the range, in degrees?

62 A pie chart of 40 people has a “yes” sector of 180°. What percentage said yes?

63 A bar chart's vertical scale starts at 90 instead of 0. Two bars read 95 and 100. By what percentage is the second actually larger than the first, to the nearest whole percent?

64 A pie chart of 72 people has a sector of 45°. How many people is that?