



Comparing sets of data

Year 7 About 70 minutes No calculator 46 marks

Date _____

A Do Now

Quick questions to start.

A1 Needed today [1 mark]

Work out the mean of 6, 9, 4 and 13.

Answer

A2 Needed today [1 mark]

Work out the range of 15, 8, 22 and 11.

Answer

A3 Last lesson [1 mark]On a line graph, above what value is the point for the class $30 < t \leq 40$ plotted?

Answer

A4 From chapter 15 [1 mark]Solve $2(x + 5) = 3x + 1$.

Answer

B Example, then your turn

Year 7

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

EXAMPLE 1

These are the points two basketball players scored in five games.

Ali: 12, 8, 15, 10, 15

Ben: 14, 12, 13, 15, 16

Compare the two players. Use the mean and the range.

Hint The mean says who scores more on average.
The range says who is more consistent: a smaller range means the scores are closer together.**B1** These are the numbers of cakes two shops sold on six days. [4 marks]

Shop P: 18, 25, 21, 30, 16, 22

Shop Q: 24, 26, 23, 27, 25, 19

Compare the two shops. Use the mean and the range.

EXAMPLE 2

Two pie charts show how pupils travel to two schools. At Hill School 120 pupils were asked, and the Walk sector has an angle of 90° . At Lake School 60 pupils were asked, and the Walk sector has an angle of 150° . Jess says, "The Walk sector is bigger for Lake School, so more pupils walk to Lake School." Is Jess right?

Hint An angle is a fraction of the circle. Find that fraction of the number of pupils asked at THAT school.

- B2** Two pie charts show the favourite fruit of pupils in two year groups. In Year 7, 80 pupils were asked and the Apple sector has an angle of 135° . In Year 8, 48 pupils were asked and the Apple sector has an angle of 210° . Mo says, "More Year 8 pupils chose apples." Is Mo right? Show your working. [3 marks]

Answer

EXAMPLE 3

Two phones each cost £400 when new. The table shows their values at the end of each year. Which phone lost more value over the four years?

Year	Phone A	Phone B
0	£400	£400
1	£320	£300
2	£260	£240
3	£210	£200
4	£170	£180

Hint Compare the drop from the first value to the last value for each phone, not the values in one year.

- B3** The table shows the heights of two plants, P and Q, at the end of each week. (a) Which plant grew more over the four weeks? (b) Which plant grew more in the first two weeks? Give the numbers. [3 marks]

Week	P (cm)	Q (cm)
0	4	6
1	7	8
2	11	10
3	14	14
4	16	19

C Practice

Year 7

C1 Two groups did the same puzzle. The table shows the mean and the range of their times. Make two comparisons between the groups. [2 marks]

	Mean	Range
Group A	42 s	18 s
Group B	38 s	30 s

C2 In class 7R, 12 of the 30 pupils have a pet. In class 7S, 15 of the 50 pupils have a pet. Which class has the greater proportion of pupils with a pet? Show your working. [2 marks]

Answer

C3 Ella's five test marks have a mean of 14. Four of the marks are 12, 16, 11 and 17. (a) Work out the fifth mark. (b) Work out the range of the five marks. [3 marks]

Answer

C4 90 Year 7 and 50 Year 8 pupils chose a sport. Football is one third of the Year 7 pie chart and half of the Year 8 pie chart. How many more Year 7 pupils chose football? [2 marks]

Answer

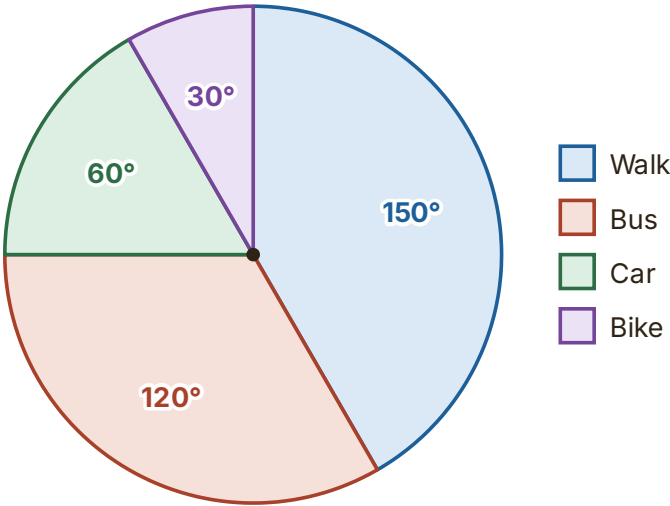
D Exam-style questions

GCSE Foundation

D1 The pie chart shows how 72 Year 7 pupils travel to school. A quarter of the 120 Year 8 pupils walk. Lily says, "The Walk sector is more than a quarter of the circle, so more Year 7 pupils walk." [3 marks]

Is Lily right? You must show your working.

Answer



D2 40 pupils sat an English test and a History test. The bar chart shows their marks.

- (a) How many pupils scored 31–40 in English? [1 mark]

Answer

- (b) How many more pupils scored 0–10 in History than in English? [1 mark]

Answer

- (c) Which test did the pupils find harder? Give a reason. [2 marks]

- (d) What fraction of the pupils scored over 20 in English? Give your answer in its simplest form. [2 marks]

Answer

Total for D2: 6 marks

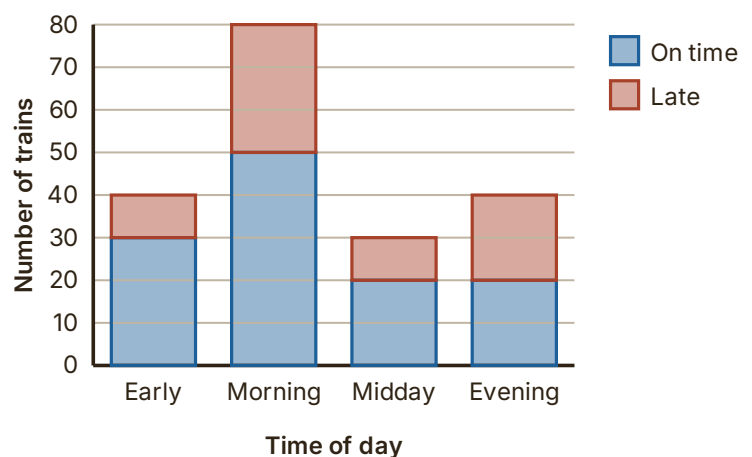
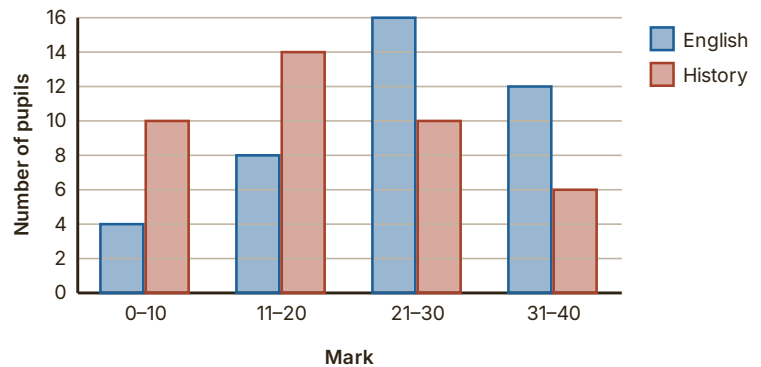
D3 The bar chart shows how many trains were on time and how many were late at four times of day.

- (a) How many trains ran in the morning? [1 mark]

Answer

- (b) What fraction of the trains early in the day were late? Give your answer in its simplest form. [2 marks]

Answer



- (c) Sam says, "The morning was the worst time for late trains, because more trains were late then than at any other time." Use the chart to explain why Sam could be wrong. [2 marks]

Total for D3: 5 marks

D4 Two teams of four runners ran a race. Team A's times, in seconds, were 52, 47, 58 and 51. Team B's mean time was 1 second less than Team A's. Three of Team B's times were 49, 55 and 50 seconds.

- (a) Work out the fourth time in Team B. [3 marks]

Answer

- (b) Which team was more consistent? Give a reason. [2 marks]

Total for D4: 5 marks

E Extension

Stretch

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

- E1** Set B is 3, 8, 12, 13. Set A is x , 7, 11, y , where x is the smallest number in set A and y is the largest. The two sets have the same mean and the same range. Work out x and y . [4 marks]

Answer

Extension hints

Cover these with paper. Uncover one at a time.

- E1** **Hint 1** The mean of set B is $36 \div 4 = 9$, so the four numbers in set A add up to 36.
- Hint 2** The range of set B is $13 - 3 = 10$, so $y - x = 10$. The mean gives $x + y + 18 = 36$, so $x + y = 18$.
- Hint 3** Two numbers that add to 18 and differ by 10: $x = 4$ and $y = 14$.

How did it go?

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

I can compare two sets of data with the mean and the range. ☐ ☐ ☐

I can compare pie charts that have different totals. ☐ ☐ ☐

I can compare values over time from a table. ☐ ☐ ☐

I can read comparative and composite bar charts. ☐ ☐ ☐