



Averages and spread from tables

About 50 minutes Calculator allowed 40 marks

Date _____

A Do Now

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

A1 Needed today [2 marks] **A2** Last lesson [2 marks]

A class has 9 boys and 8 girls. The boys' mean test mark is 42 and the girls' mean test mark is 76. Find the mean mark for the whole class.

Answer

A pie chart shows how 36 people choose a drink. The angle for juice is 70° , the angle for tea is x° and the angle for coffee is $(2x - 10)^\circ$. How many people chose coffee?

Answer

A3 From chapter 1 [2 marks] **A4** Key Stage 3 [2 marks]

Given that $57 \times 54 = 3078$, work out $3078 \div 0.54$.

Answer

A bag holds only red, blue and green counters. $P(\text{red}) = 0.4$ and $P(\text{blue}) = 0.1$. There are 80 counters in the bag. How many are green?

Answer

B Example, then your turn

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

EXAMPLE 1

The table shows the times, t minutes, that 30 people waited at a clinic. Work out an estimate of the mean time.

Time, t (min)	Frequency
$0 < t \leq 10$	5
$10 < t \leq 20$	8
$20 < t \leq 30$	11
$30 < t \leq 40$	6

Hint Use the midpoint of each group as the value for everyone in it.

B1 The table shows the lengths, l cm, of 40 fish. Work out an estimate of the mean length. [3 marks]

Length, l (cm)	Frequency
$10 < l \leq 20$	8
$20 < l \leq 30$	11
$30 < l \leq 40$	13
$40 < l \leq 50$	8

Answer

C Practice

- C1** Six swimmers took 31, 32, 32, 34, 35 and 58 seconds. Which average, the mean or the median, best describes a typical time? Give a reason. [2 marks]
- C2** 12 students have a mean mark of 64. Another 8 students have a mean mark of 74. Work out the mean mark of all 20 students. [2 marks]

Answer

- C3** A team scored 0 goals in 4 matches, 1 in 7, 2 in 6 and 3 in 3. Work out the mean goals per match. [2 marks]
- C4** Five numbers have a mean of 12. One number is removed and the other four have a mean of 10.5. Which number was removed? [2 marks]

Answer

Answer

- C5** The table shows the number of people in each car that passed a school. The mean number of people in a car is 2.2. Work out the value of x . [3 marks]
- C6** The table shows the masses, m , of 35 dogs at a rescue centre. Which class contains the median mass? [2 marks]

People in the car	Frequency
1	6
2	x
3	8
4	2

Mass, m (kg)	Frequency
$0 < m \leq 10$	5
$10 < m \leq 20$	9
$20 < m \leq 30$	12
$30 < m \leq 40$	6
$40 < m \leq 50$	3

Answer

Answer

D Exam-style questions

- D1** A table shows the value 1 fourteen times, 2 eleven times, 3 six times, 4 five times and 5 four times. Priya says, "The median is 3, because 3 is in the middle of 1 to 5." [2 marks]

Explain why Priya is wrong, and find the median.

D2 The table shows the times, t minutes, that 50 runners from club A took to run 5 km.

Time, t (min)	Frequency
$15 < t \leq 20$	6
$20 < t \leq 25$	14
$25 < t \leq 30$	18
$30 < t \leq 35$	12

(a) Write down the modal class. [1 mark]

Answer

(b) Work out an estimate of the mean time. [3 marks]

Answer

(c) The 40 runners from club B have an estimated mean time of 27.4 minutes. [2 marks]
Work out an estimate of the mean time of all 90 runners, to 1 decimal place.

Answer

(d) Explain why your answer to (b) is an estimate. [1 mark]

Total for D2: 7 marks

D3 Two shops deliver parcels. The delivery times, in days, of five parcels from each shop are: Shop P: 2, 3, 3, 4, 8 and Shop Q: 4, 4, 5, 5, 6. Compare the delivery times of the two shops. Use the median and the range. [4 marks]

E Extension

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

E1 Five whole numbers have a mean of 7, a median of 7 and a range of 6. The only mode is 7. Find the five numbers. [3 marks]

Answer

Extension hints

Cover these with paper. Uncover one at a time.

- E1

Hint 1

Write them in order as $a, b, 7, d, e$. What must they add up to?
- Hint 2

They add up to 35, and $e = a + 6$. The number 7 must appear more often than any other.
- Hint 3

With 7 three times: $a + 21 + (a + 6) = 35$, so $a = 4$ and the numbers are 4, 7, 7, 7, 10. With 7 only twice there is no answer.

How did it go?

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

- I can find the mode, median and mean from a frequency table.
- I can estimate the mean from grouped data.
- I can compare two sets of data and choose the average that fits them best.