

06 - Averages

Numerical Reasoning Test Preparation Question Pack

This document is part of a set of resources designed to help people prepare for numerical reasoning tests. However, they could also be used by anyone who wants to improve their maths skills, especially how to use a calculator to work with fractions, percentages, ratios and averages.

There are six topic areas covered in these documents (Calculator Skills; Numbers; Fractions; Percentages; Ratio and Proportion; and Averages). For each topic area there are two documents: one is a set of notes and worked examples, and the other is a question pack.

Each set of notes and each question pack is divided up into a number of skills. For each skill, read through the notes and examples and then try the questions for that skill from the question pack. I advise that you work through the skills in order, only moving onto the next one once you have mastered the current one (this is called *mastery learning*).

Questions

You may use a calculator.

The answers can be found at the end of this document.

Find the mode of a set of values.

- 1) What is the mode of the following values? 11, 44, 13, 87, 11, 13, 13, 29, 7
- 2) What is the mode of the following values? 105, -39, 17, -39, 53, 17, 2, 84, -39
- 3) What is the mode of the following values? Red, Blue, Red, Yellow, Green, Red, Green, Yellow

Find the median of a set of values.

- 1) What is the median of the following values? 43, 12, 7, 89, 104, 56, 14
- 2) What is the median of the following values? 5, 109, 28, 435, 67, 50, 93, 47, 35, 41
- 3) What is the median of the following values? 84, -32, 7, 30, -12, 18

Calculate the mean of a set of values.

- 1) What is the mean of the following values? 105, -39, 17, -39, 53, 17, 2, 84, -39
- 2) What is the mean of the following values? 43, 12, 7, 89, 104, 56, 14
- 3) What is the mean of the following values? 84, -32, 7, 30, -12, 18

Given the mean of a set of values and the number of values, calculate the total of all of the values.

- 1) A company has 11 employees. Their mean salary is £24,312. What is the total of all the employees' salaries?
- 2) Jean is growing brussel sprouts in her allotment. She has 8 brussel sprout stalks and the mean number of sprouts growing on a stalk is 32.5. How many brussel sprouts are growing in Jean's allotment?
- 3) Lucy has played 16 football matches this season. Her mean number of goals per match this season is 1.5625. How many goals has Lucy scored this season?

Given the mean of a set of values, and all but one of the values, calculate the missing value.

- 1) The financial year is divided into four quarters: Q1 to Q4. A company's profits for the first three quarters of the last financial year were as follows: Q1 = £1,235,000; Q2 = 1,673,000; Q3 = £1,596,000. If the mean profit across all four quarters was £1,471,750, what was the profit for Q4?
- 2) Tim has three children: Sammy, Alex and Jules. Sammy is 132cm tall and Alex is 184cm tall. If the mean height of the three children is 157cm, what is Jules' height?
- 3) Joe has 5 rose bushes in his garden. The mean number of flowers per rose bush is 7.6. One rose bush has 8 flowers, one has 11, one has 3, and one has 9. How many flowers does the final rose bush have?

Calculate a weighted mean.

- 1) Last week, Alan's Cafe had 342 customers in total from Monday to Friday, with a mean spend of £5.35, and 204 customers on the weekend, with a mean spend of £7.02. What was the mean spend of all the customers at Alan's Cafe last week?
- 2) In the summer, Sam took up running. In June, the mean distance Sam ran per day was 1.4km, in July it was 2.7km, and in August it was 3.1km. There were 30 days in June, 31 days in July, and 31 days in August. What was the mean distance Sam ran per day across all three months?
- 3) The students in a school are grouped into four houses: A, B, C and D. House A contains 29% of the students, House B contains 24% of the students, House C contains 21% of the students, and House D contains 26% of the students. All of the students were given a test. The mean scores for each house were: House A - 57, House B - 71, House C - 68, House D - 49. What was the mean score for all of the students in the school?

Given the mean of a set of values, the total number of values, the means of one or more subsets of the values, and the number of values in each subset, calculate the total and mean of the remaining values.

- 1) Gary has 285 phone contacts. The mean amount of time he has spent on the phone to each contact is 1.14 minutes. 63 of Gary's phone contacts are work contacts. The mean amount of time he has spent on the phone to each work contact is 3.55 minutes. What is the mean amount of time Gary has spent on the phone to each non-work contact?
- 2) A fruit bowl contains 22 pieces of fruit, with a mean mass of 113g. This includes 7 oranges with a mean mass of 135g, 4 bananas with a mean mass of 117g, and 5 apples with a mean mass of 103g. What is the mean mass of the remaining pieces of fruit?
- 3) On Monday, Janet's shoe shop sold 68 pairs of shoes with a mean price of £72.78. This included 45 pairs of trainers with a mean price of £85.60 and 14 pairs of smart shoes with a mean price of £43.20. What was the mean price of the other pairs of shoes sold?

Answers

Find the mode of a set of values.

1. 13
2. -39
3. Red

Find the median of a set of values.

1. 43
2. 48.5
3. 12.5

Calculate the mean of a set of values.

1. 17.9 (to 3 sf)
2. 46.4 (to 3 sf)
3. 15.8 (to 3 sf)

Given the mean of a set of values and the number of values, calculate the total of all of the values.

1. £267,432
2. 260
3. 25

Given the mean of a set of values, and all but one of the values, calculate the missing value.

1. £1,383,000
2. 155cm
3. 7

Calculate a weighted mean.

1. £5.97 (to the nearest penny)
2. 2.41km (to 3sf) Note: the full answer is 2.410869565.
3. 60.6 (to 3sf)

Given the mean of a set of values, the total number of values, the means of one or more subsets of the values, and the number of values in each subset, calculate the total and mean of the remaining values.

1. 0.456 minutes (to 3 sf)
2. 93g
3. £54.70 (to 3 sf)