



Core Mathematics

Pre-course work



Pre-course expectations

Success in Sixth Form is largely a function of the amount and quality of independent study you carry out; here's a chance to help you get the very best start to your course. We would like you to complete the work described below and hand it in to your teacher in your first lesson in September. If you have made a late change to your timetable, please complete this work within the first week of starting the course. The work should take you 2-3 hours.

Details of pre-course work

Percentages, Statistics and linear graphs all play a key part in some of the material covered in Core Mathematics. As such it is important that you have a good understanding of these concepts before the start of the course.

Complete the questions in the booklet. You need to bring your worked solutions to your first Core Maths lesson in September.

Resources to help you with this work

Your GCSE Maths revision guides and/or exercise books should be useful. You can also access :

MathsGenie: <https://www.mathsgenie.co.uk/gcse.html>

No login required. A combination of videos, worksheets and worked solutions are available.

MathsWatch: www.vle.mathswatch.com

Using your previous log in details (internal students only)



Stretch yourself

Tackle one (or more) of the problems from the website below.

http://furthermaths.org.uk/gcse_problem_solving Look for elegant and efficient solutions to the problems.

Working with Percentages

Question 1

Mike drank 60% of his glass of milk. Afterwards, 80ml of milk remained in the glass. What volume of milk was initially in the glass?

Question 2

My bargain settee cost me £240 in a sale offering 25% reductions on all items. How much did I save?

Question 3

The kettle in Keith's kitchen is 80% full. After 20% of the water in it has been poured out, there are 1152ml of water left. What volume of water does Keith's kitchen kettle hold when it is full?

Question 4

A shop advertised "Everything half price in our sale", but also now advertises that there is "An additional 15% off sale prices". Overall, this is equivalent to what reduction on the original prices?

Question 5

This year there were more than 800 entrants in the Kangaroo Hop race. Exactly 35% of the entrants were female and there were 252 more males than females. How many entrants were there in total?

Question 6

Alex, Hans and Stan saved up some money to buy a tent for a camping trip. Stan saved 60% of the price. Alex saved 40% of what was left of the price and Hans' share of the price was €30. What was the price of the tent?

Question 7

Enrico invests £500 in Bank A. The interest rate is 3% per annum. Freddie invests £400 in Bank B. After 6 years he has the same amount of money as Enrico. Calculate the interest rate for Bank B.

Question 8

A bouncy ball is dropped from a height of 15m. The maximum height after each bounce is 85% of the previous height. After how many bounces is the maximum height less than 2m?

Working with Averages

Question 1

The mean, median and mode of the numbers in the boxes below are the same. What is the missing number?

7	7	5	7	?
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Question 2

The six-member squad for the Ladybirds five-a-side team consists of a 2-spot ladybird, a 10-spot, a 14-spot, an 18-spot, a 24-spot and a pine ladybird (on the bench). The average number of spots for members of the squad is 12. How many spots has the pine ladybird?

Question 3

Karen was given a mark of 72 for Mayhematics. Her average mark Mayhematics and Mathemagics was 78. What was her mark for Mathemagics?

Question 4

It is well known that the Pobble has no toes, and that the three-toed sloth has 12 toes (3 on each of its 4 feet). A synchronised swimming team is made up of 7 Pobbles and 5 three-toed sloths. What is the mean number of toes per team member?

Question 5

The range of a list of integers is 20, and the median is 17. What is the smallest possible number of integers in the list?

Question 6

On four tests, each marked out of 100, my average was 85. What is the lowest mark I could have scored on any one test?

Question 7

Viola has been practising the long jump. At one point, the average distance she had jumped was 3.80 m. Her next jump was 3.99 m and that increased her average to 3.81 m. After the following jump, her average had become 3.82 m. How long was her final jump?

Question 8

When one number was removed from the set of positive integers from 1 to n , inclusive, the mean of the remaining numbers was 4.75. What number was eliminated?

Working with Graphs



