WELCOME TO CORE MATHS 2024-2026

Let the fun, toil and problem solving begin.

Context:

It is possible/likely that over the summer that some of the key areas of GCSE maths crucial to the sixth form courses will become very rusty or in fact may never have been fully understood in the first instance. What follows is a compulsory course which will make sure that the start of your Core Maths experience goes smoothly. Please make sure you master the techniques and not let them master you in September 2024.

Task Description:

Each section is a topic in maths which you will have studied at GCSE, and the understanding of which is considered important to Core Maths. To ensure you have the best possible experience studying Maths, you need to make sure you are fluent in these topics.

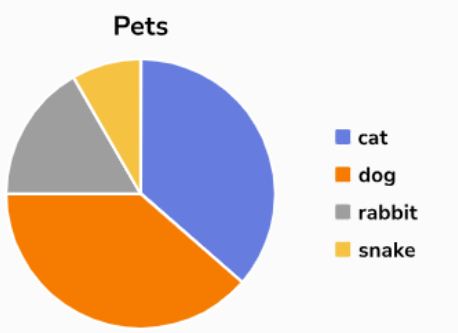
Each section has a set of questions for you to answer, finishing in a **Marked Question.** The other questions you will mark yourself using the answers provided, but the marked question will be marked by your teacher after collecting in these papers.

The papers will be collected by your teacher on the first week in the Sixth Form in September 2024. We will be looking for 100% completion of all questions, and we will be marking the marked question in each section, so make sure to include all working with that question.

In preparation for you're A-Levels it is important you have the correct calculator for the course. The required calculators are any of the following: the Casio fx-991EX or Casio fx-991CW. The 991CW can be bought through Scopay for £20.99 (this is a special price for Edexcel customers, only available through schools).

Good luck.

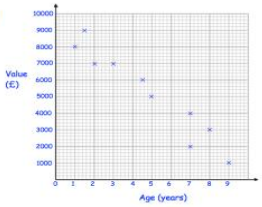
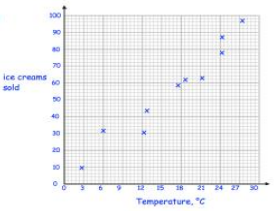
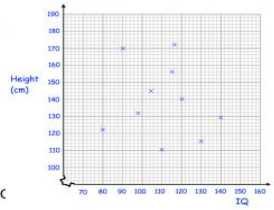
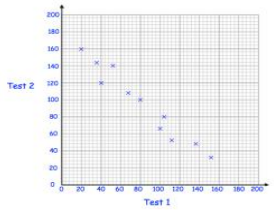
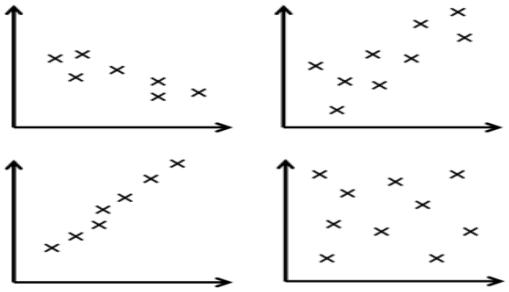
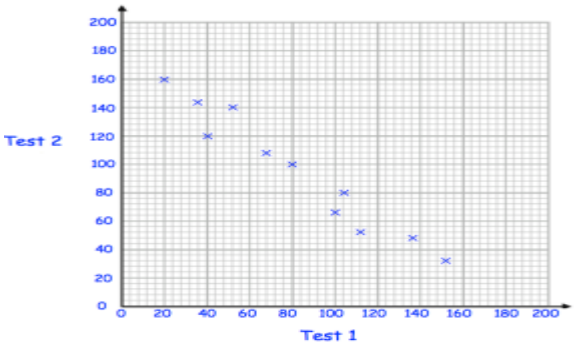
The Maths Faculty

Subject	TYPES OF DATA
Context	Throughout the course, you will need to see that data is classified to make it easier to process. You will explore the different kinds of data, and how it can be collected in the form of measurements or observations of variables. You will also see how different kinds of data are represented using a variety of diagrams.
Securing	Match these types of data to their meanings Primary Data — Data other people have collected Quantitative Data — Data that is described in words (eg colours) Discrete Data — Data you collect yourself Qualitative Data — Data which takes any numerical value ie. decimals Secondary Data — Data that is in numbers Continuous Data — Data that takes certain numerical values (eg. Shoe sizes)
Processing	The PE staff of a school were recording the times and distances in running and throwing events at the school sports day. Which of the following best describes the type of data collected: **Primary Secondary Qualitative Continuous**
Exploring	Which best describes the data in the pie chart? 
Reviewing	**Marked Question**: Darren is researching the average shoe size in different parts of the world. He finds a few websites with the data he requires. What describes the data he will be collecting? (2 marks)

Subject	PERCENTAGES
Context	In Core Maths, we often work with percentages. Being able to fluently manipulate percentages is essential to solving a variety of financial problems that will be encountered in the course. Simple interest, compound interest, mortgages, taxation, AER and APR are just a few topics that will require confidence with the use of percentages!
Securing	Question 1: Write down the multipliers that are equivalent to the following percentages (a) 50% (b) 80% (c) 10% (d) 25% (e) 45% (f) 95% (g) 5% (h) 3% (i) 7% (j) 36% (k) 71% (l) 44% (m) 0% (n) 175% (o) 104% (p) 160% (q) 7.5% (r) 1.2% (s) 0.8% (t) 0.01% Question 2: Work out (a) 20% of 90cm (b) 70% of 3km (c) 15% of $4500 (d) 57% of £58650 (e) 3.9% of 40cm (f) 106% of 8km
Processing	Question 3: Write down the multipliers that are used to calculate a: (a) 4% increase (b) 15% increase (c) 30% increase (d) 62% increase Question 4: Work out each of the following (a) 60ml increased by 70% (b) £940 increased by 8% (c) 143g increased by 19% Question 5: Write down the multipliers that are used to calculate a: (a) 2% decrease (b) 8% decrease (c) 12% decrease (d) 15% decrease Question 6: Work out each of the following (a) 80ml decreased by 4% (b) £480 decreased by 13% (c) 143g decreased by 40%
Exploring	Sam invests £1800 in the bank for four years. It earns compound interest of 4% each year. Calculate the total amount Sam has in the bank at the end of four years. 
Reviewing	**Marked Question:** An adult ticket for the cinema costs £13.40 A child ticket is half the price of an adult ticket. Mr and Mrs Henderson and their six children go to see a movie. Mrs Henderson has a voucher for 18% off. Work out how much Mrs Henderson pays for the tickets. (4 marks)

Subject	ROUNDING AND ESTIMATING
Context	During Core Maths, you will recognise that mathematics in the real world does not come as neat little questions, but as larger challenges that are solved by making appropriate assumptions. The ability to round and estimate effectively is therefore essential in dealing with these types of problems.
Securing	(a) Write 5725 to the nearest 100. (b) Write 83.07718 correct to two decimal places. (c) Write 6.35 correct to 1 decimal place. (d) Write 129.34952 correct to 1 decimal place. (e) Write 65.047 correct to 2 decimal places.
Processing	(a) Round 41982 to one significant figure (b) Round 8812 to one significant figure (c) Round 0.0761 to one significant figure (d) Round 9.99 to one significant figure
Exploring	Question 4: Work out estimates to the following (a) $\frac{291+602}{102}$ (b) $\frac{8019}{711-508}$ (c) $\frac{7.14+16.88}{10.96-4.85}$

Reviewing	**Marked Question:** In a cinema there are 28 rows and in each row there are 22 seats. Each ticket costs £8.10 Work out an estimate for the total income from the ticket sales. (3 marks)

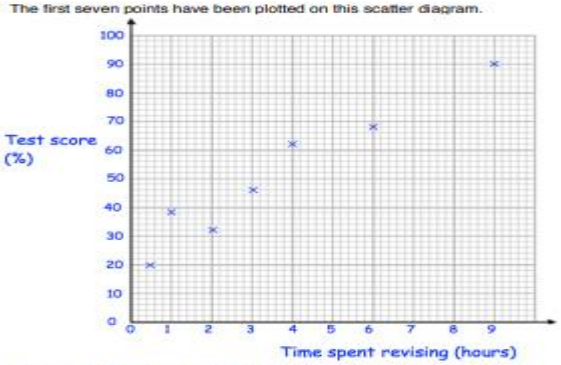
Subject	SCATTER GRAPHS
Context	In GCSE you have learnt to plot and draw scatter graphs. In Core Maths, you will build on these skills. You will recognize when pairs of data are uncorrelated and correlated, and understand the idea of an outlier. You will fully appreciate the correlation does not necessarily imply causation. It is essential you are fluent with all GCSE skills related to Scatter Graphs.
Securing	Question 2: What type of correlation does each scatter graph show below (a)  (b)  (c)  (d)  © CC
Processing	**Line of Best Fit Task** Draw a line of best fit, where possible, for each of the following scatter graphs. 
Exploring	Some rugby players take two tests, one measuring speed and the other measuring strength. Each test is marked out of 200. The scatter graph compares the results.  (a) What type of correlation does this scatter graph show? ..... (b) Draw a line of best fit on the scatter graph. Brian scores 40 in Test 2. (c) Estimate his score in Test 1. .....

Reviewing	**Marked Question:**

3. The table shows the time spent revising and the test scores of ten students.

Time spent revising (hours)	9	0.5	1	4	6	2	3	7	5	8
Test result (%)	90	20	38	62	68	32	46	70	60	86

The first seven points have been plotted on this scatter diagram.



(a) Complete the scatter diagram. **(1)**

(b) Describe the relationship shown in the scatter diagram.

.....

..... **(1)**

(c) Draw a line of best fit on your scatter diagram. **(1)**

(d) Another student has spent 4.5 hours revising.
Use your line of best fit to estimate their test result.

..... % **(1)**