Maths at Key Stage 4

Year 9 and Year 11

‘Failing to prepare is preparing to fail…’

Students should be fully prepared every lesson at key stage 4.

Every lesson students should have a pen, pencil, ruler and calculator.

When we do constructions and use our compass/protractors we do let students know, however this could easily still be kept in their school bag.

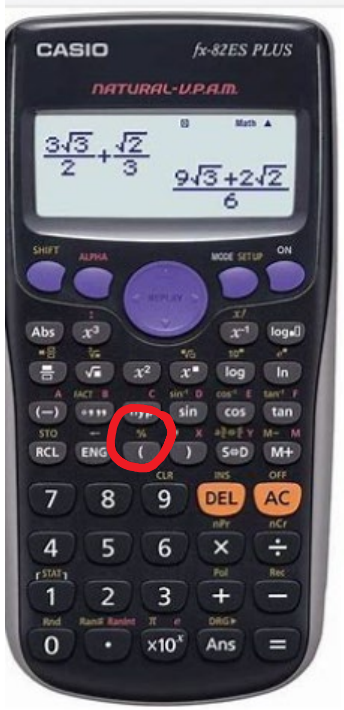
Calculators

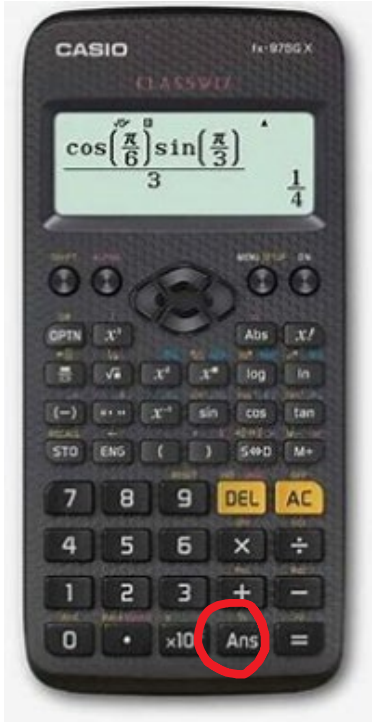
Below are images of calculators we see and use in school. I have circled the % button on each calculator.

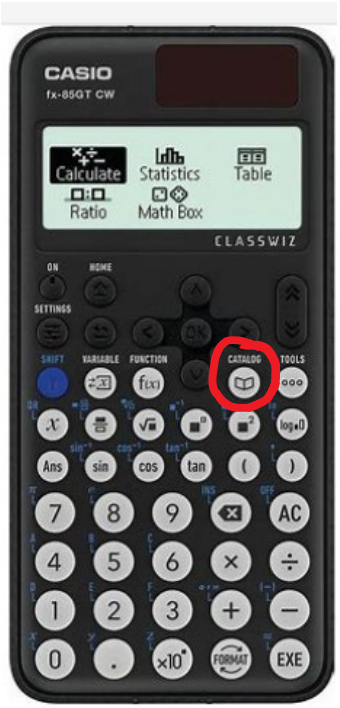
Students currently without their own calculator are at a disadvantage as they will not be confident with where to find all the different functions we use.

We cannot stress enough how important it is for students to come to school fully equipped and learn their own calculator.

(£10 in resources)







What is available to my child?

In year 9 and 10, students are provided with revision lists based on the current topics they are learning. These look like the ones below and are different to the ones we see at KS3 (Y7 and 8). They have 3 assessments throughout year 9 and 10, one each term.

1: Number: Basic number	• negative numbers in real life	Video	Worksheet	Answers
	• compare and order positive and negative numbers.	Video	Worksheet	Answers
	• use the four rules of arithmetic with integers and decimals.	Video	Worksheet	Answers
	• work out the answers to problems with more than one mathematical operation.	Video	Worksheet	Answers
2: Geometry and measures: Measures and scale drawings	• convert from one metric unit to another	Video	Worksheet	Answers
	• use approximate conversion factors to change between imperial units and metric units.	Video	Worksheet	Answers
	• use a scale drawing to make estimates.	Video	Worksheet	Answers
	• draw nets of some 3D shapes	Video	Worksheet	Answers
	• plans of 3D shapes and isometric drawings	Video	Worksheet	Answers
3: Statistics: Charts, tables and averages	• use tally charts and frequency tables to collect and represent data	Video	Worksheet	Answers
	• draw pictograms to represent statistical data	Video	Worksheet	Answers
	• draw bar charts and vertical line charts to represent statistical data.	Video	Worksheet	Answers
	• work out the mode, median, mean and range of small sets of data	Video	Worksheet	Answers

What is available to my child?

At the end of year 10, and throughout year 11 students receive a full list of topics, also referred to as a PLC (personal learning checklist). This is a combination of ALL topics they have covered throughout the whole of KS4.

	Learning objectives	R	A	G	Video number
2	**1: Number: Basic number**				
3	Use a number line to represent negative numbers				
4	Use inequalities with negative numbers				176
5	Compare and order positive and negative numbers.				208
6	Use the four rules of arithmetic with integers and decimals.				90
7					91
8					92
9					93
10					94
11	Work out the answers to problems with more than one mathematical operation.				211
12	**2: Geometry and measures: Measures and scale drawings**				

What is available to my child?

How should revision lists be used?

- Students should red/amber/green the topics in the first instance highlighting areas they need to revise.
- Start with the amber topics. These are topics they can remember but are not confident with.
- Red topics – it is possible these haven’t been covered yet. We usually finish teaching the course in January (depending on the class). If they have been taught it but highlight it as a ‘red’ topic, they should speak to their teacher and see if it will be revised in lessons.

What is available to my child?

PLC's can be overwhelming, so I have created a simplified version as well as an interactive topic list (with links to videos/worksheets in grade order).

Basic	Core	Stretch
UNIT1: NUMBER		
Arithmetic	Estimating	Index laws
Rounding	Factors, multiples, primes	
UNIT 2: ALGEBRA		
Collecting like terms	Expanding single brackets	Expanding and simplifying
Substitution	Factorising linear expressions	Factorising higher powers into a single bracket
UNIT3: GRAPHS, CHARTS AND TABLES		
Tally charts	Two-way tables	Line of best fit/estimations
Pictograms	Pie charts	
	Scatter graphs	
UNIT 4: FRACTIONS AND PERCENTAGES		
Simplifying fractions	FDP	% increase/decrease
Key FDP conversions	Arithmetic with fractions	Reverse %'s
Multiple of 10%	%'s of amounts	
UNIT 5: EQUATIONS, INEQUALITIES AND SEQUENCES		

Year 11 Foundation Revision Topic List

	Topic	Grade			
Number	Addition and Subtraction	1	Video	Questions	Solutions
	Multiplication and division	1	Video	Questions	Solutions
	Time	1	Video	Questions	Solutions
	Simplifying and ordering fractions	1	Video	Questions	Solutions
	Place value	1	Video	Questions	Solutions
	Rounding	1	Video	Questions	Solutions
	Negative numbers	1	Video	Questions	Solutions
	Powers and roots	1	Video	Questions	Solutions
	BIDMAS	1	Video	Questions	Solutions
	Factors and multiples	1	Video	Questions	Solutions
	Calculations (worded questions)	2	Video	Questions	Solutions
	Fractions of an amount	2	Video	Questions	Solutions
	Fractions, decimals and percentages	2	Video	Questions	Solutions
	Error intervals	3	Video	Questions	Solutions
	Fractions	3	Video	Questions	Solutions
	Estimating	3	Video	Questions	Solutions
	Simplifying ratio	3	Video	Questions	Solutions
	Ratio questions	3	Video	Questions	Solutions
	Proportion (recipe questions)	3	Video	Questions	Solutions
	Percentages	3	Video	Questions	Solutions
	Percentage change	3	Video	Questions	Solutions
	Exchange rates	3	Video	Questions	Solutions
	Conversions and units	3	Video	Questions	Solutions
	Scale drawings	3	Video	Questions	Solutions
	Best buy	3	Video	Questions	Solutions
	Compound interest	4	Video	Questions	Solutions
	Indices (powers)	4	Video	Questions	Solutions
	Prime factors, HCF, LCM	4	Video	Questions	Solutions
	Ratio problems	5	Video	Questions	Solutions
	Direct and inverse proportion	5	Video	Questions	Solutions
	Reverse percentages	5	Video	Questions	Solutions
	Standard form	5	Video	Questions	Solutions
	Speed and density	5	Video	Questions	Solutions

What to revise?

Topic Area	Foundation Tier (%)	Higher Tier (%)
Number	25	15
Algebra	20	30
Ratio	25	20
Geometry	15	20
Probability and statistics (combined)	15	15

My child wants a grade ‘6’ what should they do?

It is very common for students to revise topics based on their target grade.

- To achieve a grade ‘6’ students need to also be confident on grade 1-5 topics.
- The first few pages on the papers are designed to be easier but many students drop ‘easy’ marks here as they don’t think they should revise topics such as long multiplication, division, FDP conversions as they don’t reflect their target grade.
- Revising only grade ‘6’ topics will not guarantee a grade 6.

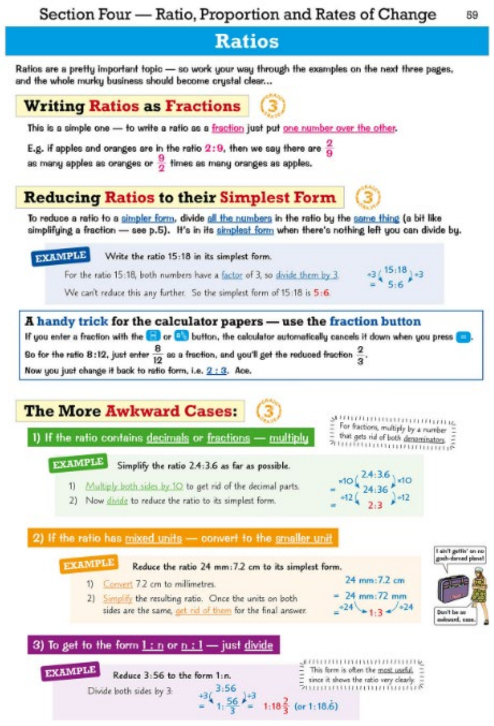
Year 9				
Autumn	In class assessment	Unit 1, 2 and 3	40 mins	Non-calc
	In class assessment		40 mins	Calc
Spring	In class assessment	Unit 4, 5, 6, 7 and 8	40 mins	Non-calc
	In class assessment		40 mins	Calc
Summer	In class assessment	Unit 9 and 10	40 mins	Non-calc
	In class assessment		40 mins	Calc
Year 10				
Autumn	In class assessment	Unit 11 and 12	40 mins	Non-calc
	In class assessment		40 mins	Calc
Spring	In class assessment	Unit 13, 14 and 15	40 mins	Non-calc
	In class assessment		40 mins	Calc
Summer	PPE (main hall)	Cut down GCSE paper	1hour 15mins	Non-calc
	PPE (main hall)	Cut down GCSE paper	1hour 15 mins	Calc
Year 11				
Oct half term	PPE (main hall)	Full GCSE paper	1hour 30mins	Non-calc
	PPE (main hall)	Full GCSE paper	1hour 30mins	Calc
	PPE (main hall)	Full GCSE paper	1hour 30mins	Calc
February half term	PPE (main hall)	Full GCSE paper	1hour 30mins	Non-calc
	PPE (main hall)	Full GCSE paper	1hour 30mins	Calc
	PPE (main hall)	Full GCSE paper	1hour 30mins	Calc
Exams start shortly after the Easter holidays.				

Exam schedule at KS4

- Any topic can be tested in any paper. Topics are not limited to paper 1, 2 or 3 at GCSE.

What is available to my child?

- Why don’t we offer revision guides?
- Which websites are useful?
- Where can I get flash cards?
- Where can we find past papers?
- Tutors – ask your child’s class teacher for topics yet to be covered or key topics areas to revise.
- Year 9 – 3-year textbook is available on amazon for £17.99



Section Four — Ratio, Proportion and Rates of Change 59

Ratios

Ratios are a pretty important topic — so work your way through the examples on the next three pages, and the whole murky business should become crystal clear...

Writing Ratios as Fractions (3)

This is a simple one — to write a ratio as a fraction just put one number over the other.

E.g. if apples and oranges are in the ratio 2:9, then we say there are $\frac{2}{9}$ as many apples as oranges or $\frac{9}{2}$ times as many oranges as apples.

Reducing Ratios to their Simplest Form (3)

To reduce a ratio to a simpler form, divide all the numbers in the ratio by the same thing (a bit like simplifying a fraction — see p.5). It's in its simplest form when there's nothing left you can divide by.

EXAMPLE Write the ratio 15:18 in its simplest form.

For the ratio 15:18, both numbers have a factor of 3, so divide them by 3.

We can't reduce this any further. So the simplest form of 15:18 is 5:6

÷3 15:18 ÷3 = 5:6

A handy trick for the calculator papers — use the fraction button

If you enter a fraction with the [fraction] or [fraction] button, the calculator automatically cancels it down when you press [=].

So for the ratio 8:12, just enter $\frac{8}{12}$ as a fraction, and you'll get the reduced fraction $\frac{2}{3}$.

Now you just change it back to ratio form, i.e. 2 : 3. Ace.

The More Awkward Cases: (3)

1) If the ratio contains decimals or fractions — multiply

For fractions, multiply by a number that gets rid of both denominators.

EXAMPLE Simplify the ratio 2.4:3.6 as far as possible.

1) Multiply both sides by 10 to get rid of the decimal parts.
2) Now divide to reduce the ratio to its simplest form.

×10 2.4:3.6 ×10 = 24:36 ÷12 = 2:3 ÷12

2) If the ratio has mixed units — convert to the smaller unit

EXAMPLE Reduce the ratio 24 mm:7.2 cm to its simplest form.

1) Convert 7.2 cm to millimetres.
2) Simplify the resulting ratio. Once the units on both sides are the same, get rid of them for the final answer.

24 mm:7.2 cm = 24 mm:72 mm = 1:3 (÷24)

I ain't gettin' on no gosh-darned plane!

Don't be so awkward, case.

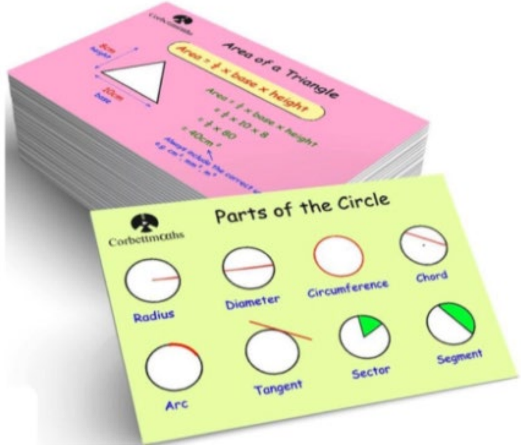
3) To get to the form 1 : n or n : 1 — just divide

EXAMPLE Reduce 3:56 to the form 1:n.

Divide both sides by 3:

÷3 3:56 ÷3 = 1: $\frac{56}{3}$ = 1:18$\frac{2}{3}$ (or 1:18.$\dot{6}$)

This form is often the most useful, since it shows the ratio very clearly.



Grades

Year 9 and 10 grades are based on the percentage of questions they get correct and the difficulty of the papers. At the end of year 10, they sit their first PPE (mock), and we can sometimes see a dip in their grade. This is common as it is the first time they sit a longer paper on all topics they have covered. Between the October PPE's and the summer exams, students make on average a grade's progress, some 2 grades, some stay on their current grade.

Old grades	New grades
A*	9
	8
A	7
B	6
	5 STRONG PASS
C	4 STANDARD PASS
D	3
E	2
F	1
G	
U	U

Tier

- Year 9 – set 1 and 2 do higher, set 3, 4 and 5 do foundation
- Year 10 – set 1-4 do higher, set 5 is an overlap group of foundation with some higher topics, set 6-10 do foundation.
- Year 11 – set 1-5 higher, set 6-11 foundation.

Students at a grade 4 will be monitored for progress if they currently do higher and a decision on tier will be made closer to their GCSE's.

Summer 2025

15 students were achieving a grade 4 in March were spoken to regarding their tier. After moving to foundation 12 went up to a grade 5 and 3 stayed at a grade 4.

3 other students wanted to stay on higher and achieved a 4 or lower (from set 5). None went to a 5 or 6 and some will now need to resit (after achieving a grade 3).

When students receive their results, they only get a grade, NOT a tier.

We want them to get the best possible grade so please trust our judgement regarding tiers.

What can I do to help?

- Encourage, support, praise

- Quiz them using flash cards or the first double page of exam papers.
- Support them in finding the resources they need, time them and help go through answers.
- Don’t talk about school/subjects in a negative manner. They should take pride in their education, and we should be supportive of this.
- Help them create a realistic revision timetable and be specific about what should be learnt in each slot. E.g. maths-probability.

How much is a suitable amount of revision?

- Following PPEs in October/November, students will be able to identify topics they would class as amber/red. Students should start revising these using topic list/websites.
- One topic a week plus one past paper (given as homework) is a good starting point and will mean they cover lots of topics/papers by the summer exams.
- Revision week is coming up; we also have one in year 10. students have practiced making flashcards, using websites, making notes etc. so should know which techniques work well for them.

	Paper 1	Paper 2	Paper 3	Total	Grade
Jun-24					
Nov-23					
Jun-23					
Nov-22					
Jun-22					

Past paper trackers work well!!