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# Maths

Foundation revision session

# Exams

Foundation Tier – 3 x 90 minute papers

P2 is a non calculator paper

P1 and P3 are calculator papers

Paper 1 (Foundation)	1 h 30 min	Fri	19 May am
Paper 2 (Foundation)	1 h 30 min	Wed	7 June am
Paper 3 (Foundation)	1 h 30 min	Wed	14 June am



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# Changes for 2023...

Unlike last year, schools will NOT be provided skills lists/content lists for each paper

Formula sheet still in place



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## Perimeter, area and volume

Where  $a$  and  $b$  are the lengths of the parallel sides and  $h$  is their perpendicular separation:

$$\text{Area of a trapezium} = \frac{1}{2} (a + b) h$$

Volume of a prism = area of cross section  $\times$  length

Where  $r$  is the radius and  $d$  is the diameter:

$$\text{Circumference of a circle} = 2\pi r = \pi d$$

$$\text{Area of a circle} = \pi r^2$$

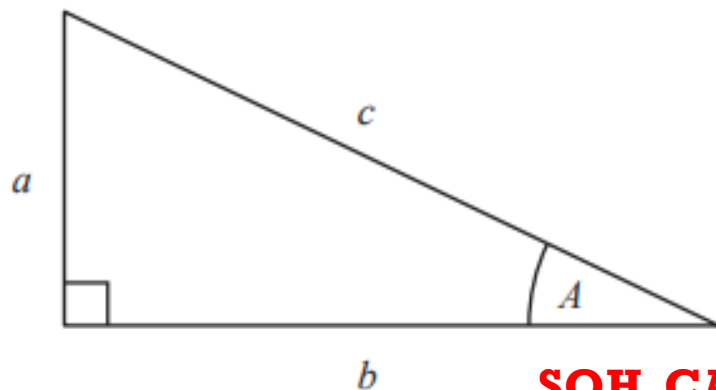


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## Pythagoras' Theorem and Trigonometry



**SOH CAH TOA**

In any right-angled triangle where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:


$$a^2 + b^2 = c^2$$

In any right-angled triangle  $ABC$  where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

## Compound Interest

Where  $P$  is the principal amount,  $r$  is the interest rate over a given period and  $n$  is number of times that the interest is compounded:


$$\text{Total accrued} = P \left( 1 + \frac{r}{100} \right)^n$$

## Probability

Where  $P(A)$  is the probability of outcome  $A$  and  $P(B)$  is the probability of outcome  $B$ :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

For example, increasing by 3% for 4 years:

$$100\% + 3\% = 103\% = 1.03$$

So "initial amount"  $\times 1.03^4$



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Title	Formula
Area of a triangle	$\frac{(b \times h)}{2}$
Area of a Trapezium	$\frac{1}{2}(a + b) \times h$
Area of a parallelogram	$b \times h$
Area of a circle	$\pi \times r^2$
Circumference of a circle	$\pi \times d$
Density	$\frac{mass}{volume}$
Pressure	$\frac{force}{area}$
Speed	$\frac{distance}{time}$

Pythagoras' Theorem	$a^2 + b^2 = c^2$
Sin (x)	$\frac{opp}{hyp}$
Cos (x)	$\frac{adj}{hyp}$
Tan (x)	$\frac{opp}{adj}$
Equation of a straight line	$y = mx + c$
Gradient	$m = \frac{rise}{run}$
y - intercept	+ c
Volume	Area of the cross-section x length
Number of sides	$\frac{360}{exterior\ angle}$

Highlighted = given on the formula sheet



# Maths revision

What do I need to **KNOW** – recall of facts and rules - LCWC

- Angle rules
- Laws of indices
- Speed, density, pressure
- Area of a triangle
- Convert from a decimal to a percentage



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# Maths revision

What do I need to be able to do – core **SKILLS** for each topic

- Expand double brackets
- Convert between FDP
- Simplify powers
- Solve simultaneous equations
- Convert between units of measure

Multiply out and simplify.

$$(x + 5)(x - 2)$$

Write  $\frac{7}{20}$  as a decimal.

Write  $3 \times 3 \times 3 \times 3$  as a power of 3.

Solve the simultaneous equations.

$$\begin{aligned} 2x + 3y &= 10 \\ 3x + 5y &= 17 \end{aligned}$$

Write 1.52 litres in millilitres.





# Maths revision

When do I need to **USE** each skill – **APPLICATION** to exam questions

Charlie and Jasmine share cartons of apple juice.

Charlie drinks  $\frac{1}{3}$  of a carton every day.

Jasmine drinks  $\frac{2}{5}$  of a carton every day.

Any apple juice left in a carton at the end of the day is used the following day.

The cost of a carton is 70p.

Charlie and Jasmine buy just enough cartons to last them for 10 days.

How much do they spend in total for these cartons?  
Give your answer in £.  
Show your working.



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## Lessons

- Key skills sheets: targeted skills based on your class needs – this is the SKILLS part of your revision
- Exam style practise: APPLICATION part of your revision with answers
- Exam papers with full solutions: further APPLICATION. These will be used to keep your teacher informed with what you can and can't do

## Outside of lessons

- Revision sessions after school
- Revision tasks in form time
- Exam packs with worked solutions
- Sparx and video tutorials online
- HW exam paper each week



# Mathematics Y11 Foundation Tier plan: Feb onwards

Week beginning	Lesson Topic	Retrieval Topic	Papers	Weekly Intervention
7/2/22	Area and circumference of circle and rectilinear shapes, word formulae,	Place value	AQA Nov 2017 p3 C	Ratio
14/2/22	Types of whole number including prime factors, order FDP, solve inequalities, frequency trees	Convert FDP 75/76	OCR Summer 2018 P2 NC	Standard form
21/2/22	Half Term			
28/2/22	Constructions, bearings	Multiply out brackets 161/163	OCR Summer 2018 P1 C	Pie charts/bar charts etc
7/3/22	MOCK WEEK			Averages
14/3/22	MOCK WEEK			Bounds
21/3/22	Algebra: expressions, solve equations and simultaneous equations (as dictated by mock)	Fractions 66-70	OCR Summer 2018 P3 C	Probability
28/3/22	Number: calculations with different types of number (non-calculator)	Simple Percentages 85/87	AQA Summer 2018 P1 NC	Powers and roots
4/4/22	Geometry: Trigonometry, volume, surface area etc.	Name geometrical objects 829/592	AQA Summer 2018 P2 C	Forming expressions and equations
11/4/22	Easter Holidays			
18/4/22				
25/04/22	Statistics: Probability, averages, scatter graphs, misleading graphs	Transformations 643/648/640	OCR Summer 2019 P1 C	Solve linear and quadratic equations



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Week beginning	Lesson Topic	Retrieval Topic	Papers	Weekly Intervention
13/3/22	<i>Review papers and EBI tasks</i>			
20/3/22	Averages from Frequency Tables Reverse Percentages		OCR November 2019 Paper 2	
27/3/22	Solving by Factorising Venn Diagrams		OCR November 2019 Paper 3	
03/4/22 10/4/22	<b>Easter break</b>		OCR November 2020	
17/4/22	Shapes of Graphs Compound Interest	Decided from weekly papers	OCR November 2021 Paper 1	Loci and Constructions
24/4/22	Calculating Percentage Change Calculator percentages	Decided from weekly papers	OCR November 2021 Paper 2	Functional Skills – big questions
01/05/22	Solving Quadratics Simultaneous Equations	Decided from weekly papers	OCR November 2021 Paper 3	Algebra
8/5/22		Decided from weekly papers		Graphs
15/5/22	Paper 1: Friday 20 <sup>th</sup> May @ 9am	<i>Paper 1 Skills</i>		Angles
22/5/22				



Step 1	Step 2	Step 3	Step 4	Step 5
Know your key formulae and facts	Learn each topic	Topic exam-style questions	Practice papers and mixing topics	Additional support
Look/cover/write/check or Flash cards	Revise and practise key topics on Hegarty Maths (or from a revision guide with practise questions)	Complete exam pack on that topic (see POD) to make sure you are 100% with the exam style	Practice lots of past papers so you can jump between topics, recognise key instructions and pick up marks!	Attend <i>topic of the week</i> sessions  Tuesday Lunch and after school
At least 10mins every week – carefully check your answers – no mistakes!	Write your notes clearly with diagrams if they help.  Try some questions...  Show your working clearly.  Check your answers and keep trying until you've cracked it!	Complete pack of exam questions for the topic...  Check answers q by q – where can you pick up marks?  Try more questions and check as you go.	<p><b>IN CLASS: EVERY THURSDAY</b></p> <ol style="list-style-type: none"> <li>1. Try to complete as many of the questions as you can – try to pick up at least one mark on <b>every</b> question</li> <li>2. Use the time carefully – work by yourself and see what you can do yourself in the time</li> <li>3. Listen and watch the answers carefully</li> <li>4. Write your corrections in carefully and make sure you understand each line.</li> </ol> <p><b>AT HOME: EVERY WEEK</b></p> <ol style="list-style-type: none"> <li>1. Try to complete as many of the questions as you can – try to pick up at least one mark on <b>every</b> question</li> <li>2. Use your notes/revision guide to give you a prompt</li> <li>3. Get help with questions you don't understand</li> <li>4. Check answers carefully – watch the video solutions/read through solutions on Teams when you need more than a quick fix.</li> <li>5. Write your corrections in carefully and make sure you understand each line.</li> <li>6. Hand in your effort each Friday and check any feedback</li> </ol>	<p>You will be given a “core skills” 5 quick questions on the topic of the week.</p> <p>Attempt the questions.</p> <p>The teacher will show you how to complete the skill.</p> <p>Write the full corrections out for each skill – these will be useful for further revision.</p> <p>Attempt some more questions from POD (see step 3) and in the after school session</p> <p><b>Keep your skills sharp with Key Skills sheets</b></p>



Paper 1	Paper 2	Paper 3	Total and grade	Marks from the next grade

Paper 1F - Calculator				
Qu	Topic	Skill	/ Total	Revised?
1	Geometry	Identify an octagon, Properties of a cube	2	
2	Statistics	Find mode, range	3	
3	Geometry	Corresponding angles, on a line	2	
4	Number	Number problem	2	
5	Statistics	Misleading graph	2	
6	Number	Identify a cube number, prime number, rounding	3	
7	Algebra	Simplify an algebraic expression, factorise expressions	2	
8	Ratio and prop.	Order fractions, decimals and percentages	2	
9	Number	Number problem involving fractions	3	
10	Number	Order of operations	2	
11	Probability	Complete a frequency tree, interpret	6	
12	Geometry	Area of a composite shape	4	
13	Number	Number problem involving money	8	
14	Algebra	Inverse function, Function machine problem involving time	7	

Self-Review sheets will be completed in lesson following the mock completion

# Places to go for independent study

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

This link takes you to packs of skills, based on the level of challenge. They are split by grade, but for the foundation course, all up to and including grade 5 are appropriate. Full solutions are here too!



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# Places to go for independent study

<https://www.mathsgenie.co.uk/OCRpapers.html>

Past OCR exam papers with full written solutions.  
Useful if you are off ill or simply want to practise more exam papers rather than specific topics



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# Work on your topics



[Fractions](#)

[Solutions](#)

[Percentages](#)

[Solutions](#)

[FDP](#)

[Solutions](#)

[Ratio](#)

[Solutions](#)

[Speed](#)

[Solutions](#)

[Density](#)

[Solutions](#)

[Polygons](#)

[Solutions](#)

[Parallel lines](#)

[Solutions](#)

Topic	Title	Know. Org.	64 content points	Sparx Tasks	E
1	Factors and Multiples		1. Written calculations: non calculator +, -, X, ÷	U293, U868	
			2. Negative numbers;	U742, U548	
			3. Prime factor decomposition;	U739	
			4. HCF and LCM from Venn diagrams	U250	
			5. Rounding and approximations	U298, U731, U965	
2	Indices and Standard Form		6. Indices: positive, negative, fractional, negative fractions, reciprocals	U694, U985, U772	
			7. Standard form;	U264, U290	
3	Expressions		8. Simplifying expressions;	U105, U662	
			9. Expanding and factorise single brackets;	U179, U365	
			10. Expanding and factorise 2 brackets: incl. difference of two squares	U768, U606, U178, U963	
4	Equations		11. Form and solve linear equations;	U325, U870, U599	
			12. Inequalities: number lines, solving linear, double sided	U738, U145, U337	
			13. Change the subject: single and where subject occurs twice	U556	
5	Charts and Averages		14. Sampling: random, systematic and stratified	U162	
			15. Bar and Pie charts	U557, U508, U172	
			16. Scatter charts: lines of best fit, interpretations and extrapolations	U277, U128	
			17. Averages from tables;	U569, U877	
			18. Average from lists;	U854, U717	
6	Area and Volume		19. Reverse means;	U291, U717	
			20. Area: triangle, parallelogram, trapezium, circle, non-right-angled triangle	U934, U575, U904	
			21. Volume of prisms	U174	
			22. Surface area of prisms	U259	
7	Fractions, Decimals and Percentages		23. Fractions: add, subtract, multiply and divide	U736, U475, U544	
			24. Find fractions of an amount	U874	
			25. Find percentages of an amount	U554, U349	
			26. Percentage change, compound interest and depreciation	U671, U278, U332	
			27. Reverse percentages	U286	
8	Ratio		28. FDP conversions	U594, U550, U689	
			29. Splitting into a ratio problems;	U577, U595, U921	
			30. Speed, density, pressure;	U151, U910, U527	
9	Shapes and Angles		31. Properties of quadrilaterals;	U121, U719	
			32. Interior angles sums of polygons; using exterior angles to find sides	U329, U427	
			33. Angles about a point, on a straight line and in a triangle;	U655	



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