

**11+**  
**Vocab**

*Maths series*

**11+ MATHS**

**Formula sheets  
& Syllabus**

**FREE**

PDF DOCUMENT ONLY

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## Foreword

First of all, thanks to all the parents for the support shown to our small business [www.elevenplusvocab.com](http://www.elevenplusvocab.com). Your support and kindness are appreciated and encourages us to work harder to produce more quality resources. As our resources are PDF format, all savings from printing costs is passed back straight to you by keeping the product cost as low as possible! Our motto is to make quality 11+ resources available at an affordable price that adds value to your 11+ preparation. A number of hours and hard work have gone into each book with multiple reviews and drafts before one is finalised for publishing, so we hope it meets and even exceeds your expectation. Keep checking our website for new resources (and revised editions) that are added regularly.

A number of parents requested that I write a formula sheet for 11+ Maths. As such, since time immemorial, these sheets have existed in various 11+ books. As I went through my journey of 11+ preparations, I collated a few of these. Whilst I make my best effort to not miss out something, there is always bound to be something that will fall through the net. If you spot something missing, please do email me on [info@elevenplusvocab.com](mailto:info@elevenplusvocab.com) and I will get it added here.

We welcome all feedback to keep improving our offering. Please email any feedback (good or not so good) to [info@elevenplusvocab.com](mailto:info@elevenplusvocab.com).

We wish you all the very best for your 11+ preparation.



Girish Chaudhary  
MBA, BEng

This document is still a work in progress and I will continue to update this from time to time.

Like all my other digital books, once you have purchased it (this one is free) then subsequent updates are automatically sent out to you as and when I make updates. For example, the SPAG Book 1 has been updated thrice and those who purchased the first version would have got subsequent updates free.

### Last update details:

Version	Date	Update notes
5	01 Jan 2025	Formulae sheets: Added the Nth term formula for constant difference sequence

## Syllabus

Syllabus for 11+ Exams has probably been blown out of proportion in the recent years, and the market for 11+ preparations has become bigger than it needs to be. It is normal for parents to feel anxious of under-preparing or fear of missing out on some preparation which may be vital. The multitudes of Practice Papers and mock tests that have grown in difficulty level over the years further fuels the speculation as to what is in the 11+ syllabus and what is not. The rough guideline is it is effectively the KS2 syllabus – everything that is taught until the end of year 6, but you need to know all of it at the beginning of year 6 when you take the 11+ exams.

I will try to list down a set of topics from my experience of taking my two kids through this 11+ journey and what I have seen in various publications. Where I believe some topics are seen more in Practice Papers and less (or never) in the exam, I have marked those topics as 'Stretch' so you can focus on it once you have done the other topics. Equally, it is important to note that some independent schools will have a set of stretch topics in scope which are usually not seen in Grammar school. And even within Grammar schools, some schools will have a simpler set of topics as scope compared to other Grammar schools. A rule of thumb is if you are close to London area then you can expect a slightly tougher syllabus compared to Grammar schools outside of London area. This can also be just my perception from being part of various 11+ groups on social media where I read a lot of posts from parents and tutors. So, please pardon me if I am wrong.

### 11+ Math Topics list

#### 1. Numbers

- a. Place value
- b. Rounding up and down
- c. Negative numbers
- d. Addition
- e. Subtraction
- f. Multiplication
  - i. Multiplication of numbers (need to know how to multiply numbers with more than 2 digits), including decimal multiplication
  - ii. Also includes multiplication by 10, 100, 1000,...
- g. Division
  - i. Division of numbers and decimals.
  - ii. Division by 10, 100, 1000,...
- h. Writing numbers as words
- i. Number Function Machines
- j. BODMAS
- k. Factors and Prime Factors
- l. HCF (aka GCF), LCM – Highest Common Factor, Lowest Common Multiple
- m. Sequences
  - i. Constant difference sequence – nth term formula (could be a stretch for some schools)
  - ii. Sequence with increasing difference (simple questions, not formula)
  - iii. Sequence of squares and cubes
  - iv. Triangular number sequence
  - v. Fibonacci (stretch)
  - vi. Random sequences (*very difficult to list down all types, these are also seen in verbal reasoning. Some Practice Papers have gone ballistic here. In the bigger scheme of things, it is a small thing! ©Ensure you have done everything else before you start taking stress on this.*)
- n. Fractions
  - i. Additions, Subtraction, Multiplication, Division
  - ii. Top heavy, mixed fractions

- iii. Combination of above and its application in worded problems (*In some sense, the person who is a master of Fractions will most definitely go on to do well in 11+ exams and in higher schools. Fractions forms the basis of percentages, probability, ratio & proportion, pie charts etc., and life in general*)
- iv. Conversion to percentages, decimals
- o. Percentages**
  - i. Normal percentages
  - ii. Reverse percentages (e.g., *finding the original price for an item in sale*)
  - iii. Percentage difference (including percentage profit, percentage loss, appreciation, depreciation etc.)
  - iv. Percentages – conversion to fractions, decimals
  - v. Express as a percentage (e.g. 142 as a percentage of 150)
- p. Decimals**
  - i. Addition, subtraction, multiplication, division
  - ii. Conversion to percentages, fractions.
- q. Ratio**
  - i. Including application of ratio in charts e.g. pie charts
- r. Proportion**
- s. Scale 1:n**
- t. Divisibility Rules (at least of 2,3,5,9)**
- u. Number problems / worded problems with mixed calculation.**
  - i. Children usually take some time to get hold of this. Practise is important here. In essence this is application of all you learn in maths! It is important they are able to break down a problem and extract the information needed to decide on what calculations to do.
  - v. Squares and cubes (and you can expect to also see some simple square roots, cube root type of questions. So, get familiar with the concept.)

## 2. Data Handling

- a. Data tables
- b. Displaying data
- c. Analysing Data
- d. Misleading Data
- e. Mean, Mode, Median

## 3. Shape and Space

- a. Angles (acute, obtuse, reflex, corresponding, alternate, opposite, exterior, interior, sum of interior)
- b. 2D shapes (Triangles, Square, rectangle, rhombus, kite, parallelogram, pentagon, hexagon, circle, etc.)
- c. 2D shapes - Area and Perimeter
- d. 3D shape - Euler's law
- e. Symmetry
- f. 3D shapes (volume, Euler's law, surface area, prism)
- g. Shape Problems
- h. Coordinates (includes translation, reflection, rotation)
- i. Rotational Symmetry
- j. Cyclic quadrilateral (perhaps a stretch)

## 4. Units and Measurements

- a. Units (Metric and Imperial units).
  - i. Conversion from one unit to another in the same system (e.g. km to cm – more common) or across systems (Metric to Imperial – this should be a bit rare)
- b. Time (Duration, 12/24 hour format)
  - i. Calendar, year, month, day, hours, minutes, seconds.
  - ii. Be sure you know which years are leap years (divisible by 4), days in a month, etc.

## 5. Probability

## 6. Money

## 7. Speed

- a. Relationship between Speed, Distance, Time.
- b. Calculating speed, calculating distance travelled, calculating time taken to cover a distance etc.
- c. Understanding Distance vs Time graph.

- d. This can be a tough topic for a 10 year old, especially in questions like when two drivers start at different times and with different speed, when will they catch up.

## **8. Roman Numerals**

- a. Conversion from Roman Numerals to Decimal numbers and vice versa

## **9. Nets of 3D shapes**

## **10. Graphs**

- a. Pie charts
- b. Venn diagrams
- c. Carroll diagrams
- d. Distance vs Time graph (speed)
- e. Comparing information
- f. Combo graphs (e.g. Temperature and Rainfall across all months)

## **11. Basic Algebra**

- a. Use of expression, equivalent expression, solving basic equation, forming expression.
- b. Some people may debate this is a stretch topic. I will put it as borderline stretch. Knowledge of basic algebra is important in my opinion to solve a number of worded problems in 11+ Exams.

## **12. Pythagoras Theorem (stretch)**

- a. Quite a few publications and practice papers have questions of this. You can expect questions on these in some independent school (if not in any Grammar school).

## **13. Bearings (stretch)**

- a. Quite a few publications and practice papers have questions on this.
- b. I have seen Bearings in 11+ materials since 2009 when I was last a part time math tutor. But my sons insist they haven't seen bearing questions in any 11+ Exam. I wouldn't entirely trust them!

## **14. Speed vs Time graphs (stretch)**

- a. This is effectively acceleration question. Some Practice Papers have questions on this.
- b. Some understanding of this graph to work out when speed is increasing / decreasing is not a bad idea. Although, I am not sure if it ever comes in the actual exam.

## **15. Indices (stretch)**

- a. Quite a few publications and practice papers have questions on this.
- b. Questions like calculate  $2^4$  are common, but anything more complex utilising the properties of indices are not seen in the exams, but these are not difficult to learn.

## **16. Simultaneous Equations (stretch)**

- a. Basic simultaneous equations solving is a good idea but it can be a difficult topic to learn for some. Keep it for the last. Master basic algebra before this.

## **17. Circle theorems (Super-stretch)**

- a. Circle theorem like angle subtended by a diameter is  $90^\circ$ , tangent meets radius as  $90^\circ$ , angle subtended by an arc at the centre of the circle is twice the size compared to that subtended on the circumference.
- b. Circle theorems questions I have only seen in some Practice Papers. Unlikely that they come in the exams, but not difficult to learn.

## **18. Equation of a line (Super-stretch)**

- a. Calculation of slope, y-intercept. I have only seen these in Practice Papers and some publications. I doubt if these come in the actual exams.

## **19. Quadratic Equations (Super-stretch)**

- a. As far as my experience goes, Quadratic Equations are never seen in 11+ exams.

## **20. Bases others than 10 (Super-stretch)**

- a. Basically binary, hexadecimal etc. Some tuition centres teach this, but not seen in Grammar School exams. It may feature in independent school exams, but I doubt it.

## **21. Factorials, Permutations and Combination (Super-stretch break-point!)**

- a. I really doubt if this ever comes. Also, seen very rarely in even difficult Practice Papers. One question I remember is for multiple parallel and perpendicular lines, calculate the total number of rectangular shapes. This I think should be a GSCE question! Unless, of course, there is an easier way to do that question that I don't know of yet.

The next section will talk about Formulae sheets and other important bits to know.

## Fractions, decimals and percentages

The minimum you need to know

$\frac{1}{4}$	$\frac{2}{4} = \frac{1}{2}$	$\frac{3}{4}$	Fractions
0.25	0.50	0.75	Decimals
25%	50%	75%	Percentages

$\frac{1}{3}$	$\frac{2}{3}$	Fractions
0.33...	0.66...	Decimals
33.33% (2 dp)	66.67% (to 2dp)	Percentages

$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	Fractions
0.20	0.40	0.60	0.80	Decimals
20%	40%	60%	80%	Percentages

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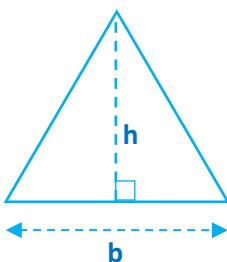
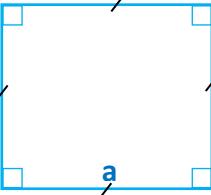
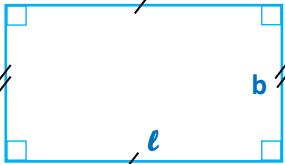
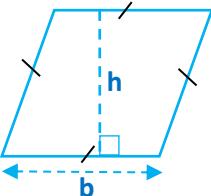
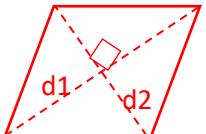
For a stretch you can also try remember the below

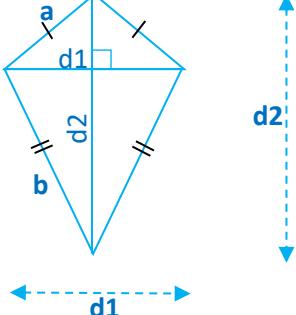
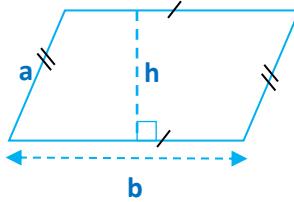
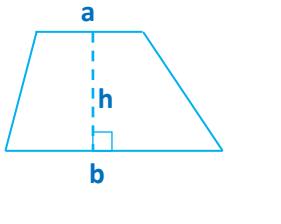
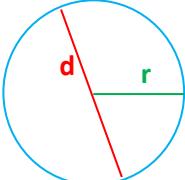
$\frac{1}{6}$	$\frac{1}{8}$	Fractions
0.166..	0.125	Decimals
16.67%	12.5%	Percentages

Assuming everybody knows the below

$\frac{1}{10}$	Fractions
0.1	Decimals
10%	Percentages

## SHAPES

Shape	Area	Other points to know
<b>Triangle</b> 	$\text{Area} = \frac{\text{base} \times \text{height}}{2}$ $= \frac{b \times h}{2}$	Perimeter = sum of all sides  Know different types of triangles: <ul style="list-style-type: none"> <li>• Isosceles Triangle</li> <li>• Equilateral Triangle</li> <li>• Scalene Triangle</li> <li>• Right Angled Triangle</li> </ul>
<b>Square</b> 	$\text{Area} = \text{side} \times \text{side}$ $= a \times a = a^2$	Perimeter = $4a$  <ul style="list-style-type: none"> <li>• All sides are same length</li> <li>• Opposite sides are parallel</li> <li>• All interior angles are <math>90^\circ</math></li> <li>• Diagonals intersect at <math>90^\circ</math></li> <li>• Lines of symmetry = 4</li> <li>• Rotational order = 4</li> </ul>
<b>Rectangle</b> 	$\text{Area} = \text{length} \times \text{breadth}$ $= l \times b$	Perimeter = $2(l + b)$  <ul style="list-style-type: none"> <li>• Opposite sides are same length</li> <li>• Opposite sides are parallel</li> <li>• All interior angles are <math>90^\circ</math></li> <li>• Lines of symmetry = 2</li> <li>• Rotational order = 2</li> </ul>
<b>Rhombus</b> 	$\text{Area} = \text{base} \times \text{height}$ $= b \times h$ Also, $\text{Area} = \frac{\text{diagonal}_1 \times \text{diagonal}_2}{2}$ $= \frac{d_1 \times d_2}{2}$ 	Perimeter = $4b$  <ul style="list-style-type: none"> <li>• All sides are same length</li> <li>• Opposite sides are parallel</li> <li>• Opposite angles are equal</li> <li>• Diagonals intersect at <math>90^\circ</math></li> <li>• Lines of symmetry = 2</li> <li>• Rotational order = 2</li> <li>(you can say angles are not <math>90^\circ</math>)</li> </ul>

Shape	Area	Other points to know
<b>Kite</b> 	$\text{Area} = \frac{\text{diagonal1} \times \text{diagonal2}}{2}$ $= \frac{d_1 \times d_2}{2}$	<p>Perimeter = sum of all sides = <math>2(a + b)</math></p> <ul style="list-style-type: none"> <li>• Pair of adjacent sides are same length</li> <li>• Diagonals intersect at <math>90^\circ</math></li> <li>• Lines of symmetry = 1</li> <li>• Rotational order = 1</li> </ul>
<b>Parallelogram</b> 	$\text{Area} = \text{base} \times \text{height}$ $= b \times h$	<p>Perimeter = sum of all sides = <math>2(a + b)</math></p> <ul style="list-style-type: none"> <li>• Opposites sides are parallel</li> <li>• Opposites sides are same length</li> <li>• Opposite angles are equal</li> <li>• Lines of symmetry = 0</li> <li>• Rotational order = 2</li> <li>• (you can say angles are not <math>90^\circ</math>)</li> </ul>
<b>Trapezium</b> 	$\text{Area} = (\text{average of parallel sides}) \times \text{height}$ $= \frac{(a+b)}{2} \times h$ The below are also trapezium 	<p>Perimeter = sum of all sides</p> <ul style="list-style-type: none"> <li>• One pair of Opposites sides are parallel</li> <li>• Lines of symmetry = 0</li> <li>• Rotational order = 1</li> </ul>
<b>Circle</b> 	$\text{Area} = \pi r^2$	<p>Perimeter is known as circumference Circumference = <math>2\pi r</math> (<math>r</math> = radius) Circumference = <math>\pi d</math> (<math>d</math> = diameter)</p> <p>diameter = <math>2 \times</math> radius <math>d = 2r</math></p> <p>Values of <math>\pi</math> that is used for 11+ Exams <math>\pi = 3.14</math> (approximately) <math>\pi = \frac{22}{7}</math> (approximately)</p>

## Triangles to know (Isosceles, Equilateral, Scalene, right angled)

<b>Equilateral Triangle</b>	<b>Isosceles Triangle</b>	<b>Scalene Triangle</b>	<b>Right angled Triangle</b>
<ul style="list-style-type: none"> <li>All sides are equal</li> <li>All angles are 60°</li> </ul>	<ul style="list-style-type: none"> <li>2 sides are same size</li> <li>2 angles are same size</li> </ul>	<ul style="list-style-type: none"> <li>All sides are different in size.</li> <li>All angles are different in size</li> </ul>	<ul style="list-style-type: none"> <li>One interior angle is 90°</li> <li>Other 2 angles are complementary angles (i.e., add to 90°)</li> </ul>

## Angles to know

<b>Acute angle</b>	<b>Obtuse angle</b>	<b>Right angle</b>	<b>Reflex angle</b>
<ul style="list-style-type: none"> <li>Less than 90°</li> </ul>	<ul style="list-style-type: none"> <li>More than 90° (but less than 180°)</li> </ul>	<ul style="list-style-type: none"> <li>90°</li> </ul>	<ul style="list-style-type: none"> <li>More than 180°</li> </ul>

Angle of a Straight line is 180°	Angle around a point is 360°

<b>Corresponding angles</b>	
Corresponding angles are same size. It is formed when a line intersects a set of parallel lines	
<b>Alternate angles</b>	
Alternate angles are same size. It is formed when a line intersects a set of parallel lines	

<b>Opposite angles</b>  Opposite angles are same in size. It is formed by any two intersecting lines.	
<b>Complementary angles</b>  Complementary angles add to $90^\circ$ $a + b = 90^\circ$	
<b>Supplementary angles</b>  Supplementary angles add to $180^\circ$ $a + b = 180^\circ$ $\text{green circle} + \text{red circle} = 180^\circ$	

## Sum of Angles inside a triangle, Quadrilateral

Sum of all angles in a triangle is $180^\circ$ $a + b + c = 180^\circ$	Sum of all angles in a Quadrilateral is $360^\circ$ $a + b + c + d = 360^\circ$

Some 2 D shape names to be aware of

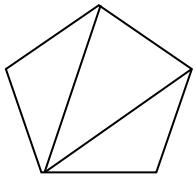
Pentagon (5) 	Hexagon (6) 	Heptagon (7) 	Octagon (8) 
Nonagon (9) 	Decagon (10) 	Hendecagon (11) 	Dodecagon (12) 

It is OK if you can't remember Hendecagon. Even I can't!

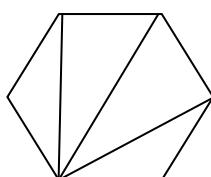
**Sum of Angles inside any polygon =  $(n-2) \times 180$**

		Sides ( $n$ )	Sum of all angles = $(n-2) \times 180$
Triangle		3	$= (3 - 2) \times 180$ $= 180^\circ$
Quadrilateral		4	$= (4 - 2) \times 180$ $= 360^\circ$
Pentagon		5	$= (5 - 2) \times 180$ $= 540^\circ$
Hexagon		6	$= (6 - 2) \times 180$ $= 720^\circ$

Basically, this formula is saying that you can fit 2 less triangles than the number of sides a polygon has.



You can fit 3 triangles in a Pentagon

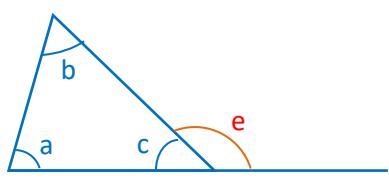


You can fit in 4 triangles in a Hexagon

#### Other angle related formulae

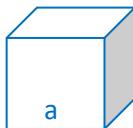
<b>Exterior angle of a regular polygon</b> = $\frac{360}{n}$ 	n = number of sides. For e.g., for Pentagon, n=5, exterior angle = $360/5 = 72^\circ$ <i>Note: "regular" means all sides are same length.</i>
<b>Interior angle of a regular polygon</b> = $180 - \text{exterior angle}$ 	Once you know one interior angle, you can also work out <b>the sum of all interior angles</b> by multiplying it by the number of sides. This is just another way to find the sum of all interior angles. Similarly, if you know the sum of all interior angles then you can work out one individual interior angle.

#### Exterior angle of a triangle

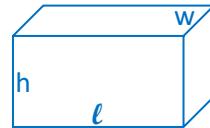
	$e = a + b$ This is really common sense. $a + b + c = 180^\circ$ (sum of angles in a triangle) $e + c = 180^\circ$ (straight line angle is $180^\circ$ ) So, $e = a + b$
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Volume of common shapes****Cube**

Volume =  $a \times a \times a$   
= side x side x side

**Cuboid**

Volume =  $\ell \times w \times h$   
= length x width x height

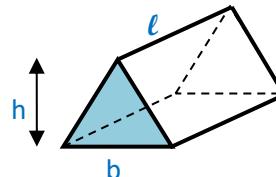
**Volume of Prism****Triangular Prism**

Volume = area of triangle x length

If base of triangle =  $b$ , height =  $h$

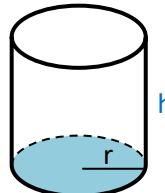
$$\text{Area of triangle} = \frac{b \times h}{2}$$

$$\text{Volume} = \left(\frac{b \times h}{2}\right) \times \ell$$

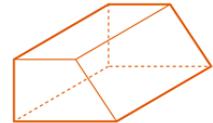
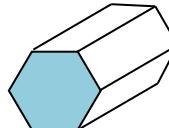
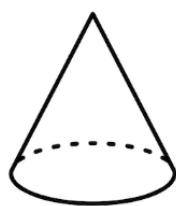
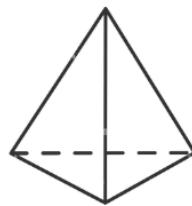
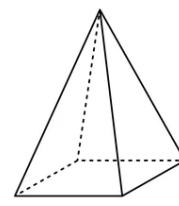
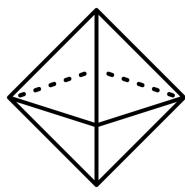
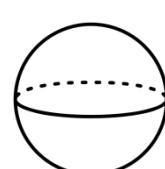
**Cylinder**

Volume = area of circle x height

$$= \pi r^2 \times h$$

**Any prism**

Volume = area of face which is same size throughout the prism x length

**Other 3 D shapes to be aware of****Cone****Triangular pyramid (aka Tetrahedron)****Square based pyramid****Octahedron****Hemisphere****Sphere**

**Unit of measurement – Metric Units**

	Units	Conversion	Further notes
<b>Mass or weight</b>	milligram (mg)	1mg = 0.001 g 1mg = 0.1 cg	1 g = 1000 mg 1 cg = 10 mg
	centigram (cg)	<b>1 cg = 10 mg</b>	
	gram (g)	<b>1 g = 1000 mg</b> 1 g = 100 cg 1 g = 0.001 kg	1 kg = 1000 g
	kilogram (kg)	<b>1 kg = 1000 g</b> 1 kg = 0.001 t	1 tonne = 1000 kg
	tonne	<b>1 tonne = 1000 kg</b>	
<b>Length</b>	millimetre (mm)	1 mm = 0.1 cm	1 cm = 10 mm
	centimetre (cm)	<b>1 cm = 10 mm</b>	
	metre (m)	<b>1 m = 100 cm</b>	
	Kilometre (km)	<b>1 km = 1000 m</b>	
<b>Volume</b>	millilitre (mℓ)	1 mℓ = 0.1 cℓ = 0.001 ℓ	<b>1 mℓ = 1 cm³</b>
	centilitre (cℓ)	<b>1 cℓ = 10 mℓ</b>	1 cℓ = 10 cm³
	litre (ℓ)	<b>1 ℓ = 1000 mℓ</b>	<b>1 ℓ = 1000 cm³</b>
	kilolitre (kℓ)	1 kℓ = 1000 ℓ	

What you need to remember for 11+ exams (and life in general) is highlighted in red above

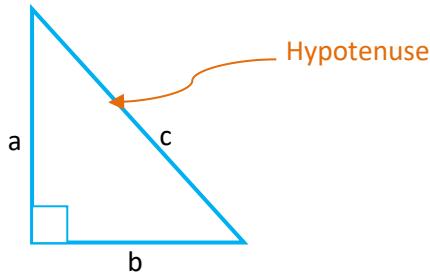
**Unit of measurement – Imperial Units**

	Units	Conversion	Metric approximation
<b>Mass or weight</b>	ounce (oz)	1 oz = $\frac{1}{16}$ lb	1 oz = 28 g
	pound (lb)	<b>1 lb = 16 oz</b>	1 lb = 0.45 kg
	stone (st)	<b>1 st = 14 lb</b>	<b>1 st = 6 kg</b>
	ton	1 ton = 160 st	<b>1 ton = 0.91 tonne</b>
<b>Length</b>	inch (in)	1 in = $\frac{1}{12}$ ft	<b>1 in = 2.5 cm</b>
	foot (ft)	<b>1 ft = 12 in</b>	<b>1 ft = 30 cm</b>
	yard (yd)	<b>1 yd = 3 ft</b>	<b>1 yd = 91 cm</b> (you can approx to 90 cm too) <b>1 yd = 0.9 m</b>
	mile	1 mile = 1760 yd	<b>1 mile = 1.6 km = <math>\frac{8}{5}</math> km</b>
<b>Volume</b>	fluid ounce (fl. oz)	1 fl. oz = $\frac{1}{20}$ pt	1 fl. oz = 28 mℓ
	pint (pt)	1 pt = 20 fl. oz	<b>1 pt = 568 mℓ</b>
	gallon (gal)	1 gal = 8 pt	<b>1 gal = 4.5 ℓ</b>

What is nice to know (but perhaps ok if you forget) for 11+ exams is highlighted in blue above. What you need to know for 11+ is highlighted in red.

### Pythagoras theorem (stretch)

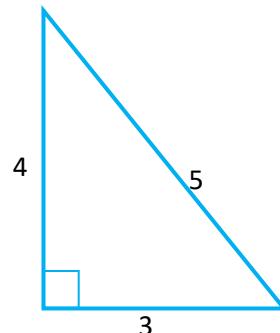
"For a right-angled triangle, the sum of the squares of the sides forming the right angle is equal to the square of the hypotenuse."



As per Pythagoras Theorem:

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

Famous Pythagoras triplets: 3, 4, 5



### Euler's law

For a 3-D shape,

$$\text{Faces} + \text{Vertices} = \text{Edges} + 2$$

	Faces	Vertices	Edges
Cube	6	8	12
Square based Pyramid	5	5	8

### Squares, cube

$n^2$	$n^3$
$1^2 = 1$	$1^3 = 1$
$2^2 = 4$	$2^3 = 8$
$3^2 = 9$	$3^3 = 27$
$4^2 = 16$	$4^3 = 64$
$5^2 = 25$	$5^3 = 125$
$6^2 = 36$	$6^3 = 216$
$7^2 = 49$	$7^3 = 343$
$8^2 = 64$	$8^3 = 512$
$9^2 = 81$	$9^3 = 729$
$10^2 = 100$	$10^3 = 1000$
$11^2 = 121$	
$12^2 = 144$	
$13^2 = 169$	
$14^2 = 196$	
$15^2 = 225$	
$16^2 = 256$	
$17^2 = 289$	
$18^2 = 324$	
$19^2 = 361$	
$20^2 = 400$	

I have only given cubes till 10, as I believe that is all you need to remember for 11+

However, for Squares you can go up to 25.

Note Square root would be opposite of squares

$$\sqrt{25} = 5$$

Cube root will be opposite of cubes

$$\sqrt[3]{125} = 5$$

**Prime numbers:**

The prime numbers from 1 to 100 are:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

Note that 1 is not a prime number because it has only one factor, i.e. 1. Prime numbers need to have exactly two factors, which is 1 and the prime number itself.

**Percentage change**

$$\text{Percentage change} = \frac{(\text{difference in value})}{\text{original value}} \times 100$$

The above can also be used for the following:

$$\text{Percentage increase} = \frac{(\text{final value} - \text{original value})}{\text{original value}} \times 100$$

Percentage increase is sometimes also stated as ‘Percentage Profit’ or ‘Percentage appreciation’

$$\text{Percentage decrease} = \frac{(\text{original value} - \text{final value})}{\text{original value}} \times 100$$

Percentage decrease is sometimes also stated as ‘Percentage loss’ or ‘Percentage depreciation’

Don’t worry too much about whether to do (original value – final value) or (final value – original value). Main thing is to find the difference in value. When final price is lower than original price then you have a loss; when final value is more than original value then you have a profit.

**Triangle inequality rule**

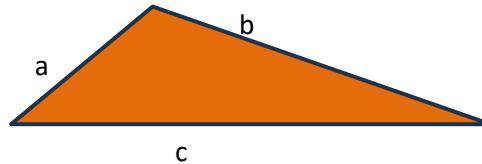
This rule basically states that no side can be bigger than the sum of the other two sides.

So,

$$c < a + b$$

$$a < b + c$$

$$b < a + c$$



For example: Sides 12, 5, 6 cannot be a triangle as

$$12 > 5 + 6$$

$$12 > 11$$

**Nth term formula for constant difference sequence**

$$T_n = a + (n - 1)d$$

Or it can also be written as

$$T_n = dn + (a - d)$$

Where:

a = 1<sup>st</sup> term (term is nothing but the individual numbers in a sequence)

d = constant difference

T<sub>n</sub> = n<sup>th</sup> term

n = position of a term in the sequence

Example:

3, 7, 11, 15, 19...

Here:

a = 3. (1<sup>st</sup> term in the sequence)

d = 4. (constant difference between consecutive numbers in the sequence)

$$\begin{aligned}T_n &= dn + (a - d) \\&= 4n + (3 - 4) \\&= 4n - 1\end{aligned}$$

Once you know the formula for the sequence you can work out any term in the sequence.

The 16<sup>th</sup> term would be = 4(16) – 1 = 63

The 4<sup>th</sup> term would be = 4(4) – 1 = 15 (as you can see in the series above anyway – this helps to doublecheck)

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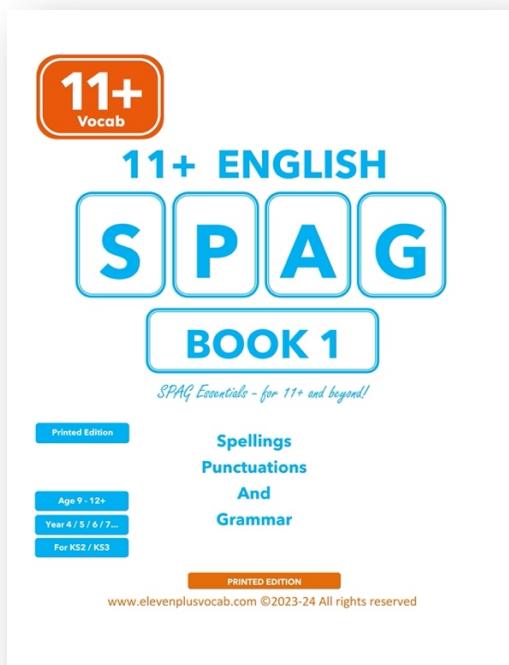


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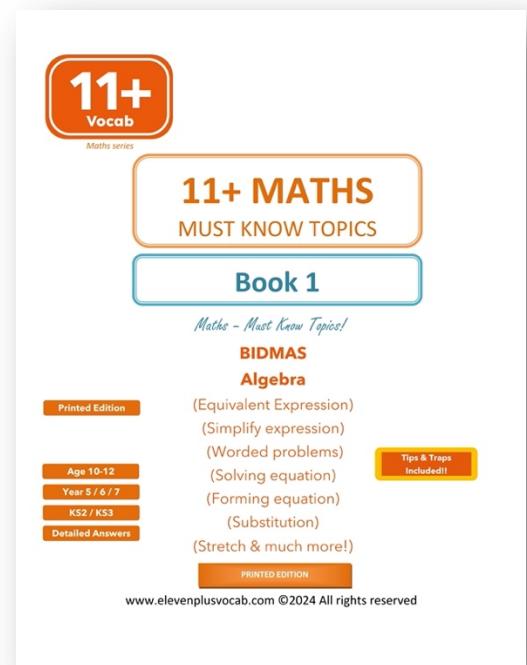


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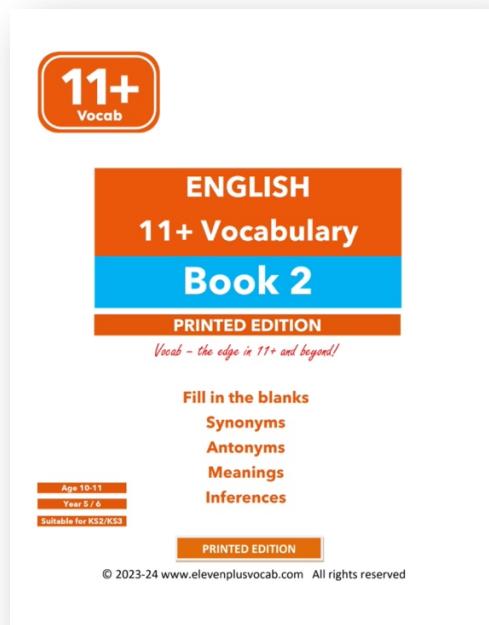
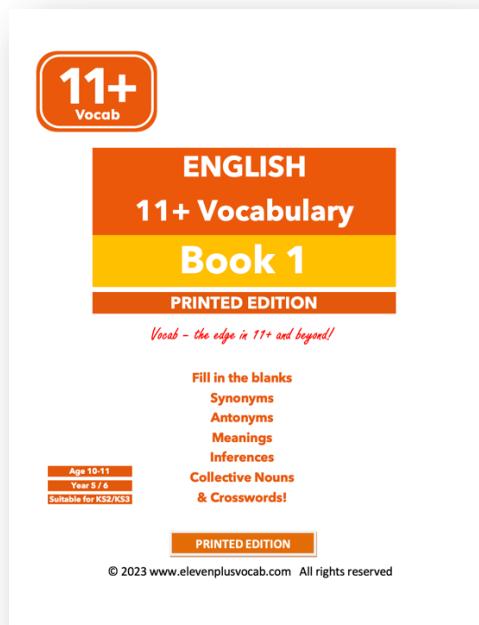
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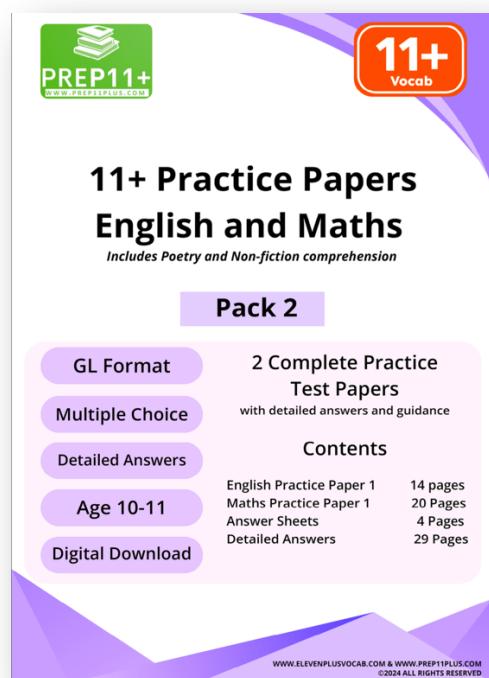
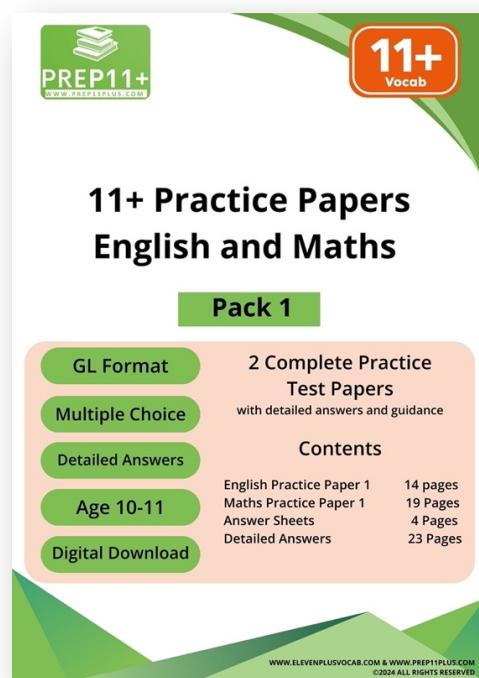


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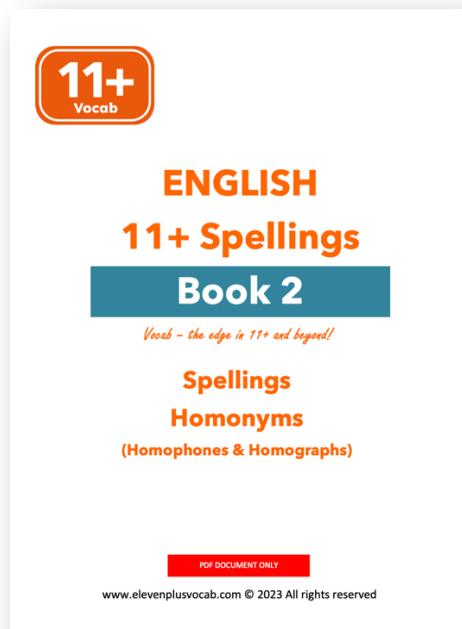
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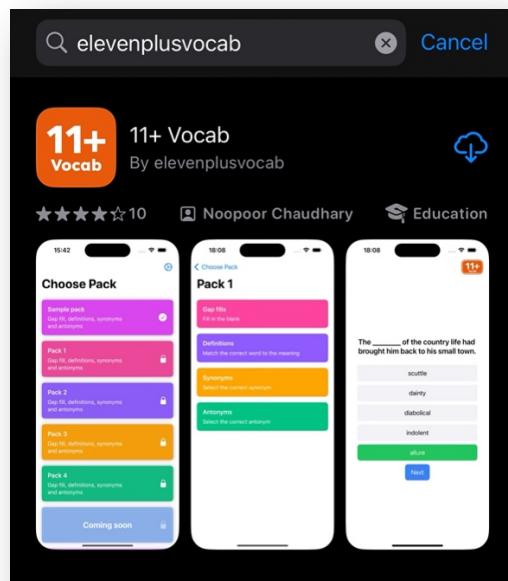


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**Naz Mehra**

Hi Girish, I purchased this book on Amazon, and it's been one of the best decisions I've made. My daughter used to struggle with SPAG, but her improvement has been remarkable since we started using this book. The layout, with clear examples and concise breakdowns of each SPAG topic, ensures the content sticks with her (and me too!). I'm incredibly grateful for this resource and would highly recommend it to any parent looking to help their child excel in English, not just for the 11+ exams, but beyond. Thank you Girish !

23m Love Reply

**Sangeeta Golha Joshi**

Girish Chaudhary No other book clarified Punctuations so clearly like yours. Grateful 🙏

33m Love Reply

1 ❤️

**Sophie Louise Hewitt**

I bought this and have used with my tutor group. We loved how simply it explained things and the progression of topics is planned brilliantly. Will be buying more at such a fantastic price!

5 h Love Reply Message Hide 1 ❤️

**Sue Pathirana**

Vocabulary app is the game finisher for my son. He does it to ease off his test paper practices. Thank you for your hard work. Sure many children and families will achieve their 11+!dream with the help of all these resources in the group [11+ Vocab and other resources](#)

2d Love Reply

1 ❤️

**Patrycja Sirtautas**

We got all the books, have to say you have done a great job!

6 m Love Reply

1 ❤️

**Sumne Chamak**

Rising contributor  
Your books are definitely top notch compared to whatever available in market. And also it's coming from a parent who already has experience in 11 plus and that makes a lot of difference to the quality of product . Thanks

11 h Love Reply

1 ❤️

**Kay Judd**

Girish Chaudhary I am finding these useful!

15 m Like Reply

**Top comments ▾****Rachana Somaiya**

A special note to [Girish Chaudhary](#)- learnt soo much in the last couple of days with your SPAG book!! A true gem and highly recommended for all those taking their 11+



25m Love Reply

1 ❤️

**Rupa Iyer**

Girish chaudhary has a great compilation on algebra. My son found it very easy to understand and he has lots of practice questions too on each type of sums.

18h Love Reply

1 ❤️

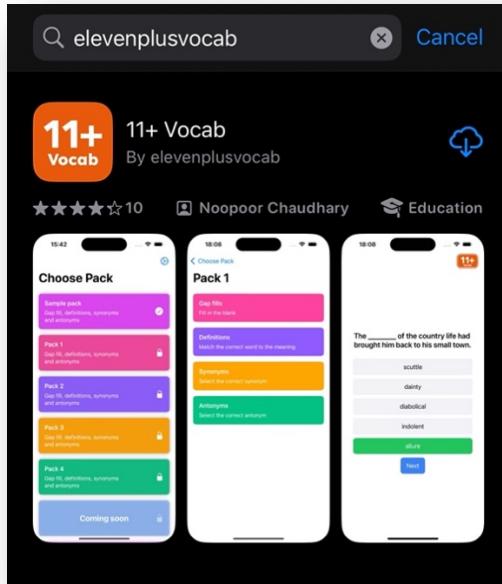
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**Great app for children doing the 11...** 9 Aug  
★★★★★ Minal23

Excellent app - it has really helped my son cover vocabulary in this crucial time and he actually enjoys doing it which has never been the case before with flash cards or books :).

**Fantastic 11+ app** Thu  
★★★★★ ml\_gamess

My daughter really enjoyed using this app. We have found it to be very useful in the final stages of her preparation, and it has helped her cover lots of vocabulary where other methods had failed. Thanks so much!

**Ray Sha**  
 I bought pack 1 . it was easy to do kids on the phone instead of writing and memories. It was reasonable price too. definitely recommend to my friends too.

6m Love Reply 1 ❤️

**Charlotte Watson**  
 I just tried it - will definitely be recommending it to my parents and students.

10m Love Reply

**Excellent App**

★★★★★ 10 Oct - UK Motorist

I'm quite appreciative of the 11 Plus Vocab app. For my son, who finds it difficult to learn vocabulary from books or PDFs, this is a game-changer. Thanks so much.

## More praise from parents – Thanks from the bottom of my heart!

The screenshot shows a mobile application interface with a dark background. At the top, there's a navigation bar with a back arrow, a '11+' logo, the text '11+ Vocab and other...', a search icon, and a shield icon.

**Most relevant**

**Anonymous participant** 5m ·

I highly recommend the 11+ books and free math syllabus from 11+ Vocabs. The materials are incredibly well-structured, covering essential tips and tricks that make learning both engaging and effective. I'm especially grateful for their commitment to offering these resources at such a minimal cost, making high-quality 11+ preparation accessible to many.

A special thank you to Girish for his timely responses to any queries and for providing detailed information, valuable suggestions, and support throughout. His dedication truly enhances the overall experience. I'm excited to see 11+ Vocabs expand as a comprehensive platform, offering resources across all 11+ subjects. It would be wonderful to have everything in one place, making it a one-stop solution for 11+ preparation.

**So completely practice from your material. I can't think of any other material for sure .** 08:07

**She understand your explanation so easily and quickly** 08:08

**Thank you so much once again. I referred to her school mate mum's too** 08:08

**They are also very happy with the purchase** 08:08

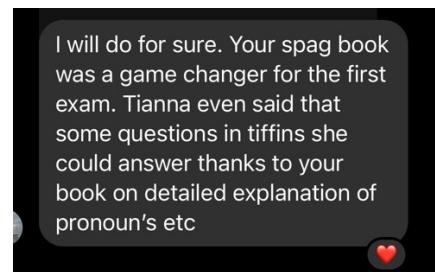
**On top on it vocab app is extremely helpful** 08:09

**Top comments** ▾

**Gabriela Botezatu** Excellent material, great explanations !!!!!! 26m 1

**Girish Chaudhary** Author **Gabriela Botezatu** Thanks 😊🙏 1m

them. Since the app's launch, my son has been eager to learn new things every day. Thank you once more for your assistance with all of the parents.



**Umm Hamza** 5h ·

Hi,  
Just wanted to say my son scored well in QE exam this year. I asked a lot of questions to Girish and followed his guidance. It helped tremendously. He's always willing to answer questions and always gives detailed logical responses. Just wanted to say thank you for all your help. We also used your resources like the vocab book and test papers. Amazing!

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You, Deepa Kirpalani and 7 others 2 comments

**Please keep writing. I can see you are pouring all your wisdom( experience from your learning from the 11+ process) and it shines through.**

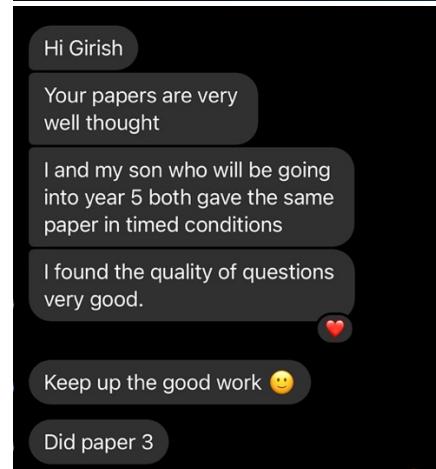
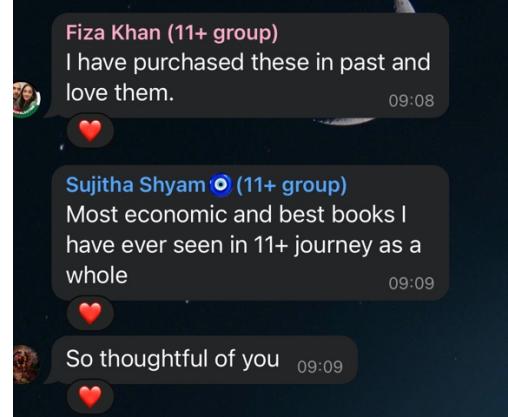
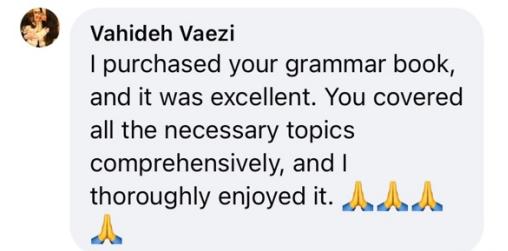
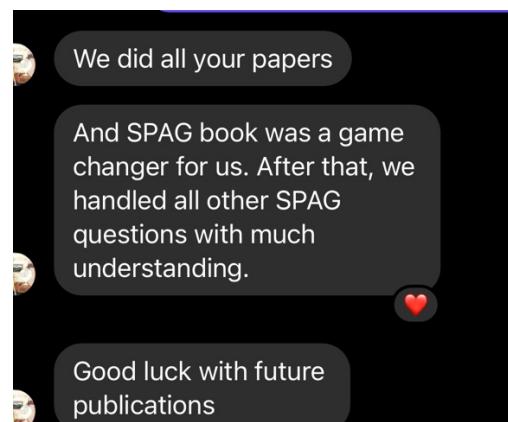
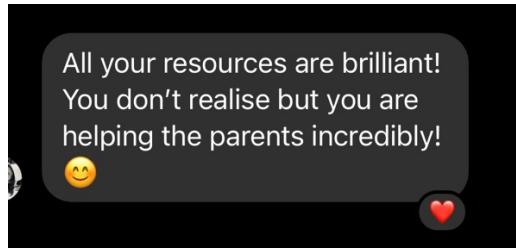
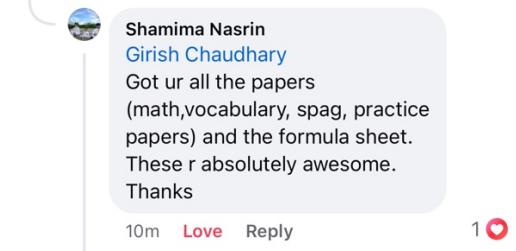
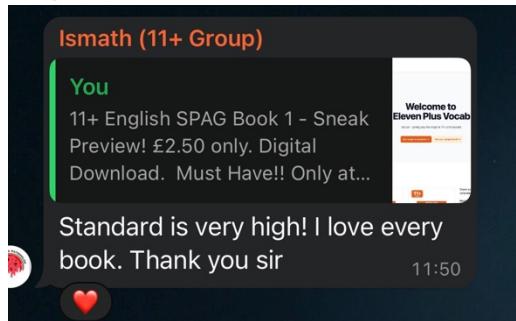
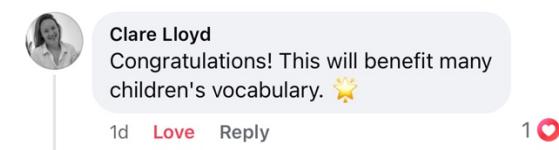
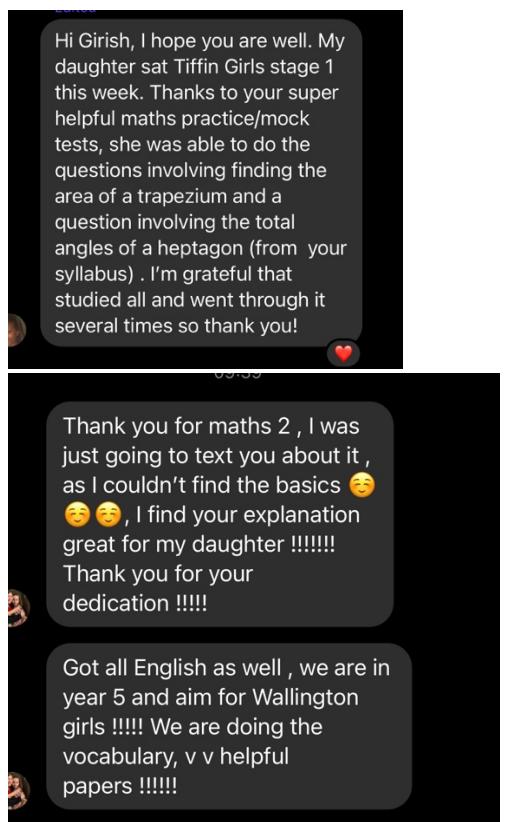
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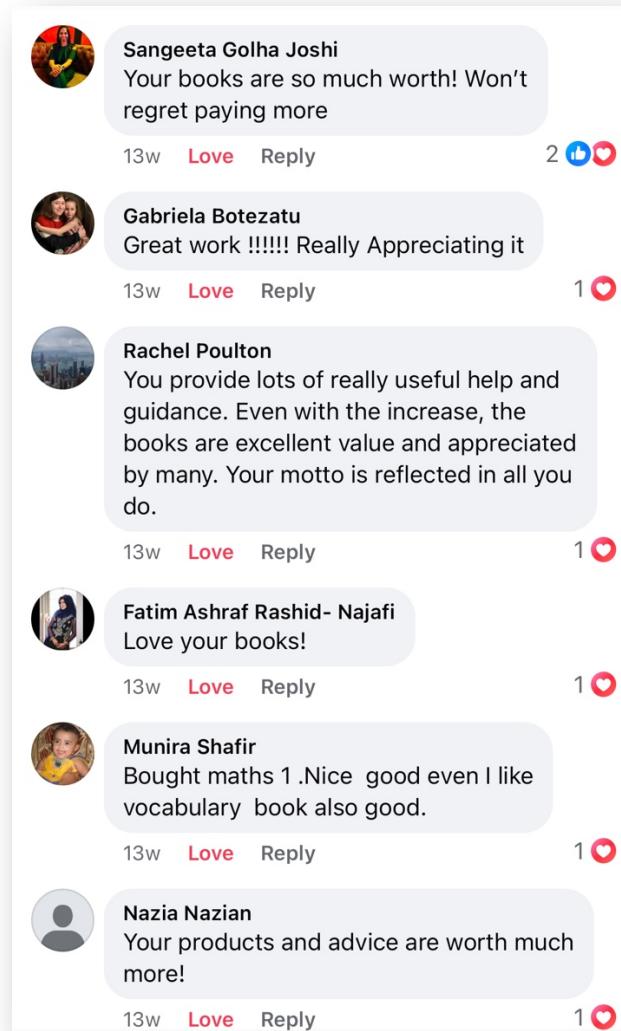
**Sarieu Yasmin Othman** Bought some of your books from Amazon and they are very much helpful for my daughter 41m 1

**Girish Chaudhary** **Sarieu Yasmin Othman** Many thanks for taking the time to write this feedback

Thats the best news!! Very exciting. I am just going through Book 2 and I am so glad you have included the LCM different methods and also the various word questions. Super helpful!!

Bravo to you. Please keep going!





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