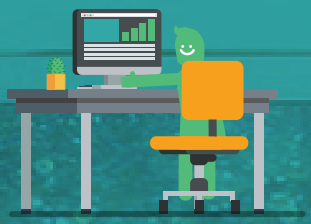
Year 6 White Rose Maths (WRM) Summer Scheme of Learning, 2018 Alignment with Mathletics

Year 6 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number- Place Value		Number- Addition, Subtraction, Multiplication and Division				Fractions				Geometry- Position and Direction	Consolidation
Spring	Number- Decimals		Number- Percentages		Number- Algebra		Measurement Converting units	Measurement Perimeter, Area and Volume		Number- Ratio		Consolidation
Summer	Geometry- Properties of Shapes		Problem solving			Statistics		Investigations				Consolidation

This alignment document has been based on the White Rose Maths (WRM) scheme of learning available on the TES website.



Year 6 White Rose Maths (WRM) Summer Scheme of Learning, 2018

Content

Examples of alignment to Mathletics

Purpose:

The aim of this document is to support Mathletics teachers, who use the WRM scheme of learning, to make full use of the resources available within Mathletics. Whenever possible, activities, pages from the eBooks or learning experiences on Rainforest Maths have been matched to each of the small steps on the WRM scheme of learning.

In Mathletics, many eBooks are available in the student interface, however all eBooks are available to teachers through the teacher console. These topic-based eBooks contain practice and fluency exercises, along with application questions and games. Only a small selection of the relevant pages has been added to the document.

Links to Rainforest Maths, which can be found in the 'Play' area in the Mathletics student interface, have also been included as this resource has great visuals which work well on interactive whiteboards and gives pupils further opportunities to practice their learning online.

Course selection:
A specific Mathletics course has been created in alignment with the WRM Summer scheme of learning. You may wish to set this course for your class/groups.

England Yr 06 WRM Aligned

Data-Driven Teaching and Learning

Differentiation

Feedback and Reflection

Student Growth

Blended Learning

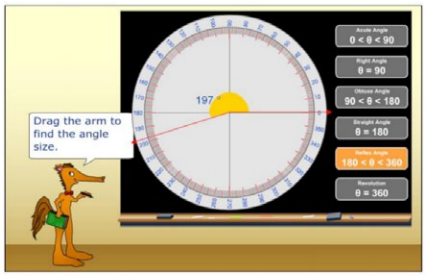
Year 6 White Rose Maths (WRM) Summer Scheme of Learning, 2018

Examples of alignment to Mathletics

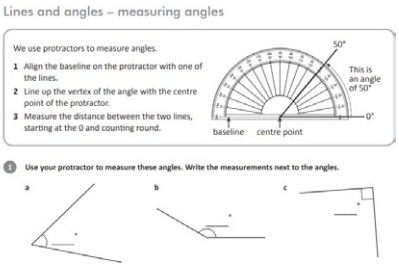
Block 1 (Weeks 1–2) Geometry: Properties of Shapes

National Curriculum Objectives	WRM Small Steps
▸ Draw 2-D shapes using given dimensions and angles. ▸ Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons. ▸ Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	▸ Measure with a Protractor ▸ Introduce Angles ▸ Calculate Angles ▸ Vertically Opposite Angles ▸ Angles in a Triangle (1) ▸ Angles in a Triangle (2) ▸ Angles in a Triangle (3) ▸ Angles in Quadrilaterals ▸ Angles in Polygons ▸ Drawing Shapes Accurately ▸ Nets of 3D Shapes

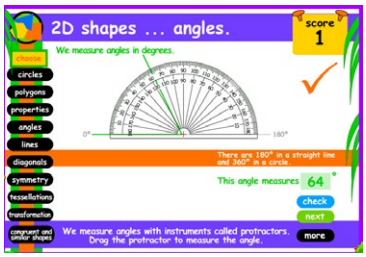
Small step: Measure with a Protractor



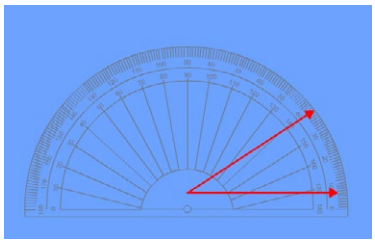
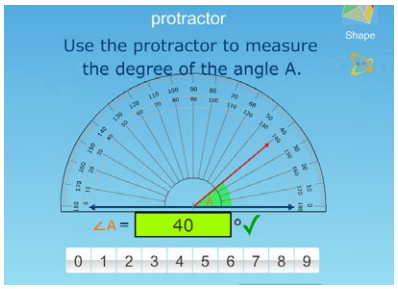
Topic: Properties of Shapes
Activity: *Measuring Angles*
Pupils read and record angles using a protractor.



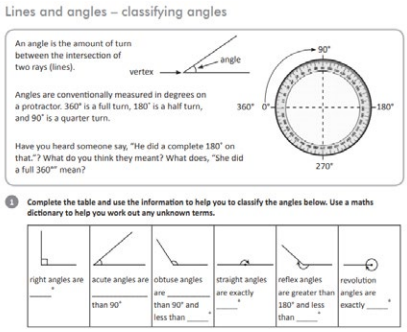
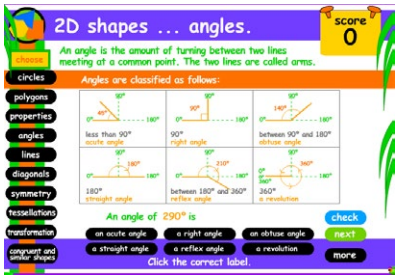
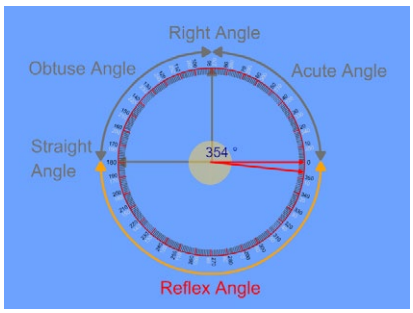
eBook, G series: Geometry, page 3
Pupils are introduced to the concept of measuring angles using a protractor. They measure a range of angles and then draw to create specific angles.

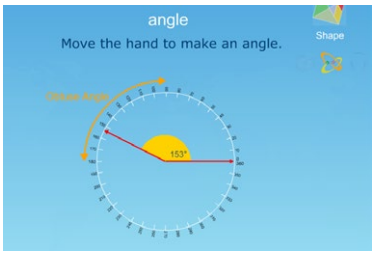
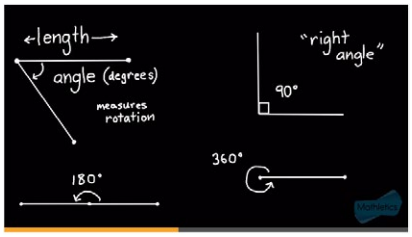
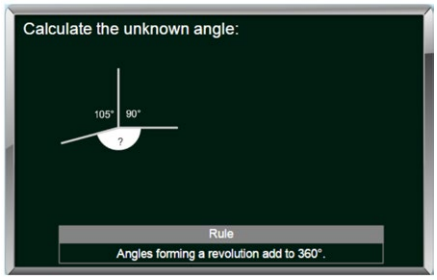
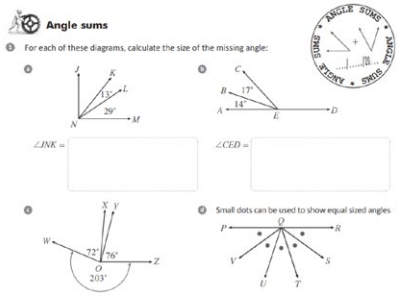
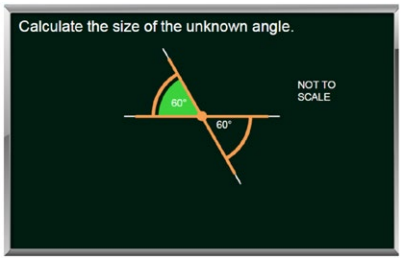


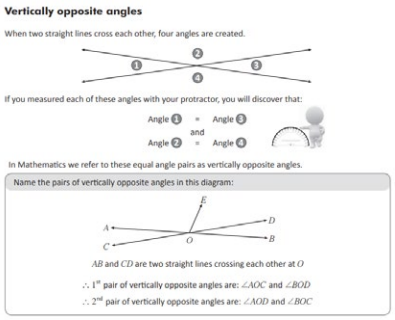
Rainforest Maths — Level G — 2D shapes — angles
This is a helpful visual to use on a large screen in the classroom. Pupils drag the protractor into place to measure the angle. They are then prompted to input the answer into the box. If the answer is incorrect, pupils can recheck and re-enter their answer.

	**Mathletics Dictionary — protractor** Clicking on the symbol at the bottom left-hand corner enables teachers to show the protractor on a large screen to the class. An angle is shown and then the protractor moves into place to measure the angle. This process can be repeated with a new angle, simply by clicking again.
	**Mathletics Dictionary — Concept Search — protractor** Page 1 of the animation in the Concept Search of protractor shows a protractor moving into place to measure an angle. On page 2, the protractor can be dragged into position and then pupils can determine the size of the angle before entering it into the box.

Small step: Introduce Angles

	**eBook, G series: Geometry, page 2** This explanation shows pupils how angles are classified and explains the properties of angles, including right angles, angles on a straight line and angles in a revolution.
	**Rainforest Maths — Level G — 2D shapes — angles** Clicking on 'more' at the bottom right-hand corner of the angles page, opens a comprehensive, illustrated guide to a full range of angles. The page labels the properties of each angle. Pupils can then match labels to the descriptions of angles to show their understanding.
	**Mathletics Dictionary — angle** The arms of the angle start fully closed and then swing gradually open. The degree changes as the arms move and the type of angle is indicated as the arm sweeps around. This provides an excellent visual to share and explore with a class.

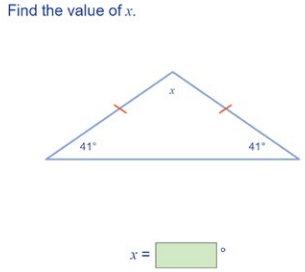
	**Mathletics Dictionary — Concept Search — angle** This is similar to the angle page in the dictionary, but page 2 of the animation allows pupils to physically move the arm of the angle and explore how the degrees change as different types of angles are formed.
	**Videos — Angles — Conceptual: Intro to Angles** This video is accessible on the student console and through student view on the teacher's console. It gives pupils an excellent introduction to angles and the related terminology.
Small step: Calculate Angles	
	Topic: **Properties of Shapes** Activity: ***Angles of Revolution: Unknown Angles*** Pupils use their knowledge of angles in a revolution to calculate missing angles.
	**eBook, H series: Angles, page 27** Pupils use their knowledge of angles on a straight line, right angles and angles in a revolution to calculate missing angles.
Small step: Vertically Opposite Angles	
	Topic: **Properties of Shapes** Activity: ***Vertically Opposite Angles: Unknown Value*** Pupils calculate the size of unknown angles, including vertically opposite angles and angles on a straight line.



eBook, H series: Angles, page 19

The concept of vertically opposite angles is explained and illustrated. Pupils can see when 2 straight lines cross each other that the opposite angles are the same. This understanding is applied to exercises where pupils work out missing angles with pairs of vertically opposite angles.

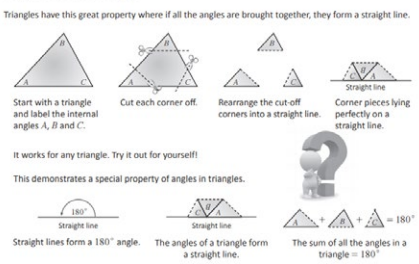
Small step: Angles in a Triangle (1)



Topic: Properties of Shapes

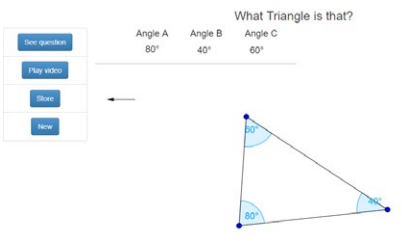
Activity: *Angle Measures in a Triangle*

Pupils calculate the missing angle in a triangle. Questions with isosceles triangles sometimes require both equal angles to be calculated.



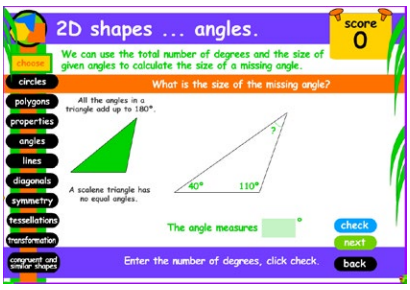
eBook, H series: Angles and Polygons, page 2

This page illustrates and explains why the internal angles of a triangle add up to 180 degrees. Pupils can complete the practical exercise of cutting off the corners from a triangle and placing them together to form a straight line. The following exercises reinforce this understanding with pupils calculating missing angles.



Rich Learning Task: F series — What Triangle is that? (interactive)

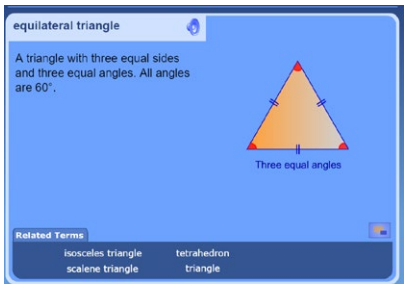
In this open-ended task, pupils are asked to think of 3 angles to construct a triangle, where one of the angles is at least twice the size of another. The interactive constructs the triangle as the angles are entered. Pupils are asked to explain their thinking. A printable student sheet accompanies the teacher's interactive.



Rainforest Maths — Level G — 2D shapes — angles

At the bottom right of the screen, clicking 'more' moves you through a series of exercises which explore angles. The third section explores a range of shapes where some of the angles are given, but pupils have to use their understanding of angles to work out the missing angle.

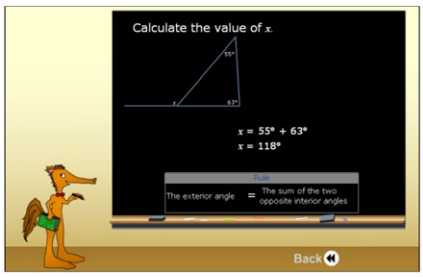
Small step: Angles in a Triangle (2)



Mathletics Dictionary — Triangles

Definitions are provided for the various types of triangles. The diagrams show the conventional markings for angles and equal side lengths.

Small step: Angles in a Triangle (3)

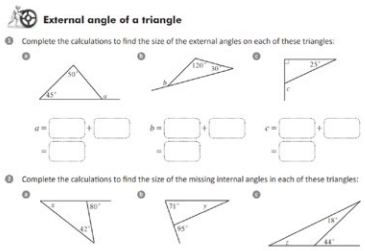


Topic: Properties of Shapes (Something Harder)

Activity: *Exterior Angles of a Triangle*

Pupils calculate the value of the external angle on a triangle.

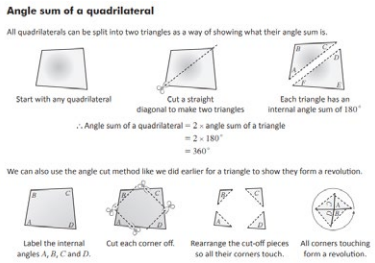
NOTE: Some questions in this activity use algebraic equations to represent the unknown, eg x + 10° or $3x$.



eBook, H series: Angles and Polygons, pages 23–24

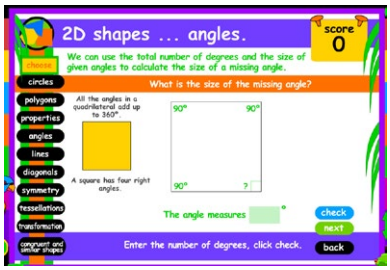
These pages include an explanation of the relationship between the exterior angle of a triangle and the 2 opposite interior angles. Pupils are then asked to calculate exterior angles by adding the 2 opposite interior angles.

Small step: Angles in Quadrilaterals



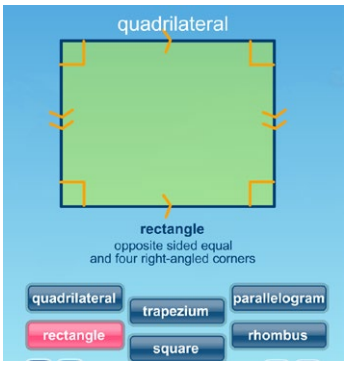
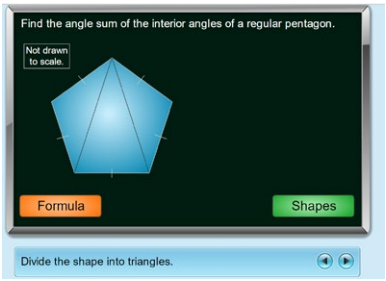
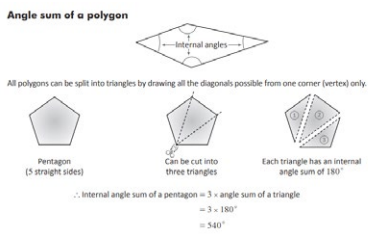
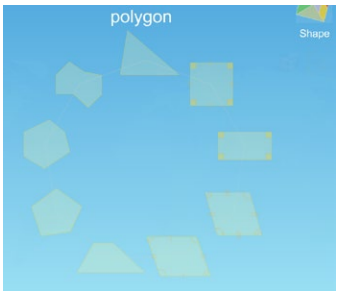
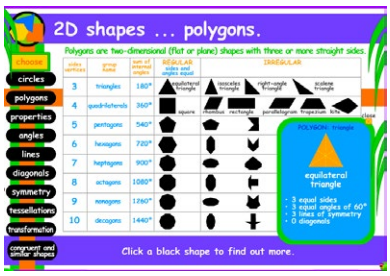
eBook, H series: Angles and Polygons, page 6

This page illustrates and explains how a quadrilateral can be split into 2 triangles, each with internal angles that total 180 degrees. In the practical activity, pupils can cut off the corners from a quadrilateral and place them together to show a full rotation of 360 degrees. Further exercises apply this understanding with pupils calculating missing angles.

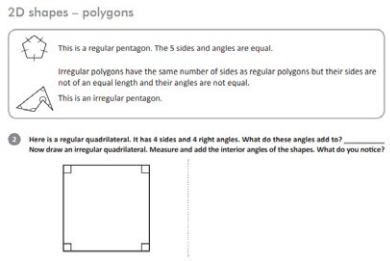


Rainforest Maths — Level G — 2D shapes — angles

At the bottom right of the screen, clicking 'more' moves you through a series of exercises which explore angles. The third section explores a range of shapes where some of the angles are given, but pupils have to use their understanding of angles to work out the missing angle.

	**Mathletics Dictionary — Concept Search — quadrilateral** This page provides a slideshow of regular quadrilaterals, with key features described underneath the visual. It is ideal for showing to the class and discussing these features and the angles of each quadrilateral.
Small step: Angles in Polygons	
	Topic: Properties of Shapes Activity: *Interior Angles* Pupils calculate the angle sum of the interior angles of various regular polygons. Selecting the method 'Shapes' will show pupils how to divide the polygon into triangles to calculate the interior angle sum.
	**eBook, H series: Angles and Polygons, page 10** This page illustrates and explains how a polygon can be split into triangles, which enables pupils to then calculate the sum of the internal angles. Exercises engage pupils in applying their learning, splitting polygons into triangles and working out missing angles.
	**Mathletics Dictionary — Concept Search — polygon** This page provides a slideshow of polygons, featuring both regular and irregular shapes. It is ideal for sharing with the class and discussing features of polygons and their angles.
	**Rainforest Maths — Level G — 2D shapes — polygons** The table on this page shows all polygons up to a 10-sided decagon. The table shows the shape and details the number of vertices and the sum of the internal angles. Clicking on the shapes opens a larger illustration with more details. This is an ideal reference page to share with the class or for pupils to access independently.

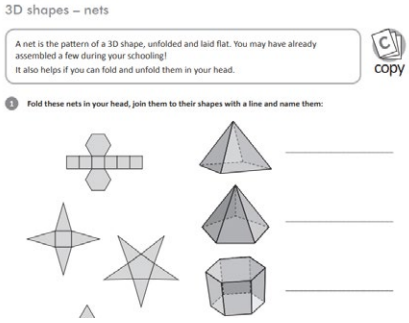
Small step: Drawing Shapes Accurately



eBook, G series: Geometry, pages 8–13

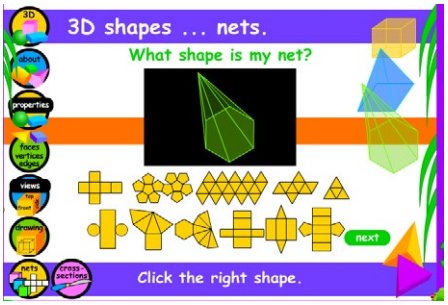
Pupils are shown examples of 2D shapes with features marked and labelled. They are challenged to draw regular and irregular polygons. Later examples specify angles and lengths, so pupils need to use a protractor and ruler accurately when drawing the shapes.

Small step: Nets of 3D Shapes



eBook, G series: Geometry, pages 31–32

Pupils imagine folding a range of nets and match the nets to the 3D objects they would create. Pupils are challenged to create a net for a cube using a section of squared paper. They then cut out and fold their net to check that it will create a cube.



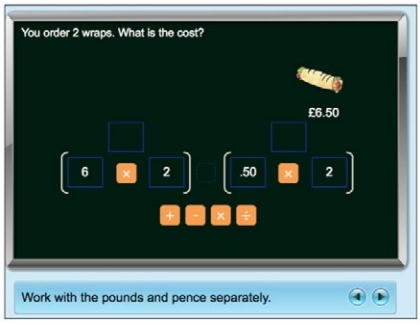
Rainforest Maths — Level G — 3D shapes — nets

Pupils select the net which would create the 3D object they are shown. Pupils can be challenged to describe the 3D objects they think would be created by the other nets shown.

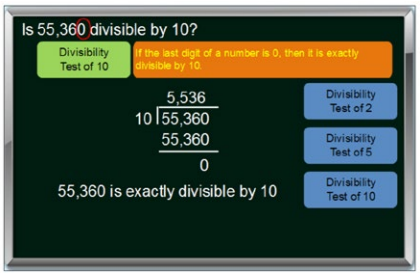
Examples of alignment to Mathletics
Block 2 (Weeks 3–5) Problem Solving

National Curriculum Objectives	WRM Small Steps
Problem solving	

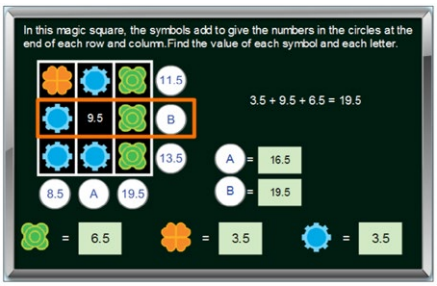
Problem solving and reasoning activities



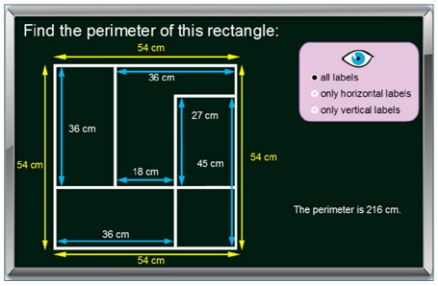
Topic: Problem Solving
Activity: *Money Problems: Four Operations with Pounds*
Pupils solve money problems using the 4 operations. There are multiple strategies that can be used but the support area suggests calculating the pounds and pence separately.



Topic: Problem Solving
Activity: *Divisibility Tests (2, 5, 10)*
Pupils apply their understanding of the divisibility rules for 2, 5 and 10 to decide if given numbers are divisible by 2, 5, or 10.



Topic: Problem Solving
Activity: *Magic Symbols 2*
In this activity, pupils problem solve and reason using clues to determine the value of symbols. Harder questions include simple decimals.



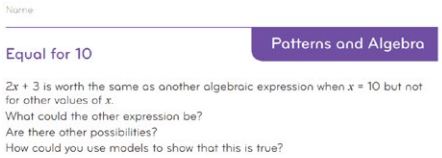
Topic: Problem Solving
Activity: *Perimeter Detectives 2*
Pupils determine the perimeter for a given rectangle by first calculating the missing lengths.

Year 6 White Rose Maths (WRM) Summer Scheme of Learning, 2018

Rich learning tasks (eBooks)

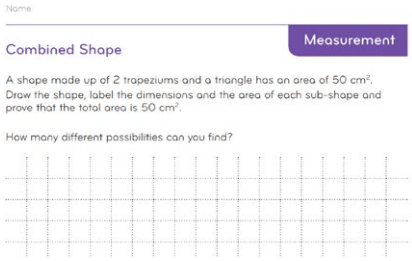
Rich Learning Task, G Series: The Gumball Heist

In this engaging task, pupils are asked to calculate the unknown whole using fractional amounts as clues. Pupils need to solve this task in steps and work systematically to find the solution.



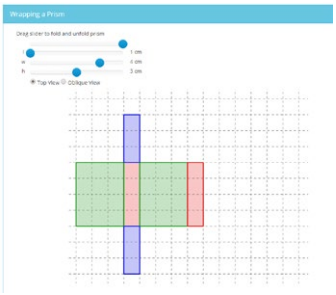
eBook, G series: Rich Learning Tasks — Equal for 10

Pupils create different algebraic expressions that have the same value and are encouraged to model their expressions to justify their solution.



eBook, G series: Rich Learning Tasks — Combined Shape

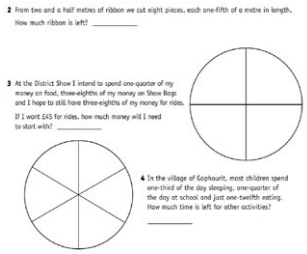
Pupils use their understanding of the additive nature of area to create composite shapes of a given total area. They are encouraged to explore different possible dimensions of the shapes that will still provide the correct total area.



Rich Learning Task, G Series: Wrapping a Prism

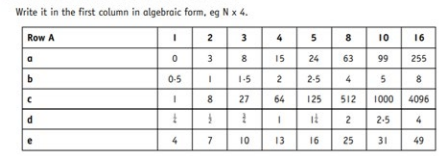
Pupils use their knowledge of the additive nature of areas in a composite shape and an interactive to find the possible dimensions of a prism with a given surface area.

Problem-solving and reasoning (eBooks)



eBook, F & G series: Problem Solving, pages 4—11

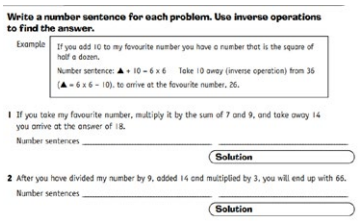
Pupils solve various problems including length, fractions, the 4 operations, money and more. They are encouraged to use diagrams to solve these problems.



Row A	1	2	3	4	5	8	10	16
a	0	3	8	15	24	63	99	255
b	0·5	1	1·5	2	2·5	4	5	8
c	1	8	27	64	125	512	1000	4096
d	½	½	½	1	1½	2	2·5	4
e	4	7	10	13	16	25	31	49

eBook, F & G series: Problem Solving, pages 14—21

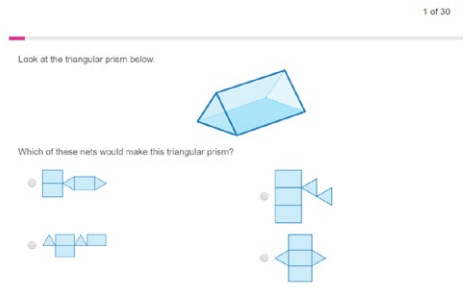
Pupils look for patterns and identify rules, sometimes recording the rules in algebraic form.



eBook, F & G series: Problem Solving, pages 34—41

In these pages, pupils are encouraged to work backwards to solve problems involving the 4 operations, money, fractions, number properties and more. They need to identify the relevant known information and use that as a starting point to work backwards to determine the unknown values.

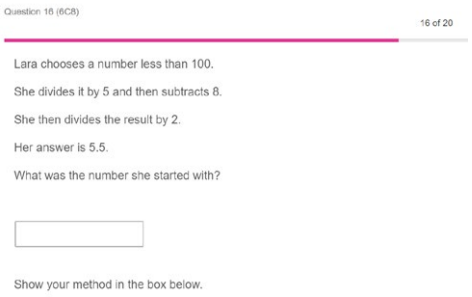
Year 6 reasoning tests



England Y6 Term 3 Reasoning Assessment

Termly reasoning assessments provide pupils with practice in applying their mathematical knowledge and understanding to solve a range of problems set out in similar formats to SATs questions. Pupils can check their answers before submitting and are reminded of any questions they have missed. Immediate feedback is given to pupils, along with correct answers where they have made an error.

Teachers receive reports which can be exported as Excel spreadsheets, including details of the objectives and percentage results for each mathematical strand, in addition to the overall score and percentage. On a class level, teachers can identify strengths and weaknesses. These assessments can also be printed through the Assessment Area on the original Mathletics Teacher Console.



England KS2 Practice SATs Reasoning

Pupils can work through 2 example KS2 SATs reasoning papers, each containing 28 questions written in a range of formats used in recent SATs papers. Pupils are given the opportunity to check or complete any missed questions before submitting their answers. Space is provided for pupils to record their working out on the screen and teachers can view the working out, played back as short video clips. Immediate feedback is given to pupils and the correct answers are shown.

Detailed feedback is given to teachers, with the ability to assign Mathletics activities to fill any gaps in learning. Results can be exported as Excel spreadsheets with a breakdown of objectives and the percentage per mathematical strand, as well as the overall score and percentage.

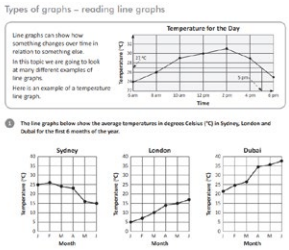
The KS2 Practice SATs Reasoning Tests can also be downloaded and printed from the Mathletics Library on the new Mathletics Teacher Console.

When assigning activities with calculations that do not have space for recording any working out, consider getting pupils to record their thinking strategies in their Maths books or on a whiteboard, before answering the question in Mathletics. Pupils can then self-mark their work after each question. If they have made a mistake, they can correct their work using the support feature in the activities. Instant feedback and learning!

Examples of alignment to Mathletics
Block 3 (Weeks 6–7) Statistics

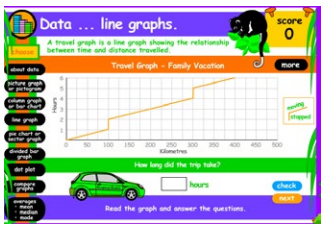
National Curriculum Objectives	WRM Small Steps
▸ Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. ▸ Interpret and construct pie charts and line graphs and use these to solve problems. ▸ Calculate the mean as an average.	▸ Read and Interpret Line Graphs ▸ Draw Line Graphs ▸ Use Line Graphs to Solve Problems ▸ Circles ▸ Read and Interpret Pie Charts ▸ Pie Charts With Percentages ▸ Draw Pie Charts ▸ The Mean

Small step: Read and Interpret Line Graphs



eBook, G series: Statistics, page 15

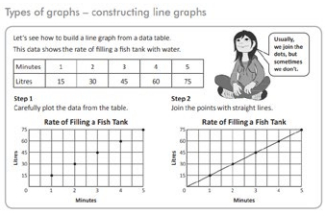
This page explains the use of line graphs for representing continuous data and illustrates this with a graph showing changes in temperature. Pupils answer basic questions related to line graphs to become familiar with reading and interpreting line graphs.



Rainforest Maths — Level G — Data — line graph

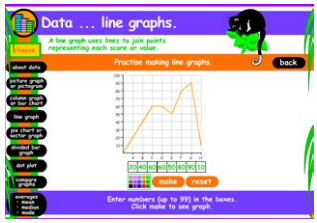
Pupils are shown an example of a line graph which shows the relationship between time and distance travelled. Pupils use the line graph to answer a series of questions, receiving immediate feedback and the opportunity to retry any incorrect answers.

Small step: Draw Line Graphs



eBook, G series: Statistics, pages 17–19

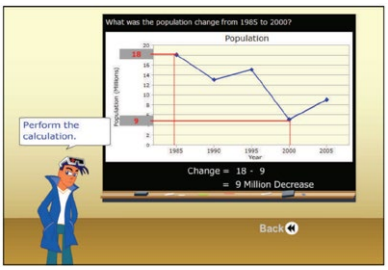
Page 17 explains and illustrates how to create a line graph. Pupils then use the information they are given to complete tables and construct their own line graphs.



Rainforest Maths — Level G — Data — line graph

When pupils click on the 'more' tab, they are taken to a screen which supports them in creating a line graph. Pupils enter values up to 99 into a table. When 'make' is clicked the line graph is created. This visual would work well on a screen with a class, enabling the pupils to think about what scenarios the line graph might be representing and suggesting questions that the graph could answer.

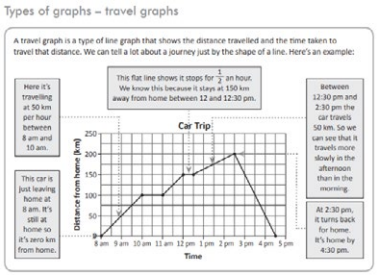
Small step: Use Line Graphs to Solve Problems



Topic: Statistics

Activity: *Line Graphs: Explanation*

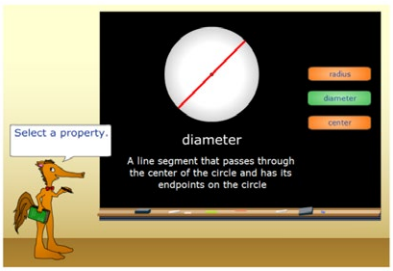
Pupils answer 1-step and 2-step questions related to line graphs with varying contexts and scales.



eBook, G series: Statistics, pages 23–24

Pupils are shown an example of a line graph which represents the distance travelled over time. Pupils answer questions using the information shown in the graph. Their understanding is extended with additional graphs and opportunities to problem solve by retrieving information shown on the graph.

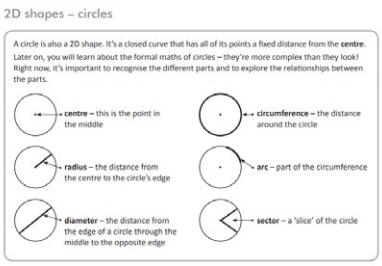
Small step: Circles



Topic: Statistics

Activity: *Identifying Parts of Circles 1*

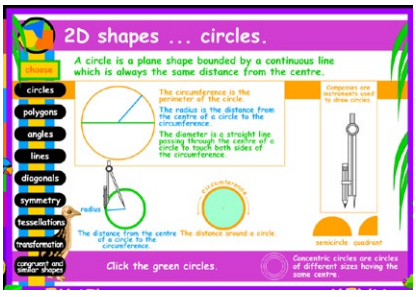
Pupils are shown diagrams of circles and are asked to identify the diagram that represents a particular part of a circle (radius, diameter, centre).



eBook, G series: Geometry, pages 14–17

Page 14 explains the different parts of a circle and the relationship between them. Pupils explore the terms centre, radius, diameter, circumference, arc and sector. They identify these parts and mark them onto circles.

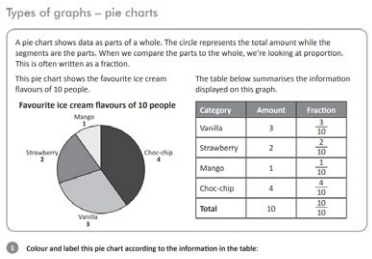
Page 16 is a partner activity which reinforces the relationship between radius and diameter.



Rainforest Maths — Level F — 2D shapes — circles

This page explains the radius, diameter and circumference of circles and the relationships between them.

Small step: Read and Interpret Pie Charts



eBook, G series: Statistics, pages 7–8

On page 7, the concept of a pie chart is explained and illustrated. Pupils then answer questions by reading and interpreting a range of pie charts constructed to reflect real-life scenarios, including favourite ice-cream flavours and colours.

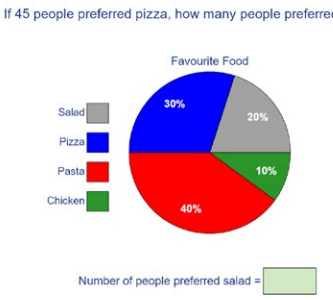
Pupils also use their knowledge of fractions to help them in interpreting pie charts.

Small step: Pie Charts with Percentages

Topic: Statistics

Activity: *Pie Charts*

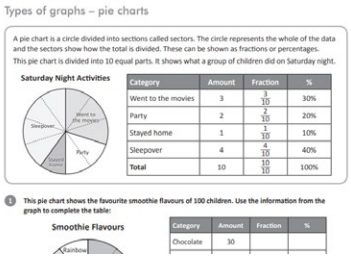
Pupils solve problems, beginning with ones that reinforce how to read pie charts using a key. Harder questions require pupils to calculate values using the key and given percentages on the pie chart. All percentages are multiples of 10.



Topic: Statistics

Activity: *Pie Chart Calculations*

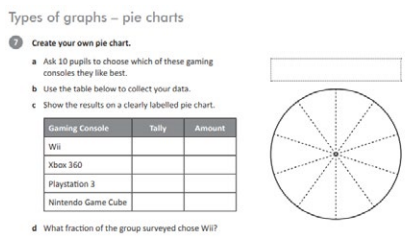
Pupils solve a variety of problems related to information represented in pie charts. Sometimes pupils are given the whole and asked to find the value of a segment on the pie chart, other times they are asked to find the whole given one value on the pie chart. In addition, they are asked to find the value of a segment using the value of another segment.



eBook, G series: Statistics, pages 9–11

Page 9 introduces the concept of showing percentages of a whole on a pie chart. Pupils look at a pie chart and complete a table to show the fraction and percentage of children who like a range of ice-cream flavours. Pages 10–11 provide further practice for pupils in interpreting pie charts and problem solving using percentages.

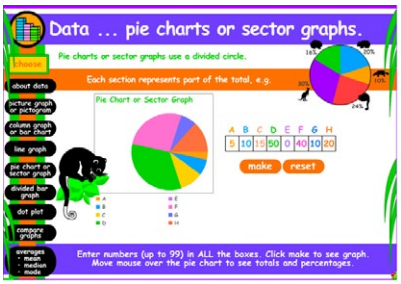
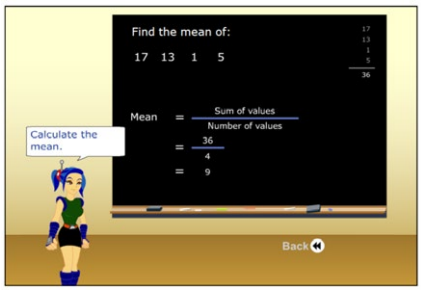
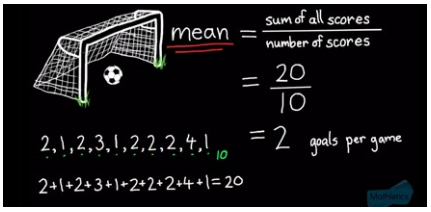
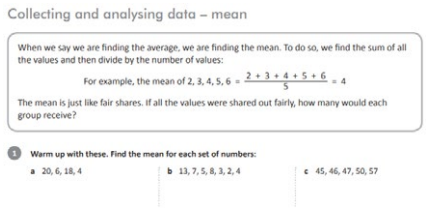
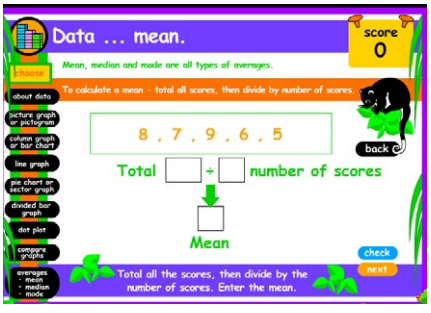
Small step: Draw Pie Charts



eBook, G series: Statistics, page 12

In exercise 7, pupils gather data from 10 children about their favourite games console and then complete a table and pie chart.

In exercise 8, pupils decide what they want to represent, gather the data, complete the table and then construct the pie chart.

	**Rainforest Maths — Level G — Data — pie charts or sector graphs** Pupils enter a series of values, and then click to create the corresponding pie chart. Hovering over a section of the pie chart reveals the value, fraction and percentage of the section.
Small step: The Mean	
	Topic: Statistics Activity: *The Mean* Pupils find the mean from a small set of data.
	Topic: Statistics Activity: *Mean* Video: *Finding the mean* In the activity 'Mean' pupils can access a conceptual video 'Finding the mean' which provides a clear explanation of how to find the mean and explains that the mean is the average value.
	**eBook, G series: Statistics, pages 28–29** Page 28 explains the concept of finding the mean of a group of values. Pupils apply their understanding to work out the mean in a range of real-life scenarios, such as the cost of boots and the heights of baseball players.
	**Rainforest Maths — Level G — Data — averages mean** Pupils are shown a group of values and follow the instructions to find the mean. Pupils enter their answer and check to see if they are correct. Pupils can also explore mode and median averages.

Mathletics

powered by

3P Learning

For more information about Mathletics, contact our friendly team.

3P Learning Ltd
4th Floor, Bull Wharf, Redcliff Street,
Bristol, BS1 6QR.
Tel: 0117 370 1990
Email: support@3plearning.co.uk
www.mathletics.com