

# Mathematics Guide

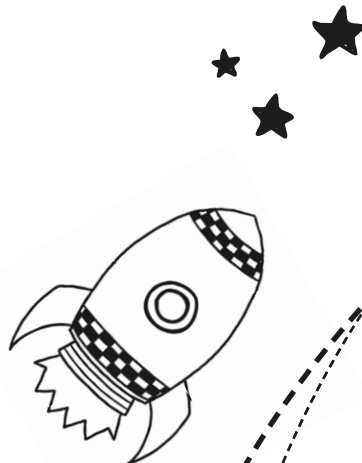




This is our scheme of work for the 2014 National Curriculum for Mathematics.

To help you save time we have designed resources to meet the aims in each area of mathematics. They have been developed by teachers and designed by our creative team to provide you with everything you need.

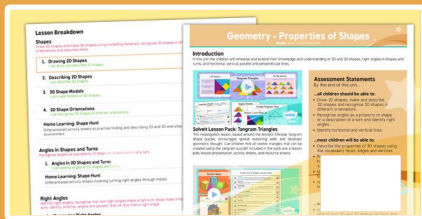
Each area of mathematics is covered by a flexible scheme of work including an area overview, an eye-catching display pack, a starter ideas pack, a set of handy challenge cards and a special investigative Solvelt lesson. The aims in each area of mathematics are covered by one or more standalone or linked lesson packs that teach objective-specific skills and could be used at any point in the year. Each lesson pack includes a detailed lesson plan, a lesson presentation, creative differentiated lesson activities and any other resources you may need. In addition to this, each aim is accompanied by differentiated home learning activities.



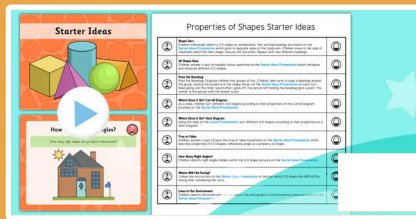
# What Is in a PlanIt Area of Mathematics?

For each area of mathematics there is...

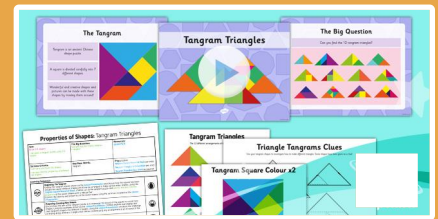
For example: **Geometry - Properties of Shape**



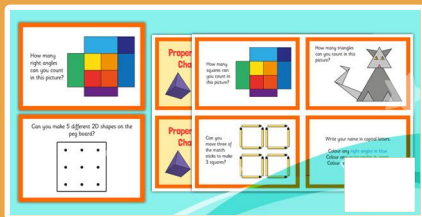
Area Overview



Starter Ideas Pack



SolvIt Lesson Pack

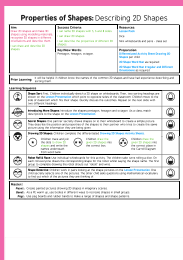


Challenge Cards



Display Pack

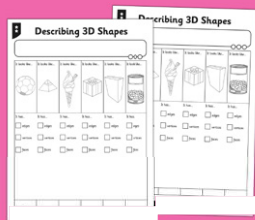
Within the area, each aim contains...



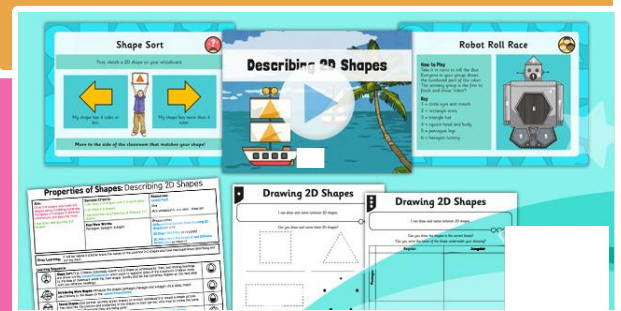
Lesson Plan



Lesson Presentation



Activity Sheets



Multiple Lesson Packs

each containing...

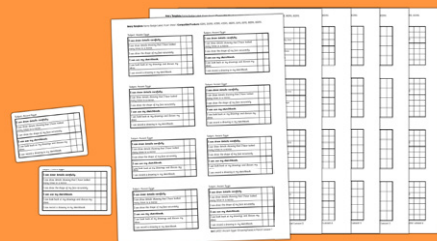


Activity Cards, Jigsaw, Bingo etc.

and sometimes...



Differentiated Home Learning



Success Criteria Grids

# What Goes into a PlanIt Lesson Plan?

Each lesson pack contains a lesson plan as a pdf document. Text can be copied from the plan to your own planning format. The lesson plan is split into four main sections to help with your planning.

Area Name

Lesson Name

**Resources:** Any resources you need will be listed here.

**Aim:** The text in red is the 2014 NC aim the green text gives you a child friendly aim for the lesson.

**Preparation:** Here you will find everything that needs preparing before the lesson.

Properties of Shapes: Describing 2D Shapes

<b>Aim:</b> Draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them. I can draw and describe 2D shapes.	<b>Success Criteria:</b> I can name 2D shapes with 5, 6 and 8 sides. I can draw 2D shapes. I can describe the properties of different 2D shapes.	<b>Resources:</b> Lesson Pack Dice Mini whiteboards and pens - class set
<b>Key/New Words:</b> Pentagon, hexagon, octagon.		<b>Preparation:</b> Differentiated Activity Sheet Drawing 2D Shapes per child 2D Shape Word Mat as required 2D Shape Word Mat Irregular and Different Orientations as required

**Prior Learning:** It will be helpful if children know the names of the common 2D shapes and have had experience describing and sorting them.

**Learning Sequence**

?	<b>Shape Sort:</b> First, Children individually sketch a 2D shape on whiteboards. Then, two sorting headings are shown on the Lesson Presentation which point to opposite sides of the classroom. Children move to the side of classroom which fits their shape. Quickly discuss the outcomes. Repeat on the next slide with two different headings.	🕒
👁️	<b>Introducing More Shapes:</b> Introduce the shapes pentagon, hexagon and octagon. As a class, match descriptions to the shape on the Lesson Presentation.	🕒
👤	<b>Secret Shapes:</b> One partner secretly draws shapes on to their whiteboard to create a simple picture. They describe the position and properties of the shapes to their partner who tries to create the same picture using the information they are being given.	🕒
👤	<b>Drawing 2D Shapes:</b> Children complete the differentiated Drawing 2D Shapes Activity Sheets.	🕒
👤	<b>Robot Roll &amp; Race:</b> Use individual whiteboards for this activity. The children take turns rolling a dice. On each roll everyone draws the corresponding shape for the robot whilst saying the shape name. The first group to complete drawing the robot shouts out 'robot!' and wins.	🕒
👤	<b>Shape Detective:</b> Children work in pairs looking at the shape pictures on the Lesson Presentation. One child secretly selects one of the pictures. The other child asks questions using mathematical vocabulary to find out which of the pictures they are thinking of.	🕒

**Masterit:**  
**Paint:** Create painted pictures showing 2D shapes in imaginary scenes.  
**Bend:** As a PE warm up, use bodies in different ways to recreate shapes in small groups.  
**Peg:** Use peg boards and rubber bands to make a range of shapes and shape patterns.

**Learning Sequence:**  
 Takes you through the lesson step by step.

**Prior Learning:** Anything that would be helpful for the children to have already learnt will be noted here.

**Footer:** This tells you which area the lesson comes from, where the lesson comes within the area, and if the lesson stands alone or is linked in a series with other lessons.

**Maths |** Year Group | Area of Mathematics | Aim | Lesson # of #: Lesson Name

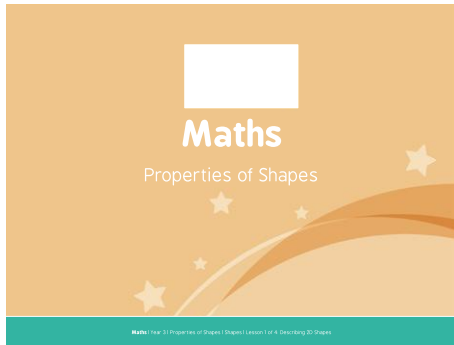
## Lesson Plan Icons

Duration of Activity	Short 	Medium 	Long 		Individual		Talk Partners
Differentiation	Low 	Medium 	High 		Pairs		Mental & Oral Starter
Assessment		Or look for green text in the learning sequence.			Group Work		Teacher Led
					Whole Class		

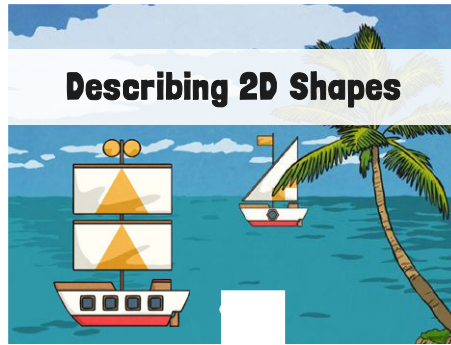
# What Goes into a Plant Lesson Presentation?

Each lesson pack has a lesson presentation, available as a PowerPoint or interactive whiteboard file. The presentation frames the learning sequence as outlined on the lesson plan, providing information, posing questions and setting tasks.

Each presentation has the same 3 slides at the beginning;



**Slide One:** Plant title slide with the subject and the area title. The footer of the slide will match the lesson plan.



**Slide Two:** Child-friendly title slide. You might choose to start your lesson with this slide.



**Slide Three:** Child-friendly aim and success criteria.

Slide titles in the lesson presentation correspond with the bold titles in the learning sequence in the lesson plan.

You'll find the corresponding icon in the top right-hand corner. There is a key to the icons at the bottom of the page.

**Secret Shapes**

**Partner A:** Secretly chooses one of the boats.  
**Partner B:** Ask questions using your shape vocabulary to work out which boat your partner is thinking of.

**Aim**

- I can draw and describe 2D shapes.

**Success Criteria**

- I can name 2D shapes with 5, 6 and 8 sides.
- I can draw 2D shapes.
- I can describe the properties of different 2D shapes.

The success criteria slide will be repeated at the end of each presentation to facilitate assessment.

## Lesson Presentation Icons



Individual



Group Work



Talk Partners



Assessment



Pairs



Whole Class



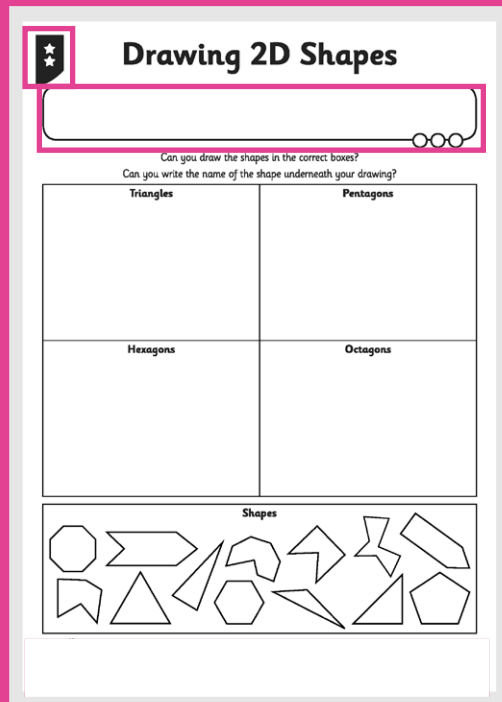
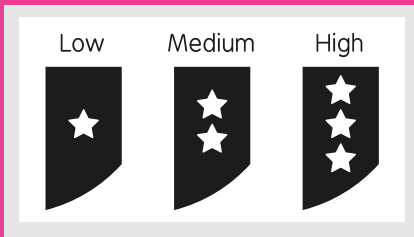
Mental & Oral Starter

# Our Activity Sheets

Our activity sheets are provided in .pdf format and .doc format.

Differentiation is indicated by the star system.

## Activity Sheet Icons



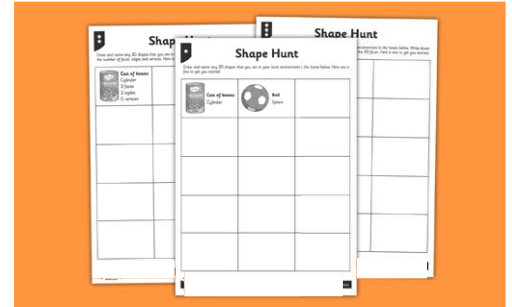
... This box is for the lesson aim. An editable version where you can add your own aim is also provided. The three circles are for optional self or teacher assessment

e.g. traffic light colours or shading 1, 2 or 3.

... The footer will let you know which area and lesson the activity sheet is from.

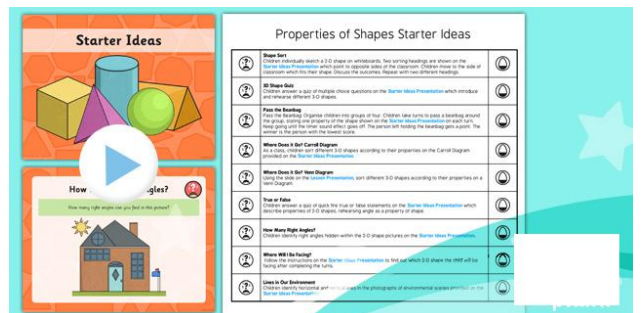
# Home Learning

For each curriculum aim, differentiated home learning activities are provided.



# What's in a Plant Starter Ideas Pack?

Each area of mathematics features a Plant starter ideas pack, which has everything you need to teach a range of mental and oral starters for that area. Each starter that is included on a lesson plan in the area will be featured in this pack, giving you the option to substitute another starter from the area to suit your class, or a starter from another area altogether. Each starter ideas pack contains a starter ideas plan, a starter ideas presentation, and any other resources you might need to teach the starters in the pack.



# What Is a Plant Solvelt Lesson?

Plant Solvelt lessons have been devised to provide a problem solving lesson for each area of the mathematics curriculum. Each lesson is based on investigating a 'Big Question', providing engaging and accessible activities that encourage skills of using, applying and mathematical reasoning. Solvelt lessons are structured a little differently to other Plant lessons, following the structure of the problem solving process, allowing you the freedom to teach over a longer session or a number of sessions, as required. Each Solvelt lesson pack contains a lesson plan, a lesson presentation, and accompanying lesson resources.

**Beginning:** Children are guided to discuss and understand the problem and to consider what information they already have and what they need to find out.

**Exploring:** Children carry out their plan, investigating and discussing possible outcomes.

**Supporting and Extending:** This section provides ideas for active differentiation so that the lesson is accessible and challenging for every child.

**The Big Question:** Each of our Solvelt lessons is based around a 'Big Question' to focus the children's investigations on an open-ended and practical mathematics activity.

**Preparing:** Children devise a plan, discussing and choosing appropriate strategies.

**Reviewing:** Children look back at their work, what strategies were successful and what they have learnt.

### Properties of Shapes: Tangram Triangles

<b>Aim:</b> Draw 2-D shapes. I can solve a tangram puzzle using 2-D shapes.	<b>The Big Question:</b> Can you find the twelve tangram triangles?	← <a href="#">Lesson Pack</a>
<b>Success Criteria:</b> I can name and draw 2-D shapes. I can describe the properties of different 2-D shapes.	<b>Key/New Words:</b> Tangram.	<b>Preparation:</b> Tangram Square Resource Sheet per child Tangram Triangles Activity Sheet per child Tangram Triangles Clue Sheet as required

**Learning Sequence**

	<b>Beginning: The Tangram</b> Display the tangram square shown on the <a href="#">Lesson Presentation</a> and discuss how the square has been divided into seven different shapes which can be arranged to make various other shapes. Using the <a href="#">Tangram Square Resource Sheet</a> , children cut up the tangram puzzle and identify and describe the properties of the seven shapes with a talk partner. Confirm the identity and properties of the seven shapes using the summary included on the <a href="#">Lesson Presentation</a> .	
	<b>Preparing: Creating New Shapes</b> Discuss how the aim of the tangram puzzle is to rearrange the pieces of the square to create new shapes. Using the examples shown on the <a href="#">Lesson Presentation</a> , children explore rearranging their own tangram shapes into different triangles. Using the <a href="#">Lesson Presentation</a> , introduce the challenge of finding all the different triangles that can be created using any arrangement of up to seven of the tangram shapes.	
	<b>Exploring: Triangle Tangrams</b> Children investigate the twelve different triangles that can be made by using any arrangement of up to seven of the tangram shapes cut from the <a href="#">Tangram Square Resource Sheet</a> . Children record the triangles as they make them on the <a href="#">Tangram Triangles Activity Sheet</a> .	
	<b>Reviewing: The Twelve Tangram Triangles</b> Share the answers with the children, discussing how many of the twelve triangles they found. Were some triangles harder to find than others? Discuss the properties of the different triangles created using the questions on the <a href="#">Lesson Presentation</a> . How many triangles did we find which used 2, 3, 4, 5, 6, 7 shape pieces? Are there any patterns to our findings? How many times did we use the square piece to help make a triangle? Do any of the triangles have a symmetrical pattern? Did the children notice anything else about the triangles they found?	

	<b>Supporting</b> Encourage children to manipulate the shapes in different ways, rotating and flipping them as needed. If required, children may use the <a href="#">Triangle Tangrams Clues Sheet</a> , which gives one or two pieces in each triangle as a starting point.
	<b>Extending</b> What other shapes can children make using the pieces of the Tangram Puzzle?

**Masterit:**

**Createit:** Investigate creating animal tangram pictures using this [Animal Tangram Activity Booklet](#).

**Playit:** Solve a range of online Tangram Puzzles on the [Museum of Play website](#).

**Puzzleit:** Create tangram puzzles for younger children to solve.

## Additional Solvelt Lesson Icons



Supporting



Extending

# Meet the Teacher Team Behind PlanIt

## Leeanne

Experienced across the primary phase, Leeanne has an enthusiasm for literature and art. She is dedicated to promoting active and creative learning for children of all ages and abilities.



## Nicola

With over 20 years' experience in teaching 5-11 year olds, Nicola now works as a specialist maths interventions teacher. She loves bringing enjoyment and fun to lessons, and helping children succeed with maths.

## Helen

From an inner city school in London to a village school in Yorkshire, Helen is a former SENCo who has enjoyed 13 years teaching 6 to 11 year olds, focusing on a creative, cross curricular approach.



## Hannah

With 11 years' experience as a primary teacher, Hannah enjoys teaching all subjects, but she particularly loves her specialist subject of music, and believes learning should always be fun.

## Emma

Emma is an experienced primary teacher with an MA in Educational Leadership. She currently teaches a range of ages and enjoys creating exciting learning opportunities across the primary curriculum.



## Helen

Helen is an experienced teacher, passionate about inspiring children through creative and engaging activities. She has enjoyed leading and developing specialisms in science, history and assessments.

## Dawn

Before retiring from teaching after 34 years, Dawn's final role was associate headteacher of a multicultural school. She loves bringing fun into the classroom, especially through games and role play.



## Beth

Beth has over 9 years teaching experience in primary schools. She has led PE and ICT and enjoys creating lessons which engage children and are enjoyable for children and teachers.

## Sue

Sue has experience in teaching 5 to 14 year olds, in very small schools, larger primary and middle schools and in the independent sector. She has expertise in humanities and computing.



## Andrew

Andrew has welcomed every challenge of being a classroom teacher, maths lead and SLT member for 12 years and never tires of inspiring new and enquiring minds.

## Lisa

Lisa has over 8 years' experience teaching 7-11 year olds. She has been a designated Leader of Gifted and Talented, SENDCo and Humanities. She has a passion to instil a love of learning through challenging, enriching and innovative lessons.



## Rebecca

Rebecca has experience teaching 5-7 year olds and prides herself on making learning fun, real and creative. She is leader of geography and computing and enjoys all aspects of the curriculum.



Be kind to yourself, you're doing wonderfully.