# EFFECTIVE MATHS



This booklet contains suggestions about activities for greater depth. The activities are directly linked to the content of specific lessons, making them a relevant, logical way to develop children's understanding.

For this unit, all the greater depth activities are on the independent task sheet.

The activities here are *suggested* activities that will likely work well for many of the children who complete the independent task successfully. Clearly the class teacher will have specific knowledge of the needs of the children within the class and may determine different challenges are appropriate.

Lesson	Focus	Suggestions for greater depth	
1	3D shapes	The greater depth task is located at the bottom of the independent task (see right).	<u>Naming solid shapes</u> Draw arrows to connect the solid shapes to their names.
		Choose a solid shape. How many corners does it have? How many faces? How many sides?	pyramid cone
		Can you use blu-tack and straws to make the skeleton of a solid shape?	sphere cuboid
			cylinder cube
			<u>CHALLENGE</u> Choose a solid shape. How many corners does it have? How many faces? How many sides?
			Can you use blu-tack and straws to make the skeleton of a solid shape?
2	2D shapes	The greater depth task is located at the bottom of the independent task (see right).	How many of each type of shape?
		How many squares can you see?	circles
			CHALLENGE rectangles
			Aow many squares can you see?

Lesson	Focus	Suggestions for greater depth
3	Drawing/ making 2-D shapes	The greater depth task is located at the bottom of the independent task (see right).
		Children use a ruler to connect points to make a 3 × 3 grid (as used • in the previous lesson's 'How many squares?' challenge).
		CHALLENGE
		Use a ruler to connect ° ° ° ° ° the points. How many squares altogether?
		0 0 0 0
		• • • •
4	Shapes around us and patterns	The greater depth task is located at the bottom of the independent task (see right). Create own shape pattern. You may want to specify the number
		of shapes, the type of change (eg change of size, change of shape).
		CHALLENGE         Create your own         shape pattern.         Image: Ima

Lesson	Focus	Suggestions for greater depth	
5	Patterns with 2D and 3D shapes	The independent tasks in this lesson are practical tasks. The first requires children to create repeating patterns where the shapes and the shape sizes change. For additional challenge, you could add conditions: use 3 shapes and have 2 changes of size.	Independent task/partner task
		NB Do not give rotation as a restriction. We have not changed the rotation of any shapes yet - this will come later on in the work on position and direction. The second task requires children arrange nine solid shapes on a 3 × grid so that each row and column has each of the shapes. For greater depth children can find different ways to do this. There is also a challenge slide in	HEETINE       HEETINE         Let's investigate!       Vour teacher will give you nine solid shapes.         Three of each shape will be the same.       Image: Can you arrange them on the grid so each row and column has each of the three shapes?         Can you arrange them on the grid so each row and column has each of the three shapes?       Image: Can you arrange them on the grid so each row and column has each of the three shapes?         Image: Construct three shapes?       Image: Can you arrange them on the grid so each row and column has each of the three shapes?         Image: Construct three shapes?       Image: Can you arrange them on the grid so each row and column has each of the three shapes?         Image: Construct three shapes?       Image: Can you arrange them on the grid so each row and column has each of the three shapes?         Image: Construct three shapes?       Image: Can you arrange them on three shapes         Image: Construct three shapes?       Image: Can you arrange them on three shapes         Image: Construct three shapes?       Image: Can you arrange them on three shapes         Image: Construct three shapes       Image: Can you arrange them on three shapes         Image: Construct three shapes       Image: Can you arrange three shapes         Image: Construct three shapes       Image: Can you arrange three shapes         Image: Construct three shapes       Image: Can you arrange three shapes
		the plenary.	Liam has less shapes than Sarah. Temi does not have any cubes. Sarah has three types of shape, but no cylinders. Mia has more shapes than Temi. Mia Mia Mia Sarah Sarah

Lesson	Focus	Suggestions for greater depth	
6	Compose 2-D and 3-D shapes from smaller	This lesson is entirely practical and involves children composing 2D and 3D shapes from smaller shapes.	Both partners Use triangles and rectangles to make the shapes.
	shapes	There are many opportunities for greater depth within the lesson. For example, slide 8 (see right). Find more than one way to make the red shapes using triangles and squares.	Is there more than one way to do it?
		Slide 15. Encourage children to give precise explanations of similarities and differences. SAME Each shape is made with 5 cubes. In the first column of shapes there are always 4 cubes	BOTH PARTNERS What's the same? What's different?
		In the second column of shapes there are always 3 cubes together. <i>DIFFERENT</i> In the first column the fifth cube is either on top, behind or in front of the other 4 cubes. In the second column the remainin 2 cubes are either on top, behind of	s f or
		Slide 19. Children make the shapes shown using 5 cubes. The bottom row of shapes are more challenging.	BOTH PARTNERS Make these shapes using 5 cubes.

Lesson	Focus	Suggestions for greater depth	
7	Compose 2-D shapes from smaller shapes	This lesson is entirely practical and involves children composing 2D shapes from tangram pieces. Challenge runs throughout the lesson. NB Some children can find the making of Tangram shapes very frustrating, especially if they are normally very successful in maths. For such children, reducing the level of frustration by providing some hints is helpful. It is important to find the right balance between too much support and just enough. Most of the lesson involves children trying to use their tangram pieces to copy pictures. Challenge those that do this successfully to create their own tangram pictures.	
		The plenary provides challenge for the whole class (see right). Which shape can cover the most dots? Children are not allowed to rotate the shapes.	

Lesson	Focus	Suggestions for greater depth
8	Position	The greater depth task is located at the bottom of the independent task (see right). Use the vocabulary from the top of the sheet to write some sentences of your own that describe the positions of the toys. The plenary involves children describing how to navigate to
		particular shapes. [2] Which toys are not close to helicopter Greater depth would involve finding different routes to the same shape. tedy bear train alphabet cubes car ball <u>CHALLENGE</u> Use the vocabulary from the top of this sheet to write some sentences of your own that describe the positions of the toys.
9	Movement	The greater depth task is located at the bottom of the independent task (see right). The square goes above the circle. The rectangle goes below the triangle. The triangle is on the right of the square. CHALLENCE The square goes above the circle. The right of the square goes above the circle. The triangle is on the right of the square goes above the circle. The rectangle goes below the triangle. The triangle is on the right of the square goes above the circle. The rectangle goes below the triangle. The triangle joes below the triangle.

Lesson	Focus	Suggestions for greater depth
10	Turns	The greater depth task is located at the bottom of the independent task (see right).
		Create your own pattern that involves half turns.
		[3] Shade in the final grid in each
		pattern.
		CHALLENGE Create your own pattern that involves half turns.