








Multiplication and Division: Prime Numbers

Aim: Establish whether a number up to 100 is prime and recall prime numbers up to 19. To know if a number up to 100 is prime and recall prime numbers up to 19.	Success Criteria: I can create arrays to prove my answers. I can find factors of numbers. I can explain the differences between prime and composite numbers.	Resources: Lesson Pack Counters or cubes Scissors and glue
	Key/New Words: Prime, composite, factor, product, arrays, multiply	Preparation: Differentiated Prime Numbers Activity Sheet – one per child Diving into Mastery Activity Sheets – as required

Prior Learning: It will be helpful if children are familiar with how to create arrays and how these link to their prior learning of multiplication.

Learning Sequence

	Remember It: Using the corresponding slide on the Lesson Presentation , the children will be reactivating prior learning on arrays and will consider the calculation that could match the image. The children will further explore other ways of building arrays for the number 12 and will list the factors that create this number.				
	Arrays: Using the three corresponding slides of the Lesson Presentation , the children will share their responses to the statement of 'There is only one way to create an array for the number 12.' Can the children understand that 12 can be organised into many array formations? Can the children further share the calculation that can be assigned to each array?				
	What Makes a Number Prime? Using the corresponding slide of the Lesson Presentation , the children will work in pairs to explore making arrays of the numbers listed on the slides. The children will be finding out if it is possible to make complete arrays for each number. They will further consider if there are any numbers where arrays can be built in more than one way. The children will look out for numbers where the array can only be built in one way. Working in pairs, the children will record their answers. The teacher could model on a flipchart how a simple table could be used to sort the numbers, using the headings 'prime' and 'not prime'. Having carried out the exploratory task, children will share their findings. Emphasise that numbers which create only one array of a single line or an incomplete array are prime numbers and have only two factors. Can the children use concrete resources to build arrays correctly for each number and list their factors? Can the children identify when an array is incomplete? Can the children work systematically and organise their findings clearly?				
	What Makes a Number Composite? Use the corresponding slides on the Lesson Presentation to lead a discussion on the differences between prime and composite numbers. It is important that the children grasp that prime numbers have two factors (one and itself) and composite numbers have more than two factors. Use the array images on the slideshow to provide a visual to back these facts up. Can the children distinguish that prime numbers have two factors whereas composite numbers have more than two factors?				
	Reasoning: Use the corresponding slides on the Lesson Presentation , the children will consider the statements provided by the three characters. This provides an opportunity for assessment and allows the common misconception of one being a prime number to be addressed and discussed. Can the children reason that one is neither a prime number nor a composite number, as it has only one factor?				
	Prime Numbers: The children work independently to complete the differentiated Prime Numbers Activity Sheets . <table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;"> Children will sort images of arrays to consolidate understanding on complete and incomplete arrays. They will then draw their own arrays and sort these under the headings 'prime' and 'composite'. </td> <td style="width: 33%; border: none;"> Children will sort numbers into a table under the headings 'prime' and 'composite'. They will draw an array to match each number. Children will answer reasoning questions to deepen their understanding. </td> <td style="width: 33%; border: none;"> Children will spot errors in the work of the child on the activity sheet. The children will complete challenges involving a missing number problem and will establish if statements are 'always true', 'sometimes true' or 'never true'. </td> </tr> </table>	Children will sort images of arrays to consolidate understanding on complete and incomplete arrays. They will then draw their own arrays and sort these under the headings 'prime' and 'composite'.	Children will sort numbers into a table under the headings 'prime' and 'composite'. They will draw an array to match each number. Children will answer reasoning questions to deepen their understanding.	Children will spot errors in the work of the child on the activity sheet. The children will complete challenges involving a missing number problem and will establish if statements are 'always true', 'sometimes true' or 'never true'.	
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	<p>Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and in fact, others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding.</p> <p> Children complete missing number sequences and fix a missing number calculation.</p> <p> Children answer reasoning questions where they consider a statement and provide evidence to back up if they agree or disagree.</p> <p> Children work individually or collaboratively on problem-solving questions related to creating prime numbers and ensuring all possible outcomes have been created.</p>	
	<p>Always, Sometimes or Never? Using the corresponding slide of the Lesson Presentation, the children will discuss the statement 'Prime numbers are odd'. They will decide if this is always, sometimes or never true. Can the children provide reasons for agreeing and disagree and draw on learning from the lesson to back up their answers?</p>	

Exploreit

Learnit: Children will find this visually exciting [Knowledge Organiser](#) a useful tool to support their understanding of multiplication and division.

Captureit: Children can practise building arrays using a wide range of resources in the classroom and at home. You could have them photograph their creations to add to your working wall.

Proveit: Children could apply prior learning on factors by creating factor rainbows or factor bugs when exploring prime numbers.