





















Multiplication and Division: Prime Factors

<p>Aim: Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Ready-to-Progress Criteria: Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors. (5MD-2)</p> <p>To find prime factors of 2-digit numbers.</p>	<p>Success Criteria: I can find factors of 2-digit numbers. I can recognise prime numbers. I can write a calculation to match my drawing.</p>	<p>Resources: Lesson Pack Multiplication Square</p>
	<p>Key/New Words: Prime, composite, factors, prime factors, product, calculation, factor tree.</p>	<p>Preparation: Differentiated Prime Factors Activity Sheets – one per child Diving into Mastery Activity Sheets – as required</p>

Prior Learning: It would be helpful if the children could recap how to find factors of two-digit numbers. You can revise prior learning on factors [here](#).

Learning Sequence

	<p>Remember It: Using the corresponding slide on the Lesson Presentation, the children will revise prior learning on factors by finding all possible factor pairs for a selection of two-digit numbers. Children will further be challenged to consider how they can prove that they have found all possible outcomes. The second slide will reveal the answers which will allow children to check their findings and will provide the teacher with an opportunity to assess the children's knowledge. Can the children organise their findings in a systematic fashion? Can the children use knowledge of multiplication and dividing to find factor pairs?</p>	
	<p>Prime Factors: Using the corresponding slide of the Lesson Presentation, the children will explore why certain factors have been highlighted. They will consider why certain factors are special and it will be introduced that these are 'prime factors'. Children will recap the fact that prime numbers have only two factors. Can the children consider how the highlighted factors are different to the other numbers? Can the children apply the prior knowledge that prime numbers have two factors?</p>	
	<p>Factor Trees: Using the corresponding slide of the Lesson Presentation, the children will be presented with a factor tree and will discuss how they think it has been created. There is an opportunity here to talk about the exact way in which a factor tree is drawn. Children will then have an opportunity, with a partner, to complete partially drawn factor trees before engaging in the challenge of creating their own. For children working towards the expected level, it may be beneficial for them to have access to a multiplication square to assist their thinking. Can the children recall factor pairs for the main number in the factor tree? Can the children spot prime factors by applying their knowledge of prime numbers?</p>	
	<p>Prime Numbers Multiply to Make a Product: To extend learning further, the children will be shown how a calculation can be created by taking the prime numbers from the factor tree. They will be shown how this creates a calculation to show the product. The children will have an opportunity to explore the missing numbers that need to go in the calculation on the screen. Can the children see the connection between the numbers in the factor tree and the numbers that go in the written calculation?</p>	
	<p>Find Prime Factors: The children work independently to complete the differentiated Prime Factors Activity Sheets.</p> <div style="display: flex; justify-content: space-around;"> <div>  <p>Children working towards expected level will complete an activity where they spot prime numbers within completed factor trees. They can then be challenged by completing partially drawn factor trees.</p> </div> <div>  <p>Children working at expected level will consolidate their understanding by completing partially drawn factor trees and writing the corresponding calculation. The children will then be challenged by creating their own factor trees before answering a reasoning question to deepen their understanding.</p> </div> <div>  <p>Children working at greater depth will be exploring how factor trees can be created in more than one way. They will further spot errors in a completed factor tree and will problem solve by finding out if 26 or 42 has the most prime factors.</p> </div> </div>	

	<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 fluency related to recalling prime factors and write calculations to show numbers as products of their prime factors.</p> <p> Children will answer reasoning questions related to prime factors. They will explain if they agree or disagree with statements and will need to prove their answers.</p> <p> Children work individually or collaboratively on problem-solving questions related to finding unknown values and detecting numbers based on short statements.</p>	
	<p>Reasoning: Using the corresponding slide of the Lesson Presentation, the children will consider if the statement is always true, sometimes true or never true. Can the children use evidence from their learning to give reasons for their answer? Can the children articulate themselves clearly using key maths vocabulary?</p>	

Exploreit

Reviseit: Using this resource, children could recap their prior knowledge on [Factor Pairs](#).

Buildit: Children can create a human factor tree to further find out about prime factors.

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