Multiplication and Division: The Sieve of Eratosthenes

Aim:	Success Criteria:	Resources:
Establish whether a number up to 100 is prime and recall prime numbers up to 19. I can find all the prime numbers up to 100.	I can explain what a prime number is. I can use the Sieve of Eratosthenes to identify prime numbers.	**Lesson Pack**
	Key/New Words: Prime number, composite number, factor, multiple, odd, even.	**Preparation:** Differentiated **The Sieve of Eratosthenes Activity Sheets** – one per child

Prior Learning:	It will be helpful if the children know the multiplication facts up to 12 ×12 and understand the words multiple, factor and prime number.

Learning Sequence

What Am I? Play this game as a whole class or in smaller groups. Choose a child to think of a number from 1-50. The rest of the group try to identify the number by asking questions that can only be answered with 'yes' or 'no'. Encourage the use of the key vocabulary. As an extra challenge, the children could think of larger numbers.

What Is a Prime Number? What is a prime number? Children discuss with a talk partner before feeding back to the class. Encourage children to explain using appropriate mathematical vocabulary. After the children have given their responses, share the definition on the **Lesson Presentation**.

Who Was Eratosthenes? Read the information on the **Lesson Presentation** to give a brief summary of the life of Eratosthenes.

The Sieve of Eratosthenes: Ask children to turn over their **The Sieve of Eratosthenes Activity Sheets**. Read through the instructions on the **Lesson Presentation** to model using the method to identify prime numbers.

The Sieve of Eratosthenes Activities: Children complete the differentiated **The Sieve of Eratosthenes Activity Sheets**, using the Sieve of Eratosthenes method to identify prime numbers.

★	★★	★★★
Children follow the instructions to sieve out multiples and identify the prime numbers up to 100.	Children follow the instructions to sieve out multiples and identify the prime numbers up to 120.	Children follow the instructions to sieve out multiples and identify the prime numbers up to 200.

Are These Prime Numbers? Ask children turn over their **The Sieve of Eratosthenes Activity Sheets**. Children look at the numbers on the **Lesson Presentation** one by one, sitting down if the number is prime and standing up if the number is composite. Ask if there are any even prime numbers. Can children explain what a prime number is, using mathematical vocabulary?

Masterit

Researchit: Encourage children to find out more about Eratosthenes. They could create a fact sheet or presentation to share with the class.

Displayit: Children make a poster of the prime numbers from 2-100 for display, including a definition of prime numbers and an explanation of how to find them.

Testit: Working in pairs, children roll two dice to generate a two-digit number. Is it a prime number or a composite number? Use The **Sieve of Eratosthenes Activity Sheets** to find out.