

Factors, multiples, primes and composites

CURRICULUM ALIGNMENT

NUM.OPS.4

build upon, select and make use of a range of operation strategies.

ALG.PRR.4a

identify, explain and apply generalisations, including properties of operations, mathematical models and patterns.

INTERACTIVES **Hundred Square · challenge, display, explore**

WHAT THIS LESSON TEACHES

A factor divides evenly into a number with nothing left over; a multiple is a number you land on counting in steps. Prime numbers have exactly two factors while composite numbers have more than two.

- 1, 2, 3, 4, 6 and 12 are factors of 12; 6, 12, 18 and 24 are multiples of 6.
- 7 is prime because only 1 and 7 divide into it.
- 9 is composite because 1, 3 and 9 all divide into it.

MODEL THIS ON THE BOARD

LISTING FACTORS AND MULTIPLES OF 12

- 1 Write the number 12 at the top.
- 2 List every whole number that divides 12 exactly: 1, 2, 3, 4, 6, **12**.
- 3 List the first five multiples by counting in 12s: **12**, 24, 36, 48, 60.
- 4 Mark 12 as composite because it has more than two factors.

ANSWER KEY

Scaffold: visual check on the page**Q1:** 1, 7; prime**Q2:** 1, 2, 5, 10; composite**Q3:** 1, 2, 3, 4, 6, 12; 12, 24, 36, 48, 60**a) Always :** By definition a prime has only 1 and itself.**b) Always :** Because 4 is a multiple of 2 so every step of 4 lands on a multiple of 2.**c) Never :** 1 has only one factor so it is neither prime nor composite.**d) Sometimes :** Some composites like 4 have an odd count while others like 6 have even.

EXTENSION SHEET · STRETCH ANSWERS

S1: 38 is composite — it can be divided evenly by 2 (so 1 and 38 are not its only factors).**S2:** 1, 2, 3, 4, 6, 8, 12, 16, 24, 48**S3:** 1, 2, 19, 38**S4:** 48 is composite — it can be divided evenly by 2 (so 1 and 48 are not its only factors).**S5:** 1, 2, 3, 6, 9, 18**Investigation:** Which numbers have the most factors? — open-ended; scan pupils' working for valid solution paths rather than a single answer.