Maths Mastery
Factors, Multiples and Prime Numbers
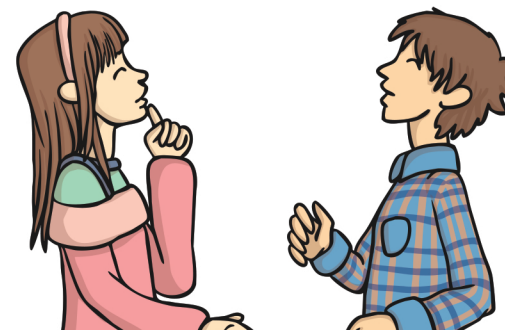### Challenge Cards

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1. Explain how you would find the common factors of 48 and 75.

   Compare your explanation with a partner. How are your ideas different?

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2. Use common factors to find equivalent fractions for the following factions:

$$\frac{15}{50} \qquad \frac{18}{24} \qquad \frac{20}{32}$$

$$\frac{36}{45} \qquad \frac{48}{60}$$

Come up with some of your own for a partner.

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3. Comment on this explanation of how to find the common multiples of 12 and 25.

   "12 x 25 = 300, so 300 is the common multiple of 12 and 25."

4. The lowest common multiple of 2 numbers is always the product of those numbers. Comment on this statement:

> Sometimes the lowest common multiple is a factor of the product of the 2 numbers. e.g. the lowest common multiple of 6 and 8 = 24. 6 × 8 = 48

When the lowest common multiple is a factor of the product of the 2 numbers, how would you find it?

5. Explain why 27 is not a prime number. Compare your explanation with others.

6. How does the highest common factor help find the lowest common multiple? Find the highest common factor and lowest common multiple of these numbers, and complete the table. What is the relationship?

Number 1	Number 2	Product	Highest Common Factor	Lowest Common Multiple
7	9			
4	5			
6	8			
8	12			

Maths Mastery – Factors Multiples and Prime Numbers Answers

1. Find the factors of 48 by finding factor pairs: 1 × 48, 2 × 24, 3 × 16, 4 × 12, 6 × 8

   so the factors are: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

* Find the factors of 75 by finding factor pairs: 1 × 75, 3 × 25, 5 × 15

   so the factors are: 1, 3, 5, 15, 25, 75.

   Look for common factors: in this case 1 and 3.

* Note it would be possible simply to look for the odd factors of 48 to see if they are factors of 75.

2. $\frac{15}{50}$ (common factor 5) = $\frac{3}{10}$ $\frac{18}{24}$ (common factor 6) = $\frac{3}{4}$ $\frac{20}{32}$ (common factor 4) = $\frac{20}{32}$

   $\frac{36}{45}$ (common factor 9) = $\frac{3}{10}$ $\frac{48}{60}$ (common factor 12) = $\frac{4}{5}$

3. Multiples of 300 will also be common multiples; 600, 900, 1200 etc Smaller multiples of 12 and 25 may also be common multiples, so they need to be checked. Check multiples of 25: (only need to check even multiples of 25 because 12 is even.) 50, 100, 150, 200, 250 – none are multiples of 12, so the smallest multiple is 300.

4. Sometimes the lowest common multiple is a factor of the product of the 2 numbers. e.g. the lowest common multiple of 6 and 8 = 24. 6 × 8 = 48. Divide the product by the highest common factor of the 2 numbers.

5. 27 is not a prime number because 3 and 9 are factors as 3 × 9 = 27. Prime numbers only have 1 and itself as a factor.

6.

Number 1	Number 2	Product	Highest Common Factor	Lowest Common Multiple
7	9	63	1	63
4	5	20	1	20
6	8	48	2	24
8	12	96	4	24

The lowest common multiple is the product divided by the highest common factor.