

## Topic Check In - 1.02 Whole number theory

- Which of these numbers is not a factor of 27?  
1      3      5      9      27
- Find the first 5 square numbers.
- What is the highest common factor of 24 and 36?
- What is the square root of 64?
- Express 72 as a product of prime factors.
- Describe what is meant by the term 'prime number'.
- Without doing a division calculation, explain how you know that 197 is not a multiple of 3.
- Without calculating the final answer, is  $47 \times 92$  even or odd? Give a reason for your answer.
- Bus A arrives every 12 minutes and Bus B arrives every 15 minutes. Both buses arrive together at 9am. What time do they next arrive together?
- Two prime numbers  $p$  and  $q$  add to make a third prime number  $r$ . Suggest possible values for  $p$ ,  $q$  and  $r$ .

### Extension

Explain how you would use prime factor decomposition to find the highest common factor of two numbers.



# GCSE (9-1) MATHEMATICS

## Answers

- 5
- 1, 4, 9, 16, 25
- 12
- 8 (and/or -8)
- $2 \times 2 \times 2 \times 3 \times 3$  or equivalent written in index form
- A number that only divides by itself and by 1 i.e. a number with exactly two unique factors.
- The digit sum of 197 is  $1 + 9 + 7 = 17$ . 17 is not in 3 times table so neither is 197.
- Even, as any odd number multiplied by any even number results in an even answer.
- Bus A arrives after 12, 24, 36, 48 and 60 minutes, Bus B arrives after 15, 30, 45 and 60 minutes, so the next time they arrive together is after 60 minutes at 10am.
- Some examples are given below.

$p$	$q$	$r$
2	3	5
2	5	7
2	11	13

## Extension

The HCF of two numbers is the product of all prime factors common to both numbers.

Example:                    HCF of 24 and 28  
 $24 = 2 \times 2 \times 2 \times 3$   
 $28 = 2 \times 2 \times 7$   
HCF =  $2 \times 2 = 4$



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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Identify factors			
AO1	2	Identify square numbers			
AO1	3	Find the highest common factor			
AO1	4	Find the square root of a number			
AO1	5	Express a whole number as a product of its prime factors			
AO2	6	Give definition of a prime number			
AO2	7	Use digit sum rule for identifying multiples of 3			
AO2	8	Understand that multiplying any number by an even number gives an even result			
AO3	9	Find the lowest common multiple of two numbers			
AO3	10	Solve a prime numbers problem			

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