Topic Check In - 1.02 Whole number theory

1. Which of these numbers is not a factor of 27?

    1   3   5   9   27

2. Find the first 5 square numbers.

3. What is the highest common factor of 24 and 36?

4. What is the square root of 64?

5. Express 72 as a product of prime factors.

6. Describe what is meant by the term 'prime number'.

7. Without doing a division calculation, explain how you know that 197 is not a multiple of 3.

8. Without calculating the final answer, is 47 × 92 even or odd? Give a reason for your answer.

9. 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?

10. 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.

Answers

1. 5

2. 1, 4, 9, 16, 25

3. 12

4. 8 (and/or ⁻8)

5. 2 × 2 × 2 × 3 × 3 or equivalent written in index form

6. A number that only divides by itself and by 1 i.e. a number with exactly two unique factors.

7. The digit sum of 197 is 1 + 9 + 7 = 17. 17 is not in 3 times table so neither is 197.

8. Even, as any odd number multiplied by any even number results in an even answer.

9. 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.

10. 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 × 2 × 2 × 3
                  28 = 2 × 2 × 7
                  HCF = 2 × 2 = 4

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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			
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