# Foundation Check In - 1.02 Whole number theory

1. What is the cube root of 125?
2. Which one of these numbers is a common multiple of 9 and 11?

9 11 81 189 198

1. Express 504 as a product of prime factors, giving your answer in index form.
2. Which of these are prime numbers?

1 2 21 27 31

1. Find the Highest Common Factor of 144 and 342.
2. Two prime numbers bigger than three are added together. Explain why the total cannot be a prime number.
3. The Venn diagram below shows the factors of two numbers, A and B.

Calculate the numbers A and B.

B

A

7

52

23

3

1. Using the information in question 7, write down all the factors of A that are less than 20.
2. Two 2-digit numbers have a Highest Common Factor of 5 and a Lowest Common Multiple of 70. Find the two numbers.
3. Sue has some coins. If she divides them into piles of 2, 3, 4 or 5 she always has one coin left over. What is the smallest number of coins she could have?

**Extension**

Tom says, “There is no square number that ends in a 2”.

Is Tom right? Explain your answer.

Answers

1. 5
2. 198
3. 23 × 32 × 7
4. 2 and 31
5. 18
6. Because all prime numbers bigger than three are odd and when you add two odd numbers together the answer is always even. To be a prime number the answer would have to be odd.
7. A = 168, B = 175
8. 1, 2, 3, 4, 6, 7, 8, 12 and 14
9. 10 and 35
10. 61

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**Extension**

Tom is right because when you square the digits 0 to 9, the answer always ends in 0, 1, 4, 5, 6 or 9.

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| **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |  | **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |
| AO1 | 1 | Find the cube root |  |  |  |  | AO1 | 1 | Find the cube root |  |  |  |
| AO1 | 2 | Identify common multiples |  |  |  |  | AO1 | 2 | Identify common multiples |  |  |  |
| AO1 | 3 | Express a number as a product of prime factors using powers |  |  |  |  | AO1 | 3 | Express a number as a product of prime factors using powers |  |  |  |
| AO1 | 4 | Identify primes |  |  |  |  | AO1 | 4 | Identify primes |  |  |  |
| AO1 | 5 | Find the Highest Common Factor |  |  |  |  | AO1 | 5 | Find the Highest Common Factor |  |  |  |
| AO2 | 6 | Apply properties of primes |  |  |  |  | AO2 | 6 | Apply properties of primes |  |  |  |
| AO2 | 7 | Evaluate products of prime factors |  |  |  |  | AO2 | 7 | Evaluate products of prime factors |  |  |  |
| AO2 | 8 | Interpret the product of prime factors |  |  |  |  | AO2 | 8 | Interpret the product of prime factors |  |  |  |
| AO3 | 9 | Solve a problem using the product of prime factors |  |  |  |  | AO3 | 9 | Solve a problem using the product of prime factors |  |  |  |
| AO3 | 10 | Solve a problem involving factors and multiples |  |  |  |  | AO3 | 10 | Solve a problem involving factors and multiples |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| AO1 | 3 | Express a number as a product of prime factors using powers |  |  |  |  | AO1 | 3 | Express a number as a product of prime factors using powers |  |  |  |
| AO1 | 4 | Identify primes |  |  |  |  | AO1 | 4 | Identify primes |  |  |  |
| AO1 | 5 | Find the Highest Common Factor |  |  |  |  | AO1 | 5 | Find the Highest Common Factor |  |  |  |
| AO2 | 6 | Apply properties of primes |  |  |  |  | AO2 | 6 | Apply properties of primes |  |  |  |
| AO2 | 7 | Evaluate products of prime factors |  |  |  |  | AO2 | 7 | Evaluate products of prime factors |  |  |  |
| AO2 | 8 | Interpret the product of prime factors |  |  |  |  | AO2 | 8 | Interpret the product of prime factors |  |  |  |
| AO3 | 9 | Solve a problem using the product of prime factors |  |  |  |  | AO3 | 9 | Solve a problem using the product of prime factors |  |  |  |
| AO3 | 10 | Solve a problem involving factors and multiples |  |  |  |  | AO3 | 10 | Solve a problem involving factors and multiples |  |  |  |