

## 78. Prime Numbers

### Practice Questions:

1. Circle all the prime numbers in this list: 11, 15, 17, 18, 19, 21.

2. Which is the next prime number after 29?

3. True or false: 51 is prime because it cannot be divided by 2, 3, 5, or 7.

4. Write down three prime numbers that add up to 30.

5. Which of these numbers are prime: 9, 11, 13, 16, 19?

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### Practice Questions:

6. Which of these pairs both contain prime numbers:

(a) 23 and 27      b) 41 and 43      (c) 55 and 59?

7. The number 91 looks prime. Show why it isn't.

8. Find a prime number between 40 and 50.

9. Pick two prime numbers over 4 and under 10. Multiply them together. What do you get?

10. What is the difference between the largest and smallest prime number from the list:  
2, 25, 29, 35, 37?

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### Scenario Questions:

1. A school is organising chairs into equal rows. There are 29 chairs. Explain why the chairs cannot be arranged into a complete rectangle with more than one row.

2. A fruit seller has 53 apples and wants to pack them into equal bags with no apples left over. Show why each bag must contain 1 apple or 53 apples.

3. A code lock uses a 2-digit prime number. Write down two possible numbers that could be used.

4. A runner trains every 17 days and a swimmer trains every 19 days. Explain why they will not train on the same day again for a very long time.

5. A bus company has 97 buses. The manager wants to split them equally between garages. Show why this is only possible if there is 1 garage or 97 garages.

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### Scenario Questions:

6. A shop sells packs of pencils. The pack size must be a prime number between 10 and 20. Write down all possible pack sizes.

7. A number is chosen at random between 1 and 30. What is the probability that it is prime? Give your answer as a fraction in its simplest form.

8. A football tournament has 23 teams. Each team must play every other team once. Explain why there cannot be an equal number of teams in each group.

9. A cinema has 19 seats in a row. The manager wants to split the row into equal sections of seats. Explain why this cannot be done unless each block has 1 or 19 seats.

10. A teacher writes a 2-digit number on the board. It is a prime number greater than 40 but less than 50. What number did the teacher write?

# ANSWERS

## *Topic 78. Prime Numbers*

### Practice Questions:

- |                                         |                             |
|-----------------------------------------|-----------------------------|
| 1. 11, 17, 19                           | 6. 41 and 43                |
| 2. 31                                   | 7. $91 = 7 \times 13$       |
| 3. False                                | 8. 43 (or 41 or 47)         |
| 4. 7, 11, 13 (any correct trio is fine) | 9. 35 (e.g., $5 \times 7$ ) |
| 5. 11, 13, 19                           | 10. 35 ( $37 - 2 = 35$ )    |

### Scenario Questions:

- |                |                   |
|----------------|-------------------|
| 1. 29 is prime | 6. 11, 13, 17, 19 |
| 2. 1 or 53     | 7. $1/3$          |
| 3. 11, 13      | 8. Odd (23)       |
| 4. 323 days    | 9. 1 or 19        |
| 5. 1 or 97     | 10. 41, 43 or 47  |

**Verify Answers**