

Prime And Composite Numbers Worksheets Answer Key PDF

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Part 1: Building a Foundation

Which of the following numbers is a prime number?

undefined. A) 4

undefined. B) 9

undefined. C) 11 ✓

undefined. D) 15

The correct answer is C) 11, as it is only divisible by 1 and itself.

Select all the composite numbers from the list below:

undefined. A) 2

undefined. B) 6 ✓

undefined. C) 13

undefined. D) 18 ✓

The correct answers are B) 6 and D) 18, as they have more than two divisors.

Define a prime number in your own words.

A prime number is a natural number greater than 1 that cannot be formed by multiplying two smaller natural numbers.

List two examples of prime numbers and two examples of composite numbers.

1. Prime Number 1

2

2. Prime Number 2

5

3. Composite Number 1

4

4. Composite Number 2

6

Examples of prime numbers include 2 and 5; examples of composite numbers include 4 and 6.

Which statement is true about the number 1?

undefined. A) It is a prime number.

undefined. B) It is a composite number.

undefined. C) It is neither prime nor composite. ✓

undefined. D) It is both prime and composite.

The correct answer is C) It is neither prime nor composite.

Part 2: Comprehension and Application

Which of the following statements are true about composite numbers?

undefined. A) They have exactly two divisors.

undefined. B) They can be expressed as a product of prime numbers. ✓

undefined. C) They are always even numbers.

undefined. D) They have more than two divisors. ✓

The correct answers are B) They can be expressed as a product of prime numbers and D) They have more than two divisors.

Explain why the number 2 is considered a special prime number.

The number 2 is the only even prime number, as all other even numbers can be divided by 2.

What is the prime factorization of 28?

undefined. A) 2×14

undefined. B) $2 \times 2 \times 7$ ✓

undefined. C) 4×7

undefined. D) $2 \times 2 \times 2 \times 3$

The correct answer is B) $2 \times 2 \times 7$.

Find the prime factorization of 60 and list the prime factors.

1. Prime Factorization

$2 \times 2 \times 3 \times 5$

2. Prime Factors

2, 3, 5

The prime factorization of 60 is $2 \times 2 \times 3 \times 5$, with prime factors 2, 3, and 5.

Describe a real-world scenario where identifying prime numbers might be useful.

Identifying prime numbers is crucial in cryptography, where they are used to secure data.

If a number is divisible by both 2 and 3, which of the following must it also be divisible by?

undefined. A) 5

undefined. B) 6 ✓

undefined. C) 9

undefined. D) 12

The correct answer is B) 6, as it is the product of 2 and 3.

Part 3: Analysis, Evaluation, and Creation

Analyze the following numbers and select those that are prime:

undefined. A) 17 ✓

undefined. B) 21

undefined. C) 23 ✓

undefined. D) 25

The correct answers are A) 17 and C) 23, as they are only divisible by 1 and themselves.

Explain how the fundamental theorem of arithmetic applies to the number 45.

The fundamental theorem of arithmetic states that every integer greater than 1 can be expressed uniquely as a product of prime factors, such as $45 = 3 \times 3 \times 5$.

Which of the following is a correct analysis of the number 30?

undefined. A) It is a prime number.

undefined. B) It has more than two divisors. ✓

undefined. C) It cannot be factored into prime numbers.

undefined. D) It is neither prime nor composite.

The correct answer is B) It has more than two divisors.

Evaluate the importance of prime numbers in modern cryptography and provide an example.

Prime numbers are essential in cryptography for secure communication, such as in RSA encryption, which relies on the difficulty of factoring large prime products.

Create a composite number using the prime numbers 3, 5, and 7, and explain your process.

1. Composite Number

15

2. Process Explanation

$3 \times 5 = 15$

A composite number can be created by multiplying the primes, such as $3 \times 5 = 15$ or $5 \times 7 = 35$.

Which of the following statements best evaluates the role of prime numbers in mathematics?

undefined. A) They are only important for basic arithmetic.

undefined. B) They have no significant applications.

undefined. C) They are fundamental to number theory and cryptography. ✓

undefined. D) They are rarely used in advanced mathematics.

The correct answer is C) They are fundamental to number theory and cryptography.

Propose a method to quickly determine if a number less than 100 is prime, and explain your reasoning.

One method is to check divisibility by prime numbers up to the square root of the number, which helps identify primes efficiently.