Number Theory

Prime and composite numbers

A. Tell if 9 is a prime or a composite number

B. Tell if 17 is a prime or a composite number

C. Say if the following numbers are prime or composite numbers

33	59	83
53	100	49
81	67	94
79	71	61
43	0	70
71	2	10

Answers:

A) Composite number	B) Prime number	
C) 33 Composite number	59 Prime number	83 Prime number
53 Prime number	100 Composite number	49 Composite number
81 Composite number	67 Prime number	94 Composite number
79 Prime number	71 Prime number	61 Prime number
43 Prime number	0 None	70 Composite number
71 Prime number	2 Prime number	10 Composite number

Number Theory

Prime factorization

A. What is the prime factorization of 8?

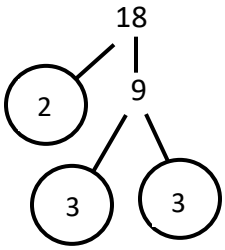
2 × 4	**1 × 2 × 4**	**2 × 2 × 2**

B. What is the prime factorization of 72?

2 × 2 × 2 × 3 × 3	**2 × 2 × 3 × 6**	**2 × 6 × 6**

C. Use a number tree to find the prime factors then write the prime factorization expression of each number?

Example:



18 = 2 × 3 × 3

32

96

Answers:

(A) 2 × 2 × 2	(B) 2 × 2 × 2 × 3 × 3
(C) 32 = 2 × 2 × 2 × 2 × 2	96 = 2 × 2 × 2 × 13

Number Theory

Prime factorization with exponents

(A) Write prime factorization of the following numbers using exponents. Order the factors from least to greatest

Example: $24 = 2^3, 3$

90 =

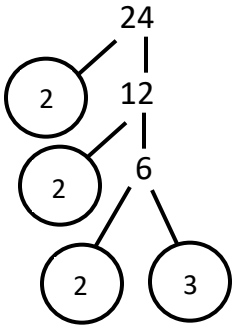
72 =

54 =

88 =

108 =

242 =



Answers:

$90 = 2.5.3^2$
$72 = 2^3 . 3^2$
$54 = 2 . 3^3$
$88 = 2^3 . 11$
$108 = 2^2 . 3^3$
$242 = 2 . 11^2$

Number Theory

Divisibility rules: word problems

(A) A computer factory produced 816 desktop computers. The factory put all the desktop computers into boxes. How many desktop computers could be in each box if they all have to same number of articles?

☐ 6 ☐ 5 ☐ 7 ☐ 10

(B) Bob owns a phone shop in town. He just received a shipment of 432 new phones. There are the same numbers of phones with different colors. How many colors could there be?

☐ 5 ☐ 10 ☐ 9 ☐ 7

(C) Berry has a huge collection of marbles. There are 34,970 marbles packed in bags in her father's garage. Each bag contains the same number of marbles. How many bags of marbles could there be?

☐ 7 ☐ 12 ☐ 11 ☐ 10

Answers:

(A) 6

(B) 9

(C) 10

Number Theory

Greatest common factor

Find the greatest common factors of the numbers below.

Example: Find the greatest common factor of 72 and 24.

1. Find the prime factors of each number

$72 = 2 \times 2 \times 2 \times 3 \times 3$

$24 = 2 \times 2 \times 2 \times 3$

2. Find and circle the prime factors that the numbers have in common

$72 = \boxed{2} \times \boxed{2} \times \boxed{2} \times \boxed{3} \times 3$

$24 = \boxed{2} \times \boxed{2} \times \boxed{2} \times \boxed{3}$

3. The greatest common factor of the numbers can be found by multiplying their common prime factors together $2 \times 2 \times 2 \times 3 = 24$ so, the GCF of 72 and 24 is 24.

The GCF of 18 and 90 is ☐

The GCF of 14,98 and 35 is ☐

The GCF of 54 and 16 is ☐

The GCF of 19,38 and 95 is ☐

The GCF of 45 and 5 is ☐

The GCF of 10,75 and 100 is ☐

The GCF of 30 and 40 is ☐

The GCF of 26,78 and 52 is ☐

Answers:

3. The GCF of 18 and 90 is = 18

The GCF of 54 and 16 is = 2

The GCF of 45 and 5 is = 5

The GCF of 30 and 40 is = 10

The GCF of 14,98 and 35 is = 7

The GCF 0f 19,38 and 95 is = 19

The GCF of 10,75 and 100 is = 5

The GCF of 26,78 and 52 is = 26

Number Theory

Least common multiple

(A) Find the least common multiple (LCM) of the numbers below.

Example: Find the least common multiple of 3 and 4.

1. Find the prime factors of each number **3 : 3,6,9,12,15,18,21,24,27,30,33,36,39** **4 : 4,8,16,20,24,28,32,36,40…**	**2. Find and circle the common multiples** **3 : 3,6,9,12,15,18,21,24,27,30,33,36,39…** **4 : 4,8,16,20,24, 28,32,36,40…**
3. The common multiples of 3 and 4 are: 24, 36….	**3. The least common multiple of 3 and 4 Is 24.**

The LCM of 3 and 9 is: ____

The LCM of 4 and 8 is: ____

The LCM of 3 and 7 is: ____

The LCM of 9 and 12 is: ____

The LCM of 6 and 18 is: ____

Answers:

(A) The Least common multiple is 24.

The LCM of 3 and 9 is: 9

The LCM of 4 and 8 is: 8

The LCM of 3 and 7 is: 21

The LCM of 9 and 12 is: 108

The LCM of 6 and 18 is: 18