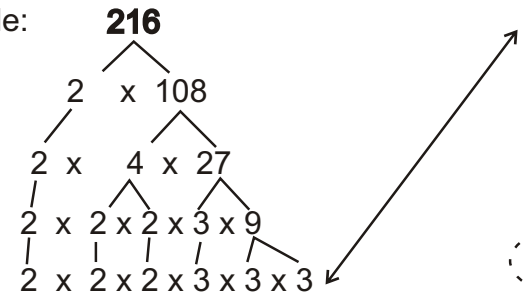
Name_____ Date_____

PRIME FACTORIZATION

Prime number. A whole number greater than 1 that can be divided exactly (i.e., with no remainder) only by itself and 1. The first few primes are 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37.

Using prime factorization, any number can be broken down into factors which are all prime.

Example:



This is as far as we can go because every number is a prime.

At the end, summarize using exponents.

$2^3 \times 3^3$

Directions: Make a factor tree of the given numbers and then write the answers using exponential notation. check your answer by multiplying your prime factors.

1) 100

$2^2 \times 5^2$

2) 225

$3^2 \times 5^2$

3) 36

$2^2 \times 3^2$

4) 75

3×5^2

5) 340

$2^2 \times 5 \times 17$

6) 130

$2 \times 5 \times 13$

7) 80

$2^4 \times 5$

8) 400

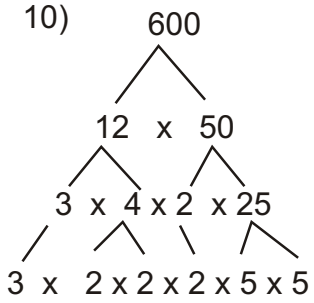
$2^4 \times 5^2$

9) 520

$2^3 \times 5 \times 13$

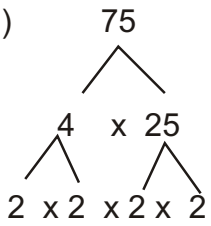
Directions: Use multiplication to check is the following factorizations are correct or incorrect.

10)



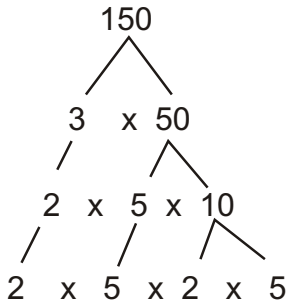
correct/incorrect

11)



correct/incorrect

12)



correct/incorrect

Directions: Evaluate the products of the following expressions. Circle your answers.

13) $2^2 \times 3^3 =$ ***108***

14) $2^3 \times 3^2 \times 5 =$ ***360***

15) $3^2 \times 7 =$ ***63***

16) In your own words, explain what a prime number is. Give three examples in your explanation of prime numbers.

A prime number has exactly 2 factors which are always the number one and itself. Three examples of a prime number are 5 , 11 and 17. To produce each of the three given numbers, you can only multiply one by the number itself to produce the number.