

Name _____
Mrs. Doolan /Math6

5-2 Prime Factorization



Objective: to learn how to use divisibility rules to express whole numbers in terms of their simplest factors.

- ◆ **prime number:** any number divisible by only two (2) factors-- itself and “1” (the identity number).
- ◆ **composite number:** any numbers with three or more factors.
- ◆ **prime factorization:** a set of prime numbers whose product equals the original number.



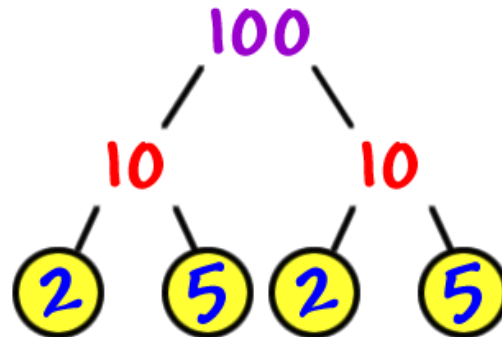
****To find prime factorization, create a “factor tree.”**

1. Find any two numbers whose product equals the original number (use divisibility rules) and write each number at the end of a “branch.”
2. If the number at the end of the “branch” is composite, continue the tree.
3. When the number at the end of a branch is prime, circle the prime number and stop the branch.
4. Prime Factorization is complete when the ends of all the branches are circled (you’ve arrived at all prime numbers).
5. Write a multiplication sentence listing the factors from least to greatest.



EXAMPLE #1:

Find the prime factorization of 100:



Prime Factorization: $100 = 2 \times 2 \times 5 \times 5$

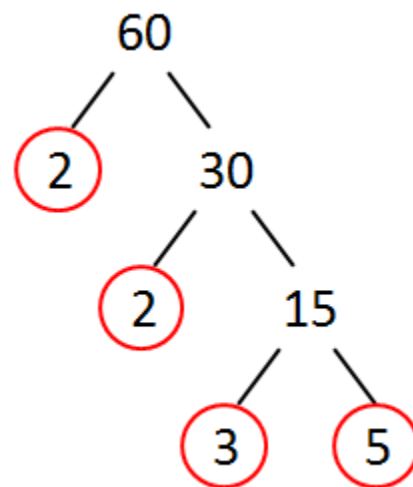
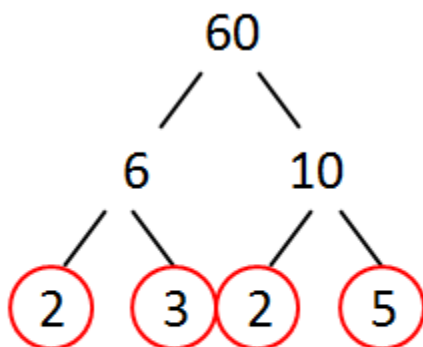
Exponential Notation: $100 = 2^2 \times 5^2$

****Note:** even if you can begin divisibility with different factors, your prime factorization, if correct, will be identical.**



EXAMPLE #2:

Find the prime factorization of 60:



Either way, the result is:

$2 \times 2 \times 3 \times 5$ or $2^2 \times 3 \times 5$



YOU TRY:

Find the prime factorization of :

1. **88**

2. **192**