Study the following.

factor (**fak**-tur) - factor has two definitions that mean the same thing but are different ways of looking at it.

a. one of the numbers multiplied to get a product.
   Example: 5 ←factor
   × 6 ←factor
   30

b. a whole number that can be divided exactly into a larger number.
   Example: 5 can be divided exactly into 30
   6 can be divided exactly into 30
   Therefore 5 and 6 are factors of 30.

prime (**prime**) - of highest importance or quality. (We ate prime beef. That is a prime house.)

prime number- any number whose factors are 1 and itself only (one is not a prime number.) Examples: 2, 3, 5, 7, 11, 13, 17,…

composite (kuhm-**poz**-it) - made up of many parts from different sources. (The composite sketch of the criminal was drawn from information given by Bill, Sue and Jane.) (The composite stone was made of three different kinds of rock.)

composite number- a whole number with more than two different factors.
Examples: 10 (has factors 1, 2, 5 and 10)
9 (has factors, 1, 3, and 9)

factorization (**fak**-tur-uh-**zay**-shuhn) - the result of factoring a number. (The factorization of 10 gives 2 × 5.)

prime factorization- when you factor a number, and show it written in prime numbers with multiplication signs between each number. (Example: the prime factorization of 18 would be 3 × 2 × 2)

Say each word out loud and write it in the blank.
prime_____
composite_____
factor_____
factorization_____

Write each definition in your own words.

factor (definition a.)

factor (definition b.)

prime

prime number

composite

composite number

factorization

prime factorization

Write two sentences using each word.

factor
1.

2.

prime
1.

2.

prime number
1.

2.
composite
1.

2.
composite number
1.

2.

factorization
1.

2.

Write 5 examples of prime numbers.

Write 5 examples of composite numbers.

Matching.

factor (a)	of highest importance or quality
factor (b)	made up of many parts from different sources
prime	one of the numbers multiplied to get a product.
	the result of factoring a number
prime number	a whole number that can be divided exactly into a larger number.
composite	any number whose factors are 1 and itself only
composite number	a whole number with more that two different factors.
factorization	when you factor a number, and show it written in prime numbers with multiplication signs between each number.
prime factorization	

List all the possible factors of each number, and state whether it is a prime number or a composite number.

Number	all possible factors	prime or composite number
3		
10		
11		
15		
19		
24		
29		
30		
31		
32		
33		

Study the following.

The prime numbers up to 100 are:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31,37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

Write these prime numbers below.

Now write the first 5 again, 10 times, to help you learn them.

1.

2.

3.

4.

5.

6.

7.

8.

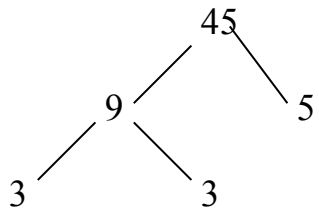
9.

10.

Study the following.

factor tree- a factor tree is a helpful way to find the prime factorization of large numbers.

Example: to find all the prime factors of 45, we draw a "tree" as follows.

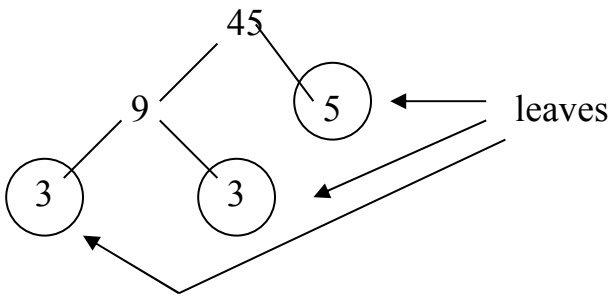


Write the number.

Factor it into 9 times 5.

Factor 9 into 3 times 3.

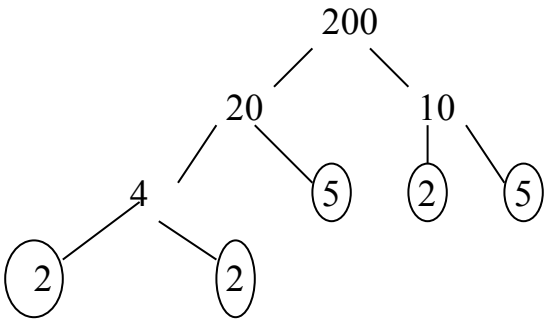
The lines are the branches and the end numbers are the leaves.
Circle the leaves next.



The leaves have to be prime numbers. If the number on the end of a branch is not prime, then you have to factor it and make two new branches, like in the case of the 9 above.

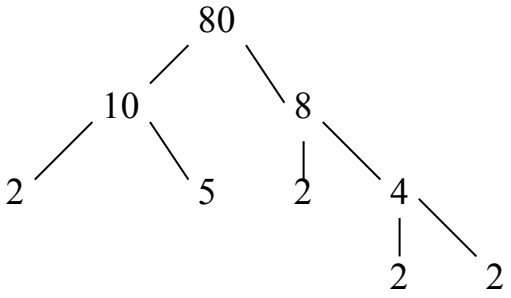
So the prime factorization of 45 is $3 \times 3 \times 5$

Write the prime factorization of the following.

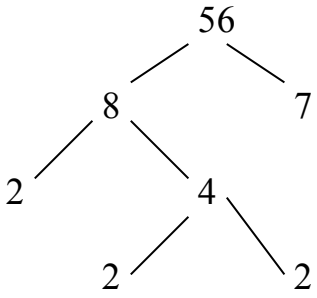


The prime factorization of 200 is _____.

Circle the leaves and write the prime factorization of the following.



The prime factorization of 80 is _____.



The prime factorization of 56 is _____.

Draw a factor tree and write the prime factorization for the following.

1. 36

2. 72

3. 24

Use the divisibility rules from the divisibility rules section, to help you draw a factor tree and find the prime factorization of the following larger numbers.

1. 600

2. 312

3. 92