Name_____

Reteaching Page

4.2 Factors and Prime Factorization

Factors of a product are the numbers that are multiplied to find the product.

48	
1	48
2	24
3	16
4	12
6	8

Use divisibility rules to determine all of the factors of a number.

You know you have reached the final pair when they "run into each other".

6 and 8 are next to each other on a number line so they are the final pair.

The factors of 48 are 1, 2, 3, 4, 6, 8, 12, 16, 24 and 48.

Use a table to help you write all of the factors for the following numbers.

20	24	30	36	45	47

20 _____ 36 _____

24 _____ 45 _____

30 _____ 47 _____

Prime Factorization

A number written as the product of prime factors is called the prime factorization of a number.

To find all of the prime factors of a number, simply break the number into factors and continue breaking each factor down until you have nothing but prime factors.

36 = 9 * 4 (neither are prime)
9 = 3 * 3 (both are prime)
4 = 2 * 2 (both are prime)
3 * 3 * 2 * 2 = 36

24 = 8 * 3 (3 is prime)
8 = 4 * 2 (2 is prime)
4 = 2 * 2 (both are prime)
3 * 2 * 2 * 2 = 24

Write each of the following as a product of prime factors.

8 = _____ 25 = _____

12 = _____ 32 = _____

15 = _____ 48 = _____

Name _____

Prime Factoring

When a number written as the product of prime factors, it is called the prime factorization of a number.

$48 = 3 * 2 * 2 * 2 * 2 = 3 * 2^4$

To make finding the prime factors easy, you need to be a master of "**The Factor Facts**" and **Divisibility Rules** for 2, 3, 5, 7 and 11. This workbook will review those skills before showing you the strategies for finding prime factors. There are 2 attack strategies for quickly and easily finding the prime factors of a given number.

1. Easy Primes
2. Ladder

Factor Facts

There are 32 numbers that are supposed to be quick and easy to recognize the factors of. Math6.org calls these numbers, "Factor Facts" and offers matching exercises and drills to help you learn them quickly and easily.

12	18	25	32	42	50	63	80
14	20	27	35	45	54	64	81
15	21	28	36	48	56	70	90
16	24	30	40	49	60	72	100

Easy Primes

Often called the tree method, easy primes involves learning to think of an easy factor and write it as the product of its prime factors. Students will think 6 and write 2*3. So when they are thinking 6*8, they write 3*2 *2*2*2. This process isn't difficult, but it does take practice to make it so easy that it's second nature.

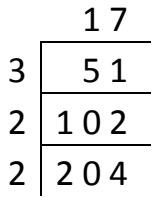
4 = 2 * 2 **6 = 3 * 2** **8 = 2 * 2 * 2** **9 = 3 * 3** **10 = 5 * 2**

Take a look at the "Factor Facts" and notice that all of them are made out of Prime Numbers or numbers that can be easily primed.

28 is **7** * **4** = **7** * **2** * **2**; 56 is **7** * **8** = **7** * **2** * **2** * **2**; 90 is **9** * **10** = **3** * **3** * **5** * **2**

Ladders

When you don't know the "easy factors" of a number, you use the divisibility rules for 2, 3, 5, 7, and 11 to begin breaking a number down. Using the divisibility rules and short division, you can quickly find all of the prime factors of any number.



$204 = 17 * 3 * 2 * 2$