

NOTES: Factor Review

Goals: #1 - I can list factors of a number.

#2 - I can write the prime factorization of a number.



#3 - I can list all the common factors of the pair of numbers.

Homework: Factor Review Worksheet

Exploration #1: Work with a partner.

1. How many ways can you multiply to 42 by using only *two* numbers?

$$\begin{array}{ll} 1 \times 42 & 6 \times 7 \\ 2 \times 21 & 3 \times 14 \end{array}$$

2. How many ways can you multiply to 17 by using only *two* numbers?

$$1 \times 17$$

Notes:

FACTORS are numbers that are multiplied together to get a product.

Examples:

$$42: \overbrace{1, 2, 3, 6, 7, 14, 21, 42}$$

A prime number is a number that has exactly two factors: 1 and itself.

Examples:

$$17: \overbrace{1, 17}$$

$$31: \overbrace{1, 31}$$

Example #1:

1. List all the factors of the following numbers.

a. 36

$$\overbrace{1, 2, 3, 4, 6, 9, 12, 18, 36}$$

b. 27

$$\overbrace{1, 3, 9, 27}$$

2. List all the *common factors* of the pair of numbers.

a. 5, 20

$$5: \overbrace{1, 5}$$

$$\boxed{1, 5}$$

$$20: \overbrace{1, 2, 4, 5, 10, 20}$$

b. 12, 30

$$12: \overbrace{1, 2, 3, 4, 6, 12}$$

$$\boxed{1, 2, 3, 6}$$

$$30: \overbrace{1, 2, 3, 5, 6, 10, 15, 30}$$

Name: _____ Hour: _____ Date: _____

Exploration #2: Work with a partner.

1. How could you multiply to 42 by using only *prime* numbers?

$$\begin{array}{c} 6 \times 7 \\ \wedge \\ 3 \times 2 \end{array} \qquad 3 \times 2 \times 7$$

Notes:

A prime factorization of a number is rewritten as a product of only prime numbers. We use a method called factor trees to find prime factorizations.

Examples:

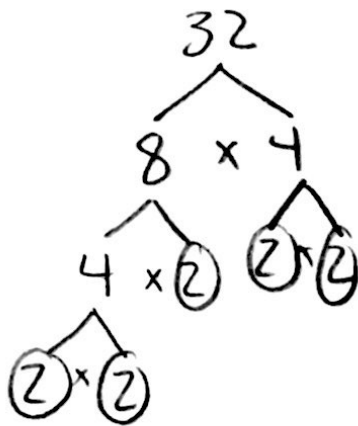


Example #2:

1. Write the prime factorization for the following numbers.

a. 32

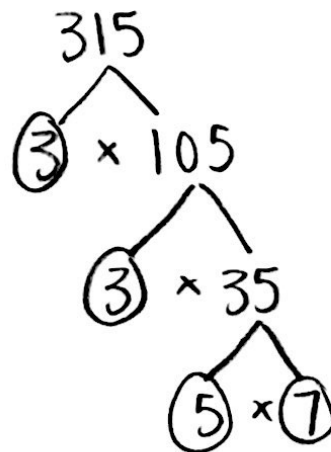
b. 315



$$2 \times 2 \times 2 \times 2 \times 2$$

OR

$$2^5$$



$$3 \times 3 \times 5 \times 7$$

OR

$$3^2 \times 5 \times 7$$