

2.1 Factors and Multiples of Whole Numbers

A **prime number** is a number that is only divisible by _____ and _____.

e.g.

A **factor** of a number is any number that will _____ evenly into it.

e.g.

The **prime factorization** of a number is that number written as a _____ of its prime factors.

e.g.

Ex. #1: Write the prime factorization of 3300.

The prime factors of 3300 are _____

The prime factorization of 3300 is: _____

Record any divisibility rules that you can recall here:

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The **greatest common factor** (GCF) is the largest number that will _____ evenly into a group of numbers.

Ex. #2: Determine the greatest common factor of 138 and 198.

The greatest common factor is: _____

The **least common multiple** (LCM) is the smallest number that a group of numbers will _____ into.

Ex. #3: Determine the least common multiple of 18, 20, and 30.

Method 1

Method 2

The least common multiple of 18, 20, and 30 is: _____

****See Example #4 on page 138****

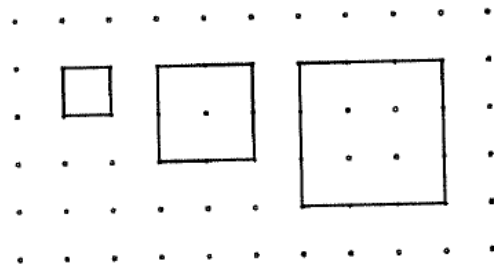
HW p140 #3-6 (a only), 8-11 (a only), 17, 19a

2.2 Perfect Squares, Perfect Cubes, and Their Roots

Investigate Square Roots and Cube Roots:

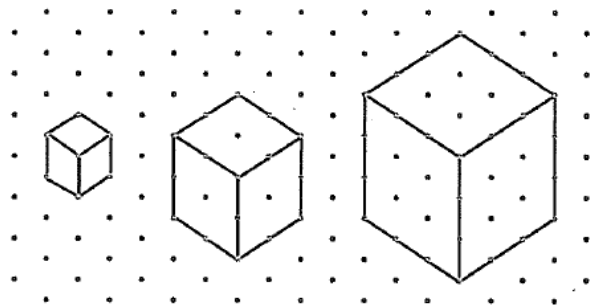
1. a) Determine the area of each square shown. Record the information in a table. Extend the pattern for squares with dimensions of 4 and 5 units.
- b) What is the relationship between the side length of a square and the area of the square?

Side Length	Area in Exponential Form	Area
1		
2		
3		
5		



2. a) Determine the volume of each cube shown. Record the information in a table. Extend the pattern for cubes with dimensions of 4 and 5 units
- b) What is the relationship between the edge length of a cube and the volume of the cube?

Side Length	Volume in Exponential Form	Volume
1		
2		
3		
5		



3. Reflect and Respond.
 - a) What strategy could you use to find the side length of a square if you were given the area?
What strategy could you use to find the edge length of a cube if you were given the volume?
 - b) Explain, using a diagram, how you could predict
 - a. The side length of a square with an area of 64 square units
 - b. The edge length of a cube with a volume of 343 cubic units

Ex. #1: Determine the square root of 1296

Write 1296 as a product of its prime factors.

$$1296 = \underline{\hspace{10em}}$$

Group the factors in pairs.
Rearrange the factors in 2 equal groups.

Since 1296 is the product of two equal factors, it can be represented as the area of a square. So, the square root of 1296 is _____

Ex. #2: Determine the cube root of 1728.

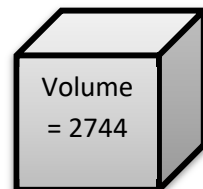
Write 1728 as a product of its prime factors.

$$1728 = \underline{\hspace{10em}}$$

Group the factors in sets of 3.
Rearrange the factors in 3 equal groups.

Since 1728 is the product of three equal factors, it can be represented as the volume of a cube. So, the cube root of 1728 is _____

Ex. #3: A cube has volume 2744 cubic inches. What is the surface area of the cube?



Checkpoint 1 Ch 3

Short Answer

1. Write the prime factorization of 630.
2. Determine the greatest common factor of 280 and 360.
3. Determine the least common multiple of 78 and 102.
4. A cube has surface area 3750 square feet. What is its volume?
5. Use factoring to determine the cube root of 2744 and show all of your work.
6. Use factoring to determine the square root of 1024 and show all of your work.

7. Bill and Betty do chores at home. Bill mows the lawn every 8 days, and Betty bathes the dog every 14 days. Suppose Bill and Betty do their chores today. How many days will pass before they both do their chores on the same day again?

8. A builder wants to cover a wall measuring 9 ft. by 15 ft. with square pieces of plywood.

a) What is the side length of the largest square that could be used to cover the wall?

Assume the squares cannot be cut.

b) How many square pieces of plywood would be needed?

Problem

9. Chris completes one lap of a go-cart track every 40 s. D'Arcy completes one lap of the same track every 50 s. Suppose Chris and D'Arcy cross the starting line at the same time.

a) How many seconds will pass before they cross the starting line at the same time again?

b) How many laps will Chris have completed in that time? How many laps will D'Arcy have completed in that time?

10. A square has area 40.0 cm^2 . Determine the perimeter of the square to the nearest tenth of a centimetre.

11. Use factoring to determine whether 4913 is a perfect square, a perfect cube, or neither.

2.3 – Common Factors of a Polynomial

Review:

1. Simplify the expression:

a) $\frac{6x^2}{2x}$

b) $\frac{4x^2-12x}{4x}$

2. Write the GCF:

a) 9, 6

b) 16, 12

c) 12, 24

d) xy, xz

e) $6ab, 15ac$

f) $-6a^3b^3, -15a^2b$

FACTORING THE GCF:

Factor means _____

What to ask yourself to find the GCF:

1. What is the _____ that goes into **ALL** the _____?
2. What _____ appears in **ALL THE TERMS** and is the _____ exponent of each of these letters?

Examples:

1) $6x^2 - 15x^3$

Steps:

1. Find the GCF of the coefficients.
2. Determine the variable common to all terms. Remove the lowest exponent value of this variable.
3. Divide all terms in the expression by the GCF determined from steps #1 & #2.
4. Write your answer as multiplication with the GCF at the front of the brackets.

2) $24x^2y^3 - 16x^3y$

3) $4x^2 - 6x + 12$

4) $-3x^3 - 9x^2 + 12x$

HW p155 #5, 8ace, 10ace, 12, 14, 16acf, 17

REVIEW for Unit 2 part 1: p198 #1-4, 6-10, 12-14