

# Algebra I

## Notes 11.4, Part 1 Prime Factorization and Common Factors

Objective: Identify a greatest common factor between two or more terms.

A *prime number* can only be divided evenly by 1 and itself.

Write the prime factorization of each number (product of “prime-only” numbers).

1. 18 \_\_\_\_\_

2. 20 \_\_\_\_\_

3. 15 \_\_\_\_\_

4. 42 \_\_\_\_\_

5. 200 \_\_\_\_\_

6. 625 \_\_\_\_\_

The product of the factors that two or more numbers have in common is called the \_\_\_\_\_ of those numbers.

Find the GCF of:

18 and 20 \_\_\_\_\_ = \_\_\_\_\_

20 and 15 \_\_\_\_\_ = \_\_\_\_\_

18 and 42 \_\_\_\_\_ = \_\_\_\_\_

42 and 200 \_\_\_\_\_ = \_\_\_\_\_

200 and 625 \_\_\_\_\_ = \_\_\_\_\_

A number that has factors other than 1 and itself is called a \_\_\_\_\_ number

A number that does not have factors other than 1 and itself is called a \_\_\_\_\_ number.

Write the prime factorization of each monomial (product of prime coefficients and variables with exponents of 1).

1.  $x^4y^2z^3$  \_\_\_\_\_

2.  $3x^5y^2$  \_\_\_\_\_

3.  $6x^3z^2$  \_\_\_\_\_

4.  $12yz^4$  \_\_\_\_\_

5.  $30x^2y$  \_\_\_\_\_

6.  $9x^2y^3z^2$  \_\_\_\_\_

The product of the factors that two or more terms have in common is called the greatest common factor or the \_\_\_\_\_ of the terms.

Find the common monomial factor (GCF) of:

$x^4y^2z^3$  and  $3x^5y^2$  \_\_\_\_\_

$30x^2y$  and  $3x^5y^2$  \_\_\_\_\_

$6x^3z^2$  and  $30x^2y$  \_\_\_\_\_

$9x^2y^3z^2$  and  $30x^2y$  \_\_\_\_\_

$12yz^4$  and  $3x^5y^2$  \_\_\_\_\_

$x^4y^2z^3$  and  $30x^2y$  \_\_\_\_\_

A polynomial that does not have a common monomial factor is called a \_\_\_\_\_ polynomial.

A polynomial that does have a common monomial factor is called a \_\_\_\_\_ polynomial.

Identify the common monomial factor (GCF).

1.  $6mn + 6mp$  \_\_\_\_\_

4.  $5x^5 + 10x + 15$  \_\_\_\_\_

2.  $16n^3 - 12n^2 + 8n$  \_\_\_\_\_

5.  $27y^3 + 18y^2 - 9y$  \_\_\_\_\_

3.  $9n^3 - 12n^2 + 18m$  \_\_\_\_\_

6.  $k^5 + k^3 + k$  \_\_\_\_\_