

GCF: Largest # that goes into each # evenly.

Find GCF of  $32 + 56$   
 $32: 1, 2, 4, 8, 16, 32$   
 $56: 1, 2, 4, 7, 8, 14, 28, 56$   
**GCF: 8**

To Factor Polynomials:  
 Find the Greatest Common Factor

"Bring Out" the common factor from each term

Put the remaining terms in parentheses

Greatest Common Factor of Integers (Review)

Find the GCF for coefficients & then each like variable.

1.  $6x^2 + -36x$  | 2.  $28ab^2 + 49a^4b^2$   
 Highest #: 6 | Highest #: 7  
 Lowest variable: X | Lowest variable: a, b<sup>2</sup>  
 GCF:  $6x$  | GCF:  $7ab^2$

"Bring Out" the common factor from each term

Put the remaining terms in parentheses

Greatest Common Factor of Integers (Review)

To Factor Polynomials:  
 Find the Greatest Common Factor

GCF ( )

$\frac{6x^2 - 36x}{6x} \quad | \quad \frac{28ab^2 + 49a^4b^2}{7ab^2}$   
 $6x( \quad ) \quad | \quad 7ab^2( \quad )$

Put the remaining terms in parentheses

Greatest Common Factor of Integers (Review)

To Factor Polynomials:  
 Find the Greatest Common Factor

"Bring Out" the common factor from each term

Divide each term by GCF and that's what goes in ( )

$6x(x-6)$  |  $7ab^2(4+7a^3)$   
 check:  $6x^2 - 36x$  | check: Distribute  
 $28ab^2 + 49a^4b^2$

Handwritten algebra problems and solutions:

- $7x^2 - 28x$  →  $7x$
- $x^3y^2 - x^2y^3$  →  $x^2y^2(x - y)$
- $5x^3 - 15x^2 + 25x$  →  $5x^2(x - 3 + 5)$
- $7x^3 - x^2$  →  $x^2(7x - 1)$
- $5x^4y^2 - 10xy^4$  →  $5xy^2(x^2 - 2y^2)$
- $12x^2 - 5x$  →  $x(12x - 5)$
- $15x^2 - 6x + 9$  →  $3(5x^2 - 2x + 3)$
- $6x^4 - 12x^3 + 24x^2$  →  $6x^2(x^2 - 2x + 4)$

Algebra 1 Name \_\_\_\_\_ ID: \_\_\_\_\_  
 Date \_\_\_\_\_ Period \_\_\_\_\_

Factor out the GCF

Factor the common factor out of each expression.

1)  $-30x + 12$  →  $6(-5x + 2)$  (Factors: 1, 2, 3, 4, 6, 12)

2)  $-10x^3 + 30x$  →  $10x(x^2 + 3)$

3)  $-15n - 5n^2 - 15n^3$  →  $-5n(3 + n + 3n^2)$

4)  $-30b^3 + 18b + 3$  →  $3(-10b^3 + 6b + 1)$

5)  $7x^6y + 8x^5$  →  $x^5(7xy + 8)$

6)  $32m^4 + 40m^2n$  →  $8m^2(4m^2 + 5n)$  (Factors: 1, 2, 4, 8, 16, 32)

7)  $-16yx^3 - 18yx + 8y$  →  $2y(-8x^3 - 9x + 4)$

8)  $\frac{-16v^3u}{3v} + \frac{18v^2u}{2v} + \frac{10v^3}{2v}$  →  $2v^2(-8v^2u + 9vu + 5v)$  (Factors: 1, 2, 10, 20)

9)  $63p^6r + 35p^4r^3 - 49p^2q^3$  →  $7p^2(9p^4r + 5p^2r^3 - 7q^3)$

10)  $-15h^4j^2 - 21h^3k - 3h$  →  $-3h(5h^3j^2 + 7h^2k + 1)$

Complete this page for homework.

# DOUBLE CROSS

1. What do you get when you cross a chicken with a centipede?

5 8 11 14 12 2 14 1 10 13 11 6 7 4 13

2. What do you get when you cross a mink with an octopus?

12 7 3 12 11 3 9 12 14 10 13

Factor each polynomial below as the product of its greatest monomial factor and another polynomial. Find your answer and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it. Keep working and you will find out what you get from these "double crosses."

①  $6x^2 + 9x + 27$

②  $5x^3 + 30x^2 - 15x$

③  $14x^3 - 7x^2 - 35x$

④  $25x^3 - 40x^2 + 10x$

⑤  $4x^4 + 20x^3 + 12x^2$

⑥  $3x^4 + 12x^2 - 33$

⑦  $49x^4 - 14x^3 - 28x$

Answers:

Ⓔ  $4x^2(x^2 + 5x + 3)$

Ⓕ  $3(x^4 + 6x^2 + 11)$

Ⓞ  $7x(2x^2 - x - 5)$

Ⓤ  $3(2x^2 + 3x + 9)$

Ⓒ  $7x(7x^3 - 2x^2 - 4)$

Ⓚ  $5x(5x^2 - 8x + 2)$

Ⓑ  $7x(7x^3 + 2x^2 - 3)$

Ⓓ  $5x(x^2 + 6x - 3)$

Ⓘ  $3(x^4 + 4x^2 - 11)$

⑧  $2a^2 + 12ab + 6b^2$

⑨  $6a^3 - 18ab$

⑩  $3a^2b^2 + 15ab^3$

⑪  $8a^4b^4 - 28a^3b^3 + 4a^2b^2$

⑫  $6a^4b - 10a^3b^2 - 6a^2b^3$

⑬  $7ab^5 - 56ab$

⑭  $24ab^4 + 12ab^3 - 18ab^2$

Answers:

Ⓗ  $6ab^2(4b^2 - 3b - 2)$

ⓧ  $2(a^2 + 6ab + 3b^2)$

Ⓢ  $7ab(b^4 - 8)$

Ⓜ  $3ab^2(a + 5b)$

Ⓡ  $6ab^2(4b^2 + 2b - 3)$

Ⓝ  $4a^2b^2(2a^2b^2 - 9ab + 2)$

Ⓐ  $2a^2b(3a^2 - 5ab - 3b^2)$

Ⓕ  $6a(a^2 - 3b)$

Ⓓ  $4a^2b^2(2a^2b^2 - 7ab + 1)$