

11-29-17

Aim: SWBAT factor an expression by finding the Greatest Common Factor (GCF).

HW: Packet Page 27

Test Tuesday

Do Now: Correct hw, Quick Quiz, then Packet Page 25 # 1- 8

HW: Multiply the binomials in questions 1-11. Match that answer to the correct letter of the alphabet. Enter that letter of the alphabet on the blank corresponding to the problem number.

F I R S T    O U T E R    I N N E R    L A S T  
 3    5    9    2    7    11    6    7    8    9    5    10    10    8    9    1    4    2    7

- A  $3x^2 + 2x - 1$     B  $x^2 + 3$     C  $2x^2 - 12$     D  $x^2 - 78$     E  $x^2 + 9x - 36$     F  $x^2 + 7x - 78$     G  $3x^2 - 1$     H  $x^2 - 36$
- I  $x^2 - 12x + 36$     J  $x^2 + 36$     K  $20x^2 - 36$     L  $x^2 + 4x + 3$     M  $x^2 + 36$     N  $x^2 - 16$     O  $x^2 + 10x + 25$     P  $2x^2 - 25$
- Q  $2x^2 + 25$     R  $2x^2 - 5x - 25$     S  $2x^2 + 5x - 12$     T  $20^2 - 63x + 36$     U  $x^2 - 9x - 36$     V  $x^2 + 25$
- W  $x^2 + 16$     X  $2x^2 - 5x + 12$     Y  $3x^2 + 1$     Z 0

V 1)  $(x+3)(x+1)$   
 $x^2 + x + 3x + 3$   
 $x^2 + 4x + 3$

S 2)  $(2x-3)(x+4)$   
 $2x^2 + 8x - 3x - 12$   
 $2x^2 + 5x - 12$

F 3)  $(x+13)(x-6)$   
 $x^2 - 6x + 13x - 78$   
 $x^2 + 7x - 78$

A 4)  $(3x-1)(x+1)$   
 $3x^2 + 3x - x - 1$   
 $3x^2 + 2x - 1$

I 5)  $(x-6)^2$   
 $x^2 - 6x - 6x + 36$   
 $x^2 - 12x + 36$

U 6)  $(x-12)(x+3)$   
 $x^2 + 3x - 12x - 36$   
 $x^2 - 9x - 36$

T 7)  $(4x-3)(5x-12)$   
 $20x^2 - 48x - 15x + 36$   
 $20x^2 - 63x + 36$

E 8)  $(x-3)(x+12)$   
 $x^2 + 12x - 3x - 36$   
 $x^2 + 9x - 36$

R 9)  $(2x+5)(x-5)$   
 $2x^2 - 10x + 5x - 25$   
 $2x^2 - 5x - 25$

N 10)  $(x-4)(x+4)$   
 $x^2 + 4x - 4x - 16$   
 $x^2 - 16$

O 11)  $(x+5)^2$      $(x+5)(x+5)$   
 $x^2 + 5x + 5x + 25$   
 $x^2 + 10x + 25$

~~$(5x)^2$~~

Divide:

12)  $\frac{16b^8c^5}{4b^8c^2}$

$4c^3$

13)  $\frac{20n^5m^9}{20nm^7}$

$n^4m^2$   
 $m^2n^4$

14)  $\frac{15r^5 + 10r^8 - 5r^2}{5r}$

$3r^4 + 2r^7 - r$   
 $2r^7 + 3r^4 - r$

15)  $\frac{27x^5 + 21x^4 - 9x}{3x}$

$9x^4 + 7x^3 - 3$

GCF : the smallest of the original values or smaller than it.

Find the GCF.

10 and 45

$$\begin{array}{r} 10 \overline{)45} \quad \times \\ 5 \overline{)45} \end{array} \quad \textcircled{5}$$

12 and 52

$$12 \overline{)52} \quad \times \quad \textcircled{4}$$

$$6 \overline{)52} \quad \times$$

$$4 \overline{)52} \quad \checkmark$$

15 and 18

$$15 \overline{)18} \quad \times$$

$$5 \overline{)18} \quad \times$$

$$3 \overline{)18} \quad \checkmark$$

$$\textcircled{3}$$

Find the GCF.

$x$  and  $x^2$

$x$

$y^2$  and  $y^3$

$y^2$

$x^4$  and  $x^2$

$x^2$

$x^2y$  and  $xy^2$

$xy$

$x^2y^2z^2$  and  $xy^2z$

$xy^2z$

$20xy$  and  $4y$

$4y$

$125x^2y^2z^2$  and  $25xyz$

$25xyz$

$25 \sqrt{125}$

**AIM:** SWBAT factor an expression by finding a greatest common factor (GCF).

**DO NOW:**

Find the Greatest Common Factor (GCF) of each pair.

1) 18 and 24

6

2) 12 and 16

4

3) 144 and 48

48

4) 15 and 35

5

5)  $x$  and  $x^3$

$x$

6)  $x^3$  and  $x^8$

$x^3$

7)  $2x$  and  $6x^5$

$2x$

8)  $24x^2$  and  $36x$

$12x$

Factoring an expression by finding the GCF is reversing the Distributive Property.

To factor out a GCF:

- 1) Find the GCF of ALL terms in the expression.
- 2) Divide each term of the expression by the GCF.
- 3) Rewrite the expression as the product of the GCF and the remaining factors.

**Example 1:** Factor  $4x^2 + 14x^4$

GCF:  $2x^2$

Divide each term by the GCF:

$$\frac{4x^2}{2x^2} + \frac{14x^4}{2x^2}$$

Rewrite as the product of the GCF and the remaining factors:

$$\frac{2x^2}{\text{GCF}} (2 + 7x^2)$$

remaining factors

**Example 2:** Factor  $6x^4 - 60x^2$

$$6x^2(x^2 - 10)$$

$\uparrow$   
GCF

**Example 3:** Factor:  $9x^6 + 81x^3 - 27x$

$$9x(x^5 + 9x^2 - 3)$$

**Example 4:** Factor  $10x^3 - 5x^2$

$$5x^2(2x - 1)$$

Find a GCF and factor each expression.

1)  $8x^2 + 10x$

2)  $12y - 16$

3)  $-15d^5 + 45d^3$

4)  $c^3 + c^2 - c$

5)  $6n^2 - 30n + 42$

6)  $18p^3 - 63p^2 - 9p$

$$c(c^2 + c - 1)$$

7)  $100x^9 + 50x^6 - 75x^5$

8)  $36rs^2 - 108r^2s^3$

9)  $36k - 30$

$$\begin{aligned} & \times 2(18k - 15) \\ & \quad 6(6k - 5) \\ & \quad \uparrow \\ & \text{GCF} \end{aligned}$$

10)  $18x^2 - 50y^2$

11)  $a^7b - a^{10}$

12)  $18x^5 - 48x^4 + 56x^3 - 86x$

$$2(9x^2 - 25y^2)$$

## HOMEWORK - FACTORING with the GCF

Find the GCF and factor each expression.

1)  $9x^2 - 21x$

2)  $15x^2 + 20x$

3)  $12x^2 + 28x$

4)  $15x^4 - 24x^2$

5)  $24x^4 - 18x$

6)  $12x^3 + 6x^2 - 30$

7)  $4x^4 - 22x^2 + 18x$

8)  $21x^5 + 35x^3 + 49x^2$

9)  $2c^5d^4 - 3c^4 + 4c^3$

10)  $23y^{10} - 46y^7 + 68y^2 + 10y$