Warm-Up

1) Find the product. $(4d-7)(4d+7)$ $16d^2-49$

$16d^2+28d-28d-49$

2) Fill in the blanks. $2(2x^2-x+3)=4x^2-2x+6$

3) Find the GCF of all the terms. $18x^2y^3+36x^4y^2-48x^5yz$

$+6x^2y$

4)In inches, what is the world record high jump for a pig?

27.5 inches

Targets

Factoring out GCF

Students can:

- ✓ Target #5: factor out a greatest common factor (monomial).

Mini Lesson

Factoring out GCF

Greatest Common Factor (GCF) - the LARGEST factor that all terms have in common.

Steps for factoring out the GCF from a polynomial

Step 1: Determine the GCF of all terms in the POLYNOMIAL (including variables)

Step 2: Factor out (divide out) the GCF from EVERY term.

Step 3: Check your answer.

Mini Lesson

Factoring out GCF

Example 1: $4x - 12$

Step 1: What is the GCF of 4x and -12? 4

Step 2: Factor out the GCF from each term. $4 \cdot (x - 3)$

Step 3: Check $4(x-3)$

$4x - 12$ ✓

Mini Lesson

Factoring out GCF

Factor the expressions.

1. $3y^4 - 24y^2$

GCF: $3y^2$

Factored: $3y^2(y^2 - 8)$

2. $-11y^3 - 22y^2 - 44y$

GCF: $11y$

Factored: $11y(-y^2 - 2y - 4)$

3. $10ab^2 + 25a^2b$

GCF: $5ab$

Factored: $5ab(2b + 5a)$

4. $32a^5 - 2a^3 + 6a$

GCF: $2a$

Factored: $2a(16a^4 - 1a^2 + 3)$

$\checkmark\ 32a^5 - 2a^3 + 6a$

Mini Lesson

Factoring out GCF

Factor the expressions.

5. $25u^2 + 14u$

GCF: $1u$

$1u(25u + 14)$

6. $4xy + 8x^2y - 24x^4y^5$

GCF: $4xy$

$4xy(1 + 2x - 6x^3y^4)$

7. $-144a^8 + 24a^6$

GCF: ~~12~~ a^6

$12a^6(-12a^2 + 2)$

8. $25y + 24x^2$

GCF: 1

$1(25y + 24x^2)$

Unit 9 Day 5 **Workshop** **Factoring out GCF**

Tic-Tac-Toe

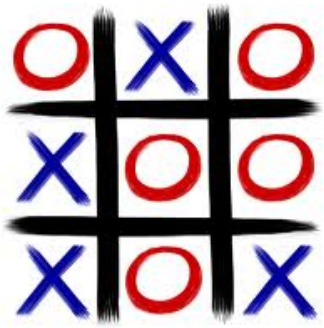
Find a partner to complete the Tic-Tac-Toe game with.

1.) Choose a square.

2.) Factor the expression by factoring out the GCF of all terms. (your partner needs to check your answer)

3.) If you get it right, you can put an X or an O in the square. If you are incorrect, it is your partner's turn.

0	0	0
	0	X
	X	X



Unit 9 Day 5

Workshop Answers

Factoring out GCF

Top Puzzle

$3p + 12q - 15q^2r^2$ $3(p+4q-5q^2r^2)$	$-32n^9 + 32n^6 + 40n^5$ $8n^5(-4n^4+4n+5)$	$-32mn^8 + 4m^6n + 12mn^4 + 16mn$ $4mn(-8n^7+m^5+3n^3+4)$
$45x^2 - 25$ $5(9x^2-5)$	$-48a^2b^2 - 56a^3b - 56a^3b$ $-8a^2b(6b+7a+7a^3)$	$-10x^4 + 20y^2 + 12x$ $2(-5x^4+10y^2+6x)$
$28b + 14b^2 + 35b^3 + 7b^5$ $7b(4+2b+5b^2+b^4)$	$28m^4 + 40m^3 + 8$ $4(7m^4+10m^3+2)$	$8x^3y^2 + 4x^3$ $4x^3(2y^2+1)$

Unit 9 Day 5

Workshop Answers

Factoring out GCF

Bottom Puzzle

$12w^3t^2 - 9wt^2 + 15w^2t^3$ $3wt^2(4w^2 - 3 + 5wt)$	$9m^3 - 9m^2$ $9m^2(m-1)$	$-x^3y^6 - 10x^4y - 9y^2 + 9$ Prime Uh....
$-3a^2b + 6a^3b^2$ $3a^2b(-1 + 2ab)$	$36t^5 + 40t^4 - 160t^3 - 20t^2$ $4t^2(9t^3 + 10t^2 - 40t - 5)$	$14x^2y^2z + 21xy^2z^2$ $7xy^2z(2x + 3z)$
$21p^6 + 30p^2 + 27$ $3(7p^6 + 10p^2 + 9)$	$9y^2z^2 - 81y^3z^2 - 90y^2z^4$ $9y^2z^2(1 - 9y - 10z^2)$	$20ab^3c^4d - 5ab^2c^2$ $5ab^2c^2(4bc^2d - 1)$