Warm Up:
Answer the following questions about the polynomial: \(-2x + 4 - 3x^3\)

- Write the polynomial in standard form (descending order)
  \(-3x^3 - 2x + 4\)
- The polynomial has how many terms?
  \(3\)
- Classify by the number of terms (mono, bi).
  Trinomial
- What is the degree?
  \(3\)

8.2 Multiplying and Factoring

Learning Goal: I will be able to multiply a monomial by a polynomial and factor a monomial from a polynomial.

Examples 1-4:
Simplify.

\[-3r \cdot r \quad -3r \cdot -5t \quad 5x^2(x-2) \quad -3m(m^2 - ln)\]

Examples 5-8:
Simplify.

\[x^3(2x^2 - 4x + 2) \quad 2x - (4 - x) \quad 5m - m(2 + 4m) \quad 3x^2 - (5 + 2x^2)\]
Examples 9-10:  (with your shoulder buddy)

\[ 9a(-a + b) = -9a^2 + 9ab \]

\[ y^3(3y^2 + 4y + x) = 3y^5 + 4y^4 + y^3x \]

Examples 11 and 12:

\[ \frac{5x^2 + 20}{5} = \frac{5}{5} \]

\[ \frac{15x^2 + 30x}{5} = \frac{3x^2 + 6x}{x} \]

Examples 13-14:

Finding the Greatest Common Factor (GCF).

\[ 5x^3 + 25x^2 + 45x \]

\[ 3x^4 - 9x^2 - 12x \]

Examples 15-16:

Finding the Greatest Common Factor (GCF).

\[ b^3 + 5b^2 - 20b \]

\[ 9m^3 + 30m - 24 \]
Examples 17-18: (with your shoulder buddy)
Finding the Greatest Common Factor (GCF).

\[ 2e^2 + 12e - 22 \]
\[ 2 \]

\[ -18q^3 - 6q^2 \]
\[ -6q^2 \]

Examples 19-20:
Factor each polynomial.

\[ 4x^5 - 24x^3 + 8x \]
\[ 4x^5 - 4x^3 + 4x^1 \]
\[ 4x^1(x^4 - 6x^2 + 2) \]

\[ 9x^6 + 15x^4 + 12x^2 \]
\[ 3x^2(3x^4 + 5x^2 + 4) \]

Examples 21-22:
Factor each polynomial.

\[ \frac{10x^2 + 50x - 25}{5} \]
\[ \frac{5}{5}(2x^2 + 10x - 5) \]

\[ 9a^5 + 27a^4 + 63a^2 \]
\[ 9a^2(1a^3 + 3a^2 + 7) \]

Examples 23-24: (with your shoulder buddy)
Factor each polynomial.

\[ \frac{x^6 - x^4 + x^2}{x^4} \]
\[ \frac{x^2(x^4 - 1)}{x^2} \]

\[ \frac{18h^4 - 27h^2 + 18}{3h} \]
\[ 3h(6h^3 - 9h^2 + 6h) \]
Summary

What will help me divide expressions more accurately?

*Split them up!*

What is the GCF? and how do I find it?

*Greatest Common Factor*
- biggest coefficient that goes into them
- all have variables, smallest exponent

Coursework Worksheet!!