Warm Up:
Simplify.

\[
\begin{align*}
3x^2 \cdot 5x^3 & = 15x^5 \\
3a^2b^4 & = \frac{9a^2b^4}{3a^2} \\
(2y^2z^4)^3 & = 2^3y^6z^{12} \\
(500x^5y^3z^3)^0 & = 1
\end{align*}
\]

8.1 Adding and Subtracting Polynomials

Learning Goal: I will be able to classify, add, and subtract polynomials.

Vocabulary:

- **Degree**: Highest exponent in the polynomial.
  - Ex: \(3x^2 + 2x^4 + 10\)

- **Polynomial**: The sum or difference of monomials.
  - \(2x^4 + 3x^2 + 10\)

- **Standard Form (Descending Order)**: Ordered from left to right starting with the highest exponent and descending.

<table>
<thead>
<tr>
<th>Vocabulary:</th>
<th>Monomial</th>
<th>Trinomial</th>
<th>Quadrinomial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monomial</strong></td>
<td>(8)</td>
<td>(12x)</td>
<td>-9xyz</td>
</tr>
<tr>
<td><strong>Trinomial</strong></td>
<td>(x^4)</td>
<td>(x^2 + 2x^4 + 5)</td>
<td>(x^3 + 5xy + 89)</td>
</tr>
<tr>
<td><strong>Quadrinomial</strong></td>
<td>(x^3 + 9x^3 + 2x^3 + 7x^3 - x + 10)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What is degree of a polynomial?
- No Variable (0 degree)
- 1st degree \(-2x^1 = 2x\)
- 2nd degree \(-2x^2\)
- 3rd degree \(-2x^3\)
- 4th degree \(-2x^4\)

Examples 1 and 2:
Simplify.
\[(2x^2 + 6x + 5) + (4x^2 - 3x + 12)\]
\[6x^2 + 3x + 17\]

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

Find the perimeter:
\[x^2 + 2x^2 + 6x^2 - 9\]
\[12x^2 + 2x + 3\]
\[3x^3 + 4x + 4\]

Examples 3 and 4: (with your shoulder buddy)
Simplify.
\[(-7.1x^2 - 180x + 5800) + (21x^2 - 140x + 1900)\]
\[13.9x^2 + 320 + 7700\]

\[(15x^2 + 3x + 10) + (7x^2 - 2x - 7)\]
\[22x^2 + 1x + 3\]
**Examples 5 and 6:**
Simplify.

\[(3x^2 - 2x + 8) - (x^2 - 4)\]
\[3x^2 - 2x + 8 - x^2 + 4\]
\[2x^2 - 2x + 12\]

\[(4x^2 + 3x + 2) - (2x^2 - 3x + 7)\]
\[4x^2 + 3x + 2 - 2x^2 + 3x - 7\]
\[2x^2 + 6x - 5\]

**Examples 7 and 8:**
Simplify.

\[(-12h^4 + h) - (-6h^4 + 3h^2 - 4h)\]
\[-12h^4 + h + 6h^4 - 3h^2 + 4h\]
\[-6h^4 - 3h^2 + 5h\]

\[(3d^2 + 8d - 2) - (2d^2 - 7d + 6)\]
\[3d^2 + 8d - 2 - 2d^2 + 7d - 6\]
\[1d^2 + 15d - 8\]

**Examples 9 and 10:** (with your shoulder buddy)
Simplify.

\[(7x^4 + 9) - (8x^4 - 2)\]
\[-1x^4 + 11\]

\[(3a^2 + a + 5) - (2a - 5)\]
\[3a^2 + a + 5 - 2a + 5\]
\[3a^2 - 1a + 10\]

**Summary**

When can you add terms together?

- **When they are like terms**
- **When exponents are same**

What do you need to remember when subtracting polynomials?

- **Distribute the - 1!!!**
Coursework Worksheet!!