

## Bellwork: Algebra

1. Write down your homework for the night.
2. Take out your homework from last night so I can check it.
3. Make sure you have your Math Nation book at your seat.
3. Write the following on your bellwork sheet for WEDNESDAY

A student says: "Of course, it is easy to see that the expression  $\underline{3x^6} + \underline{5x^3} - \underline{7x^9}$  has three terms, a degree of ~~3~~ and a ~~positive~~ leading coefficient."

Is the student correct? Explain.

negative

$-7x^9$

—

1. Write  $9x + 3x^2 - 4x^5 + x^3 + 2x^4$  in standard form.

$$-4x^5 + 2x^4 + x^3 + 3x^2 + 9x$$

2. Determine the type and degree of each of the following polynomial expressions.

$9x^4y^9$       **Monomial; Degree 13**

$x^4 - 3x^2 + 7x^5$       **Trinomial; Degree 5**

$19a^6b^2 + 8ab^3c - 27a^7$       **Trinomial; Degree 8**

3. Consider the following polynomial expression:  $4x^5 - 16x^2 + 13x^8$ .

*Part A:* Write the polynomial expression in standard form.

$$13x^8 + 4x^5 - 16x^2$$

*Part B:* What is the degree of the polynomial?

**Degree 8**

*Part C:* How many terms are in the polynomial?

**3**

*Part D:* What is the leading term?

$$13x^8$$

*Part E:* What is the leading coefficient?

**13**

4. Match the polynomial in the left column with its descriptive feature in the right column.

A.  $x^3 + 3x^2 - 2x + 7$

B.  $3a^3b^6$

C.  $3x^4 - 9x^3 + 5x^8$

D.  $7a^3b^2 + 18ab^2c - 9a^3$

E.  $2x^5 - 9x^3 + 8x^7$

F.  $4x^8 - 7x^2 + 9$

G.  $x^2 - 7$

I. 9<sup>th</sup> degree monomial **B**

II. Constant term of  $-7$  **G**

III. 7<sup>th</sup> degree polynomial **E**

IV. Leading coefficient of 4 **F**

V. Four terms **A**

VI. 5<sup>th</sup> degree polynomial **D**

VII. Equivalent to  $5x^8 + 3x^4 - 9x^3$  **C**

5. Write a binomial expression in standard form that has a degree of 4.

**Example:  $5x^4 + 3x$**

6. Write a trinomial expression in standard form that has a degree of 5.

**Example:  $6x^5 - 10x^2 + 13$**

7. Janae wrote the following polynomial expression:  $2x^5 - 4x^3 + 6x^8$ . Janae claimed it was a trinomial with a leading coefficient of 2. Justin argued back claiming that it was a trinomial with a leading coefficient of 6. Who is correct? Explain.

**Justin is correct because 6 is the coefficient of the highest exponent.**

8. Ladarius wrote the following monomial expression:  $5x^8y^3$ . Ladarius said the monomial had a degree of 11. Ayla said the monomial had a degree of 8. Who is correct? Explain.

**Ladarius is correct because you must add the exponents.**

Recall the **distributive property**.

- If  $a$  and  $b$  are real numbers, then  
 $a(b + c) = a \cdot \underline{b} + a \cdot \underline{c}$ .

One way to visualize the distributive property is to use models.

Consider  $(a + 3)(a + 2)$ .

	$a + 3$	
$a$	$a^2$	$3a$
$2$	$2a$	$6$

$$a^2 + \underline{3a + 2a} + 6$$

$$a^2 + 5a + 6$$

Now, use the distributive property to write an equivalent expression for  $(a + 3)(a + 2)$ .

$$a^2 + \underline{2a + 3a} + 6$$

$$a^2 + 5a + 6$$

1. Write an equivalent expression for  $3(x + 2y - 7z)$  by modeling and then by using the distributive property.

$$3 \begin{array}{|c|c|c|} \hline x & 2y & -7z \\ \hline 3x & 6y & -21z \\ \hline \end{array}$$

$$3x + 6y - 21z$$

$$3x - 2x$$

$$-3x - 2x$$

2. Write an equivalent expression for  $(x - 3)(x - 2)$  by modeling and then by using the distributive property.

$$x^2 - 5x + 6$$

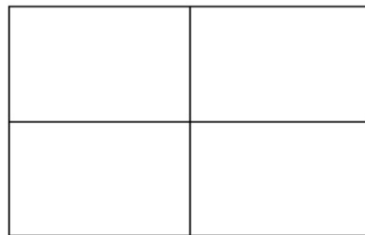
$$\begin{array}{|c|c|c|} \hline x & -3 \\ \hline x & x^2 & -3x \\ \hline -2 & -2x & 6 \\ \hline \end{array}$$

$$x^2 - 3x - 2x + 6$$

$x^2$ 
 $-3x$   
 $-2x$ 
 $6$

**Try It!**

3. Use the distributive property or modeling to write an equivalent expression for  $(m + 5)(m - 3)$ .



$$m^2 + 2m - 15$$



### BEAT THE TEST!

1. Students were asked to use the distributive property to write an equivalent expression for the expression  $(x - 5)(x - 2)$ . Their work is shown below. Identify the student with the correct work. For the answers that are incorrect, explain where the students made mistakes.

Student 1

$$\begin{aligned}(x-5)(x-2) \\ &= x \cdot x - 5(-2) \\ &= x^2 + 10\end{aligned}$$

Student 2

$$\begin{aligned}(x-5)(x-2) \\ &= xx - 2x - 5x - 5(-2) \\ &= x^2 - 2x - 5x + 10 \\ &= x^2 - 7x + 10\end{aligned}$$

Student 3

$$\begin{aligned}(x-5)(x-2) \\ &= x \cdot x + x(-2) - 5 \cdot x - 5(-2) \\ &= x^2 - 2x - 5x - 10 \\ &= x^2 - 7x - 10\end{aligned}$$