2. During harvesting season at Florida Blue Farms, hand pickers collect about 200 pounds of blueberries per day with a 95% pack-out rate. The blueberry harvester machine collects about 22,000 pounds of blueberries per day with a 90% pack-out rate. The pack-out rate is the percentage of collected blueberries that can be packaged to be sold, based on Florida Blue Farms' quality standards.

   Let h represent the number of days the hand pickers work and m represent the number of days the harvester machine is used. Which of the following algebraic expressions can be used to estimate the amount of collected blueberries that are packed at the Florida Blue Farms for fresh consumption this season?

   Ⓐ $(0.95h + 200)(0.90m + 22000)$
   Ⓑ $0.95(200h) + 0.90(22000m)$
   Ⓒ $200.95h + 22000.90m$
   Ⓓ $(200h + 0.95)(22000m + 0.90)$

Want to learn more about how Florida Blue Farms uses algebra to harvest blueberries? Visit the Student Area in Algebra Nation to see how people use algebra in the real world! You can find the video in the "Math in the Real World: Algebra at Work" folder.

Algebra Wall

Want some help? You can always ask questions on the Algebra Wall and receive help from other students, teachers, and Study Experts. You can also help others on the Algebra Wall and earn Karma Points for doing so. Go to AlgebraNation.com to learn more and get started!

Section 1 – Topic 2
Understanding Polynomial Expressions

A ***term*** is a constant, variable, or multiplicative combination of the two.

Consider $3x^2 + 2y - 4z + 5$.

How many terms do you see?

List each term.

This is an example of a ***polynomial expression***. A polynomial can be one term or the sum of several terms. There are many different types of ***polynomials***.

A monarchy has one leader. How many terms do you think a monomial has?

A bicycle has two wheels. How many terms do you think a binomial has?

A triceratops has three horns. How many terms do you think a trinomial has?

Let's recap:

Type of Polynomial	Number of Terms	Example
Monomial		
Binomial		
Trinomial		
Polynomial		

Some important facts:

- The ***degree of a monomial*** is the sum of the _____ of the variables.
- The ***degree of a polynomial*** is the degree of the monomial term with the _____ degree.

Sometimes, you will be asked to write polynomials in standard form.

- Write the monomial terms in _____ _____ order.
- The ***leading term*** of a polynomial is the term with the _____ _____.
- The ***leading coefficient*** is the coefficient of the _____ _____.

Let's Practice!

1. Are the following expressions polynomials? If so, name the type of polynomial and state the degree. If not, justify your reasoning.

   a. $8x^2y^3$

   b. $\frac{2a^2}{3b}$

   c. $\frac{3}{2}x^4 - 5x^3 + 9x^7$

   d. $10a^6b^2 + 17ab^3c - 5a^7$

   e. $2m + 3n^{-1} + 8m^2n$

Try It!

2. Are the following expressions polynomials?

a. $\frac{1}{2}a + 2b^2$

- o polynomial
- o not a polynomial

b. 34

- o polynomial
- o not a polynomial

c. $\frac{xy}{y^2}$

- o polynomial
- o not a polynomial

d. $2rs + s^4$

- o polynomial
- o not a polynomial

e. $xy^2 + 3x - 4y^{-1}$

- o polynomial
- o not a polynomial

3. Consider the polynomial $3x^4 - 5x^3 + 9x^7$.

a. Write the polynomial in standard form.

b. What is the degree of the polynomial?

c. How many terms are in the polynomial?

d. What is the leading term?

e. What is the leading coefficient?

BEAT THE TEST!

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

A. $x^3 + 4x^2 - 5x + 9$	I. Fifth-degree polynomial
B. $5a^2b^3$	II. Constant term of -2
C. $3x^4 - 9x^3 + 4x^9$	III. Seventh-degree polynomial
D. $7a^6b^2 + 18ab^3c - 9a^7$	IV. Leading coefficient of 3
E. $x^5 - 9x^3 + 2x^7$	V. Four terms
F. $3x^3 + 7x^2 - 11$	VI. Eighth-degree polynomial
G. $x^2 - 2$	VII. Equivalent to $4x^9 + 3x^4 - 9x^3$

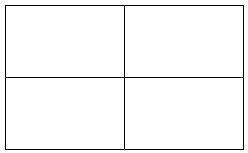
Section 1 – Topic 3
Algebraic Expressions Using the Distributive Property

Recall the ***distributive property***.

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

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

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



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