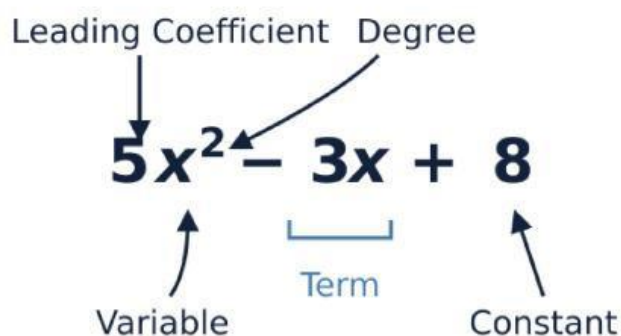


Polynomial Analysis

1. Anatomy of a Polynomial



Key Vocabulary:

- **Term:** Parts separated by + or - signs.
- **Coefficient:** The **number** in front of a letter.
- **Constant:** A number **all by itself** (no letter).
- **Degree:** The **biggest** exponent (power).
- **Like Terms:** Same letter, same exponent.

2. Deconstruct the Polynomials

Look at the polynomials below. We have filled in the first row for you as an example.

Remember: If you don't see a number in front of a variable, the coefficient is **1**.

Polynomial	# of Terms	Coefficients	Constant	Degree
$4x^2 + 3x - 7$	3 terms	4, 3	-7	2
$y^3 - 9y + 2$				3
$15 - m$			15	
$\frac{1}{2}a^4 + a^2 - 6a$			None	

3. Like vs. Unlike Terms

Like Terms must have:

1. The same **variable** (letter)
2. The same **exponent** (power)

Example: $2x^2$ and $5x^2$ are like terms. $2x^2$ and $2x$ are NOT.
Look at the box below. Match the terms that belong together.



$3x^2$	$-5y$	12	x
$4y$	$-x^2$	$8x^2$	-7
y^2	$2x$	$9y$	10

Fill in the blanks to group the terms:

x^2 Group: $3x^2$, _____, _____

y Group: $-5y$, _____, _____

Numbers (Constants): 12, _____, _____

x Group: x , _____

4. Polynomial Architect

Create your own polynomials. Use the sentence frames to help you.

1. Write a polynomial with **3 terms** (trinomial) that uses exponent **2** and has the constant **-5**.

_____ x^2 + _____ x - 5

2. Write a polynomial with **2 terms** (binomial). Use **m** as the variable. The first number is **4**.

4 m + _____

3. Why are **$3x^2$** and **$3x$** DIFFERENT? Why can't we add them together?

They are not like terms because they have different _____.

5. Polynomial Power Check ⚡

Circle the correct answer for each question.

1. In the expression $7x^3 - 4x + 9$, what is the **leading coefficient**?

- a) 3 b) 7 c) 4 d) 9

2. Which of the following is a **constant**?

- a) $5x$ b) x^2 c) -12 d) $2y$

3. What is the **degree** of the polynomial $x^5 + 2x^2 - 1$?

- a) 1 b) 2 c) 5 d) 0

6. Real or No? 🤔

Read each statement carefully. Write **True** or **False** in the box.

Statement	True / False
In the term $-8x$, the coefficient is 8 .	
$4x$ and $4x^2$ are like terms because they both have x .	
A trinomial is a polynomial with exactly 3 terms .	
The degree is the highest exponent in the polynomial.	