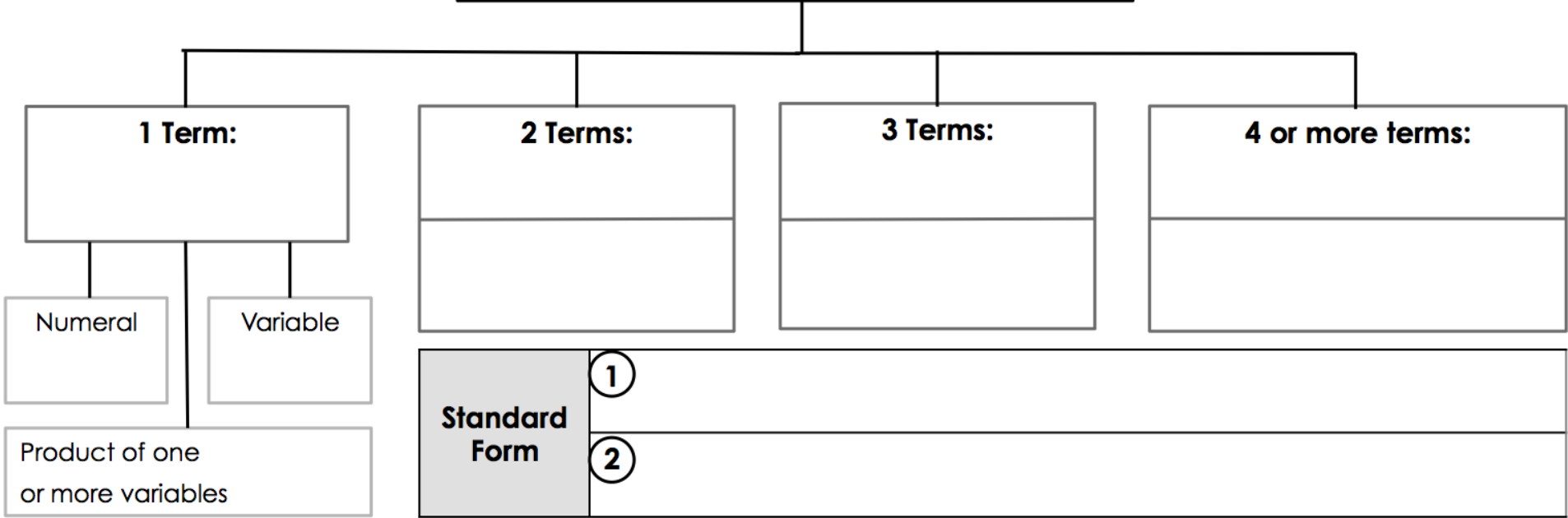


Introduction to Polynomials

What is a Polynomial?

- Means _____ terms
- A monomial or _____ of monomials
- Only _____ exponents
- _____ function



Degree	
0	1 2
3	4 5

PRACTICE

Are these polynomials? If not, explain.

1. $2\sqrt{x} + 16x - 9$

YES	NO
-----	----

2. $\frac{2x}{3} + 5$

YES	NO
-----	----

3. $x^{-5} + 6x^3 - 7x^2 - 3$

YES	NO
-----	----

4. $3^x + 6^x - x + 4$

YES	NO
-----	----

5. $8x^4 + x^2 + x^0$

YES	NO
-----	----

6. $\frac{2}{x^4} - 4x$

YES	NO
-----	----

Classify each polynomial.	Standard Form	Degree	Terms	Name
7. $-8x^2 - 10x - 5x^3$				
8. $-10 + 4xy - 7x^2 + 10x^4$				
9. $2x^2 - 10x$				
10. $3x$				
11. $2x - x^3 - 8x^5$				

HOMEWORK 6.1 – Introduction to Polynomials

Name: _____ Date: _____ Period: _____

Classify each polynomial:	Standard Form	Degree	Terms	Name
1. $x^2 - 4 + 2x^3 + 7x - 11x^5$				
2. $17x - 3x^3 + 2 - 6x^2$				
3. $32 - x^2 + 2x$				
4. $9x^3 - 5x + 3 - 4x^4$				
5. $-1 + 8x$				
6. $5xy^2 - xy + 2x^3y$				
7. $12 - y^3 + 3x^2$				
8. $7x^2y^2 - 4x^4y$				
9. $10x^4 - x^2 + 8x^2y + 3y^3$				
10. $3ab + 9a^2b^2 + 2b^3 - a^3 + 16$				

Homework 6.1: Introduction to Polynomials

Determine whether each expression is a polynomial. If it is not, explain why.

11. $2.8^5 + 3x - x^0$

YES	NO
-----	----

12. $3x^{-2} + 7x - 1$

YES	NO
-----	----

13. $4^{2x} - 5$

YES	NO
-----	----

14. $20 - 5(\sqrt{x})^2 + 8x$

YES	NO
-----	----

Write a polynomial based on the classification given.

15. constant monomial

16. quartic trinomial

17. linear binomial

18. quadratic polynomial

Operations with Polynomials

LIKE TERMS	
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Which of the following are like terms?

$5x^2$

$2x^2y$

$-8x^2$

$3xy$

$-12x^2$

$9x^2y$

ADD or SUBTRACT	To add or subtract polynomials, combine like terms.
------------------------	---

HORIZONTALLY →

A **ADD** $(5x + 14) + (2x^2 - 4x + 3)$

Steps
1 -
2 -
3 -

B **SUBTRACT** $(x^2 + 4x) - (2x^2 - 5x + 3)$

Steps
1 -
2 -

NOTES – POLYNOMIAL FUNCTIONS

VERTICALLY ↓

C ADD $(-4x^3 + 2x^2 + 9) + (7x^3 + 10x^2 - 3x - 4)$

Steps
1 – Write one polynomial under the other so that like terms appear in the same column.
2 – Add and combine like terms.

D SUBTRACT $(3x^4 - 10x^2 - 6x + 1) - (2x^4 + 5x^3 + 6x + 1)$

Steps
1 – Write the second polynomial under the first polynomial so that like terms appear in the same column.
2 – To subtract, add the opposite of every term in the second polynomial.

MULTIPLY	<ul style="list-style-type: none"> • Multiply the _____. • Add the _____.
Monomial x Monomial $-5xy^3 \cdot 8x^2y^4z^3$	Monomial x Polynomial $4x(3x^2 - 8x - 4)$
Binomial x Binomial $(3x + 2)(x - 1)$	Binomial x Polynomial $(x + 2)(x^2 - 3x - 6)$

NOTES – POLYNOMIAL FUNCTIONS

DIVIDE

A polynomial by a monomial.

$$\frac{3x^3 + 7x^2 - x}{x}$$

Steps

1 – Split the polynomial by putting each term in the numerator over the denominator.

2 – Simplify each term.

PRACTICE

1. $(x^3 + 3x^2 + 2) + (2x^3 + 4)$	2. $(x^4 + 3x^2 - 6x + 2) - (15x^4 + 2x^3 - 6x^2 + 5x - 3)$
3. $(3x^3y - 4x^2y + 2xy - y) + (-x^3y - 5x^2y - 6xy - 3y)$	4. $(5x)(3y)(5x - 3y)$
5. $(3x + 2)^2$	6. $\frac{80x^5 - 40x^2yz + 8x}{8x}$