

Chapter 8a Student Success Sheet (SSS)

Operations with Polynomials

Olathe East High School – Intermediate Algebra

Name: _____

Hour: _____

Need Help? Support is available!

- www.mhollan.weebly.com
- www.srushingoe.weebly.com

“There are no secrets to success. It is the result of preparation, hard work, and learning from failure.”

Colin Powell

Concept #	What we will be learning...	# of Videos
1	Describing and classifying polynomials	1
2	Adding and subtracting polynomials	1
3	Multiplying: monomial with trinomial	1
4	Multiplying: binomial with binomial (FOIL)	1
5	Multiplying: binomial with trinomial	1

___ Constant	Those describe polynomial d _____	0 _____
___ Linear	The b _____ e _____ I see	1 _____
___ Quadratic		2 _____
___ Cubic	That term has a number before	3 _____
___ Quartic		4 _____
___ Quintic	The l _____ c _____, LC for short	5 _____

Concept 1: Describing and Classifying Polynomials

We can classify polynomials in two ways:

* **highest degree** (largest exponent)

* **number of terms**

Usually write polynomials in **standard form**: from highest exponent to lowest exponent - in order counting down!

We describe polynomials with **TWO** names as well as by the **LEADING COEFFICIENT** (the number in front of the term with the highest exponent).

Degree	Name
0	
1	
2	
3	
4	
5	

# of terms	Name
1	
2	
3	
4 or more	

<u>Polynomial</u>	<u>Degree</u>	<u>Name</u>	<u># of terms</u>	<u>Name</u>	<u>Leading Coefficient</u>
1. $-7v^5$	5	quintic	1	monomial	-7
2. $-9a^3 - 8a^2 - 2a + 5$	3	cubic	4	polynomial	-9
3. $-k^2 + 10$					
4. p^4					
5. $5a$					
6. $10p^4 + 7p^3$	4	quartic	2	binomial	10
7. $-9p - 2$	1	linear	2	binomial	-9
8. $-10x^5 - 7x^2 - 8x$					
9. $6x^2$					
10. x^5					
11. $3m^5 - 4m^4 + 2m + 1$					
12. -8	0	constant	1	monomial	-8
13. $3a^2 - 3a - 3$	2	quadratic	3	trinomial	3
14. $-7a^3$					
15. $-5x + 7$					
16. $3m^4 - 7$					
17. $3m$					
18. $9m^4 + 8m$					
19. -3					
20. $-8p^2 - 9p$					

Sentence Frame: This is a _____ with a leading coefficient of _____.
 (constant, linear, quadratic, cubic, quartic, quintic) (monomial, binomial, trinomial, polynomial)

Concept 2: Adding and Subtracting Polynomials

Sentence Frame: This is a _____ with a leading coefficient of _____.
(constant, linear, quadratic, cubic, quartic, quintic) (monomial, binomial, trinomial, polynomial)

21. $(4n - 3n^4 - 5n^2) - (3n + 7n^2 + 8n^4)$

22. $(7 - 2v^4 - 6v) + (3v^3 - 6 + 6v^4)$

23. $(k^2 + 3k^3 + 5k^5 - 2k^4) - (-k^2 + 7k^3 + k^5 - k^4)$

24. $(5x^5 + 4x^2 + 2x^4) + (6 + 7x - 3x^5) + (4 - 6x^4 - 7x)$

25. $(8x^3 + 4x^4 + 4x^2 + 7x^5) - (-8x^4 - 2x^5 - 7 - 4x^2) + (-5x^3 + 8x^2 + 7 - 4x^4)$

26. $(-2n^2 - n^5 - 2n - 8) - (5n^2 + 6n^4 + 8n + n^5) - (-2n^4 - 2n - n^2 - 6)$

Concept 3: Multiplying: Monomial with Trinomial

1. Distribute the monomial.

2. Remember... multiply the monomial and multiply the trinomial.

EX: $-8m(m^2 + 6m - 6)$

EX: $-x^2(-7x^2 - 3x - 4)$

$-8m^3 - 48m^2 + 48m$

	$-7x^2$	$-3x$	-4
$-1x^2$			

27. $-8(-4n^2 - 3n + 1)$

28. $-4(7x^2 - 5x - 5)$

29. $-8x(7x^2 - 6x - 6)$

30. $-5m^2(-3m^2 - 2m - 6)$

31. $5n^2(n^2 + n - 2)$

32. $4(-a^2 - 4a - 5)$

Concept 4: Multiplying: Binomial with Binomial

Multiply $(2x - 8)(5x + 7)$.

“BOX” method

	$2x$	-8
$5x$	$10x^2$	$-40x$
$+7$	$14x$	-56

“FOIL” method

F (first) $10x^2$ I (inner) $-40x$

O (outer) $14x$ L (last) -56

33. $(k + 5)(k - 2)$

34. $(5x + 8)(5x + 6)$

35. $(7n + 5)(7n - 3)$

36. $(8x - 4)(7x + 4)$

37. $(n - 7)(5n - 4)$

38. $(4b - 2)(3b - 5)$

39. $(3n + 5)^2$

40. $(7a - 3)(7a + 3)$

Concept 5: Multiplying: Binomial with Trinomial

While we can use a variation of FOILing to multiply binomials with trinomials, it is easiest to use the “BOX” method here as well.

$$(5k + 2)(5k^2 + k + 1)$$

	$5k^2$	$+k$	$+1$
$5k$	$25k^3$	$5k^2$	$5k$
-2	$-10k^2$	$-2k$	-2

Combine like terms: **$25k^3 - 5k^2 + 3k - 2$**

41. $(n - 5)(7n^2 - 8n + 8)$

42. $(7x - 2)(3x^2 + 8x - 1)$

43. $(2m^2 + 5m + 7)(3m + 6)$

44. $(4v^2 - 2v + 6)(8v - 7)$