

Chapter 8a Student Success Sheet (SSS)

Operations with Polynomials (sections 8.1-8.4)

Olathe East High School – Intermediate Algebra

1

Name: _____
 Hour: _____

- Reminders:**
- Homework is completed in **homework packet**.
 - All pages in homework notebook should be done in pencil

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: monomials with trinomials	1
4	Multiplying: binomials with binomials (FOIL), including square of a binomial and difference of squares	2
5	Multiplying: binomials with trinomials	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 _____

#1 Describing and classifying polynomials

We can classify polynomials in two ways:

Their **highest degree** (largest exponent) and

The **number of terms** it has

We write our polynomials **in standard**

form: from highest exponent to lowest exponent, in order counting down!

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

Degree	Name	# of terms	Name
0		1	
1		2	
2		3	
3		4 or more	
4			
5			

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

#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) $(-8x^5 + 2x - 3) - (8x + 4x^3 - 8x^5)$

23) $(7 - 2v^4 - 6v) - (3v^3 - 6 + 6v^4)$ 24) $(-7x + 2x^5 + 5x^4) - (2x + 5x^5 + 8x^4)$

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

26) $(-5a^4 + 8a^5 + 7a^3 + 4a^2) - (-8a^4 + 5a^3 - 6a^5 + 7a^2)$

27) $(5x^5 + 4x^2 + 2x^4) + (6 + 7x - 3x^5) + (4 - 6x^4 - 7x)$

$$28) (8 + 6n^3 + 3n) + (-2 + 3n^3 + 2n^5) + (-4n^5 + 3n^2 - 2)$$

$$29) (8x^3 + 4x^4 + 4x^2 + 7x^5) - (-8x^4 - 2x^5 - 7 - 4x^2) + (-5x^3 + 8x^2 + 7 - 4x^4)$$

$$30) (-2n^2 - n^5 - 2n - 8) - (5n^2 + 6n^4 + 8n + n^5) - (-2n^4 - 2n - n^2 - 6)$$

83 Multiplying: monomials with trinomials

1. Distribute the monomial!

2. Remember... the C, the E!

Ex. 1 $-8m(m^2 + 6m - 6)$

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

Ex. 2 $-x^2(-7x^2 - 3x - 4)$

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

31) $-8(-4n^2 - 3n + 1)$

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

33) $-4(7x^2 - 5x - 5)$

34) $-8(7k^2 + 8k - 5)$

35) $-8x(7x^2 - 6x - 6)$

36) $-4n(3n^2 + 2n - 5)$

37) $-5m^2(-3m^2 - 2m - 6)$

38) $-4(-4p^2 + 2p + 2)$

39) $5n^2(n^2 + n - 2)$

40) $6x^3(x^2 - 5x - 4)$

44 Multiplying: binomial with binomial (FOIL), including square of a binomial and difference of squares

There are two methods we can use: The "box" method or the "FOIL" method:

	2x	-8
5x	10x ²	-40x
+7	14x	-56

Combine like terms: $10x^2 - 26x - 56$

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

F $10x^2$

I $-40x$

O $14x$

L -56

Combine like terms: $10x^2 - 26x - 56$

41) $(k + 5)(k - 2)$

42) $(6a - 2)(2a + 7)$

43) $(5x + 8)(5x + 6)$

44) $(3p + 3)(8p - 6)$

45) $(7n + 5)(7n - 3)$

46) $(2m - 7)(2m + 5)$

47) $(8x - 4)(7x + 4)$

48) $(5r + 7)(8r - 4)$

49) $(n - 7)(5n - 4)$

50) $(7v - 5)(3v - 5)$

51) $(4b - 2)(3b - 4)$

52) $(x + 1)(4x - 5)$

There are two "special" types of polynomials that we will multiply.

Square of a binomial

$$(7 + 8x)^2$$

What do you notice?

Multiply it:

What do you notice?

53) $(3n + 5)^2$

55) $(5k + 8)^2$

57) $(6x - 7)^2$

59) $(2m - 5)(2m + 5)$

Difference of Squares

$$(2m + 6)(2m - 6)$$

What do you notice?

Multiply it:

What do you notice?

54) $(7a + 3)(7a - 3)$

56) $(2p + 5)^2$

58) $(8n + 7)(8n - 7)$

60) $(5p - 7)(5p + 7)$

#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.

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

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

61) $(n - 5)(7n^2 - 8n + 8)$

62) $(7x - 2)(3x^2 + 8x - 1)$

63) $(7r + 5)(3r^2 + 8r + 7)$

64) $(4b + 3)(4b^2 + 8b + 2)$

65) $(x + 2)(6x^2 + 7x + 5)$

66) $(3n + 8)(7n^2 - n + 7)$

67) $(8v - 7)(4v^2 - 2v + 6)$

68) $(6a + 5)(5a^2 + 2a + 7)$

69) $(5x - 5)(8x^2 - 3x - 3)$

70) $(3x + 7)(2x^2 - 6x - 3)$

71) $(8n^2 - n + 7)(3n + 6)$

72) $(2m^2 + 5m + 7)(3m + 6)$