Name:

Final Exam Practice Pack – Section 6

Term: Any variable, constant, or product of the two

Example: $3, \quad 4x, \quad t, \quad 2r^2, \quad xyz$

Like Terms: Terms that have the **same variable(s)** to the same **exponents**

Example: $x^2 \; and \; 4x^2, \quad 7t \; and \; 3t, \quad 4 \; and \; 9$

Degree of a Term: The **exponent** on the **variable** or **sum** of exponents on **different variables** of one term

Example: $3x \; is \; Degree \; 1, \quad 4x^2 \; is \; Degree \; 2, \quad 5xyz \; is \; Degree \; 3$

Polynomial: Any term or terms **separated by addition or subtraction** where all **exponents** on the variables are **whole numbers**

Example: $5t^2 + 2t - 7$

Example: Combine the **Like Terms** and leave the simplified expression in **Descending Order**

$$5xy + 5x^2 + 2x - 6 - 4yx + 2x + 6 - 3x^2$$

Like Terms are:

$+5x^2 and -3x^2$	so	$5x^2 - 3x^2 = 2x^2$	$Degree \; of \; 2$
$5xy \; and - 4yx$	so	$5xy - 4xy = xy$	$Degree \; of \; 2$
$+2x \; and + 2x$	so	$2x + 2x = 4x$	$Degree \; of \; 1$
$-6 \; and + 6$	so	$-6 + 6 = 0$	$Degree \; of \; 0$

xy and yx are the same, in multiplication order doesn't matter, $xy = yx$

Since $x^2 and \; xy$ are both degree 2, which one goes first?

We list them **ALPHABETICALLY**, $x^2 = xx \; and \; xx \; comes \; before \; xy$

$$\boldsymbol{2x^2 + xy + 4x}$$

Identify the number of terms, what are they, and their degrees

1. $2x^4 - 4x^2 - 5$

2. $4x^3yz$

3. $xy - 5xy^3 + 4y$

4. $5x^4y + 4xy^2 - 6xy$

5. -3

6. $3xyz + 5z - x^4$

Put the following Polynomials in DESCENDING ORDER

7. $-2 + 5x^2 - 7x$

8. $-3t + 6t^3 + t - 8t^2$

9. $12 - 3x + 4x^2$

10. $3z^2 - 4z - 5$

11. $xy^2 + xy + xz - y^3$

12. $-5xy - 4y + x^2$

Simplify the following, put your answer in DESCENDING ORDER

13. $-4t + 7 - 3t - 7t^2 + 14 - 6t^2$

14. $-4z^3 = 4z - 7z^2 + 8 - 5z^2 - 9 + 2z^2 + 3z$

15. $-5xy + 7 + 5yx - 7$

16. $-q + 10q^2 - 17 - 3q^2 + 9q + 14$

17. $\frac{2}{3}i^2 + 4i - \frac{5}{6}i^2 - 3i + 6$

18. $-5.6x - 4.2y - 2.3x + 7.2y - 3$

19. $\frac{7}{5}x + \frac{1}{3}y - \frac{4}{5}x - \frac{2}{3}y + 6$

20. $\frac{3}{4}j^2 - 3j - \frac{1}{2}j + \frac{5}{8}j^2 + \frac{3}{16}j^2$

<u>Add the following Polynomials, leave answer in DESCENDING order.</u>

21. $(2x + 7) + (3x - 17)$

22. $(2x^2 + 5x + 7) + (-3x^2 + 7 + 4x)$

23. $(2xy + 5x^3 - 7) + (5xy - 2x^3 + 8)$

24. $(-5 + 7t^2 - 4t) + (-2t + 7t^2 + 8)$

25. $(-4j^3 + 3j^2 - 5j + 7) + (-3j^3 + 2j^2 - 5j + 12)$

26. $(-4 + 3x - 4x^2) + (-7x^2 - x)$

27. $(-2t^2 + 7) + (-3t^2 - 6)$

28. $(2x^2 - 2 - 3x) + (4x^2 - x + 5)$

29. $(2x - 3x^2 + 2y^2) + (y^2 - 3x - 2x^2)$

30. $(-4x + 2x^2) + (5 + 3x^2)$

31. $(-5 + 7x^2 - 4x) + (-5x + 2x^2 - 4)$

32. $(-3x + 2xy - 2y) + (2xy + 3y) + (3y - 7x)$

33. $(2y - 3x + 5xy) + (-2xy - 3x + 7y) + (-2x + 4xy)$

<u>Subtract the Polynomials, leave answer in DESCENDING order.</u>

34. $(x^2 - 4x + 7) - (-3x^2 - 4x + 3)$

35. $(-t^3 - 5t + 4t^2) - (-2t^2 + 7t + 2t^2)$

36. $-(z + 4) - (-3z + 5)$

37. $(w + 2) - (2w - 9)$

38. $(3r - 6) - (-5r + 12)$

39. $(j - 14) - (-7j - 11)$

40. $(-2k^2 + 5k - 8k) - (-3k^2 - 2k + 6k) - (-6k^2 + 9k + k)$

41. $(5 - 2t) - (-3 + 9t) - (12 + 4t)$

42. $(-2x + 3y) - (-4x + 12y) - (-x - 7y)$

43. $(-7x - 6y + 13z) - (-4x + 7y) - (-2x + 2y - z)$

Perform the Combined Operations

44. $(-2st - 3s - 9t) - (-12st + 8t) + (-3s + 2t)$

45. $(-x + 8y) + (12x - 10y) - (5x - 11y + 5z)$

46. $(-3xy + 8z) + (-4x^2 - 7z) - (-6x^2 - 8xy + 5z)$

Multiply the following. Leave answer in DESCENDING order.

47. $-2(x-5)$

48. $-(2t^2+t-4)$

49. $4tp(-3t^2-7p)$

50. $-4k^2(k^2-k+2)$

51. $-z(-3z-8)$

52. $2x(-2y+3x-7z)$

53. $xy(-2xyz+3z-xy)$

54. $2st(3s-4t+st)$

55. $-2x^2(-x^2+3y^2+z^2)$

Divide the following. Leave answer in DESCENDING order

56. $\frac{-6x+15}{3}$

57. $\frac{7t^2+5t}{t}$

58. $\frac{-6x^2-12x+18}{3}$

59. $\frac{3q^3+12q^2-15q}{5q}$

60. $\frac{-4t^2+2t}{t}$

61. $\frac{-3a^2bc-ab^2c+abc^2}{-abc}$

62. $\frac{21z^4-9z^3+3z^2}{-3z^2}$

63. $\frac{12r^{12}+8r^3-4r^2}{-2r^{-2}}$

64. $\frac{-a^2b^2c+ab^2c^2-a^2b^2c^2}{-ab^2c}$

Perform the Combined Operations. Answer in DESCENDING order.

65. $-3(-2x^2 - 7x) + 5x(3x + 6)$

66. $\frac{-2t(t^2+4t)}{t} - 3t(-4t - 7)$

67. $\frac{7q(3q^2+4q)}{-7} + \frac{9q(4q^2-q)}{3}$

68. $\frac{-3z^3(z-3)}{3} - \frac{4z^2(3z+6z^2)}{-3}$