Polynomials in this grade are not a huge jump, they involve waterbombing (distributive method), grouping like terms, and sometimes exponent laws.

They are, however, a recurring topic that we will cover in increasing detail in the years to come!

Section 6.1 – Practice Questions

EMERGING LEVEL QUESTIONS

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

1. $3x - 4x^2 - 5$

3 Terms

$3x$ Deg 1

$-4x^2$ Deg 2

-5 Deg 0

2. $4xyz$

1 Term

$4xyz$ Deg 3

3. $-2xyz - 5xy + 4$

3 Terms

$-2xyz$ Deg 3

$-5xy$ Deg 2

$+4$ Deg 0

4. $5x^3y + 4xy^3 - 6xyz$

3 Terms

$5x^3y$ Deg 4

$4xy^3$ Deg 4

$-6xyz$ Deg 3

5. 5

1 Term

5 Deg 0

6. $3x + 4y + 5z - x^2$

4 Terms

$3x$ Deg 1

$4y$ Deg 1

$5z$ Deg 1

$-x^2$ Deg 2

Put the following Polynomials in **DESCENDING ORDER**

7. $3 + 4x^2 - 5x$

0 2 1

$\boxed{4x^2 - 5x + 3}$

8. $-2t + 4t^3 - 2t - 3t^2$

1 3 1 2

$\boxed{4t^3 - 3t^2 - 4t}$

9. $2 - x + 5x^2$

0 1 2

$\boxed{5x^2 - x + 2}$

Alphabetical if same degree

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

2 1 0

$\boxed{z^2 - 4z + 5}$

11. $x + xy + xz - y$

1 2 2 1

$\boxed{xy + xz + x - y}$

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

2 1 1 2

$\boxed{x^2 - 5xy + 2x - y}$

Simplify the following, put your answer in **DESCENDING ORDER**

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

combine 1st

$\boxed{-t^2 - 3t + 8}$

14. $7z^3 + 2z - 4z^2 + 1 - 4z^2 - 5 + 3z^2 + 3z$

$\boxed{7z^3 - 5z^2 + 5z - 4}$

15. $5xy + 3 - 5yx + 2$

$xy = yx$

0

$\boxed{5}$

16. $-4q + 5q^2 - 7 - 5q^2 + 4q + 7$

0

0

$\boxed{0}$

PROFICIENT LEVEL QUESTIONS

17. $\frac{1}{3}i^2 + 2i - \frac{1}{6}i^2 + 4 - 9$

$\boxed{\frac{1}{6}i^2 + 2i - 5}$

$2 \cdot \frac{1}{3}i^2 - \frac{1}{6}i^2$

$2 \cdot$

$\frac{2}{6}i^2 - \frac{1}{6}i^2 \rightarrow \frac{1}{6}i^2$

18. $-4.9x - 3.2y - 1.3x + 4.2y + 1$

$\boxed{-6.2x + y + 1}$

19. $\frac{11}{5}x + \frac{2}{3}y - \frac{3}{5}x - \frac{1}{3}y + 10$

$\boxed{\frac{8}{5}x + \frac{1}{3}y + 10}$

$\frac{11}{5}x - \frac{3}{5}x = \frac{8}{5}x$

$\frac{2}{3}y - \frac{1}{3}y = \frac{1}{3}y$

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

$4 \cdot \frac{1}{4}j^2 + \frac{3}{8}j^2 + \frac{5}{16}j^2$

$\frac{4}{16}j^2 + \frac{6}{16}j^2 + \frac{5}{16}j^2$

$-j - \frac{1}{2}j$

$-\frac{2}{2}j - \frac{1}{2}j = -\frac{3}{2}j$

$\boxed{\frac{15}{16}j^2 - \frac{3}{2}j}$

EMERGING LEVEL QUESTIONS

Add the following Polynomials, leave answer in **DESCENDING** order.

21. $(x + 4) + (x - 7)$

$x + 4 + x - 7$

$\boxed{2x - 3}$

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

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

$\boxed{5x^2 - 14}$

23. $(3xy + 4x^3 + 4) + (2xy - 4x^3 - 4)$

$3xy + 4x^3 + 4 + 2xy - 4x^3 - 4$

$\boxed{5xy}$

24. $(10 + 4t^2 + 4t) + (2t - 7t^2 - 8)$

$10 + 4t^2 + 4t + 2t - 7t^2 - 8$

$\boxed{-3t^2 + 6t + 2}$

25. $(j^3 + 2j^2 + j + 4) + (3j^3 - 2j^2 - 7j + 15)$

$j^3 + 2j^2 + j + 4 + 3j^3 - 2j^2 - 7j + 15$

$\boxed{4j^3 - 6j + 19}$

26. $(4 + 6x - 2x^2) + (-x^2 - 2x)$

$4 + 6x - 2x^2 - x^2 - 2x$

$\boxed{-3x^2 + 4x + 4}$

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

$t^2 + 4 - t^2 - 4$

$\boxed{0}$

PROFICIENT LEVEL QUESTIONS

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

$-x^2 + 2 - 3x - 4x^2 + x - 5$

$-5x^2$

$\boxed{-5x^2 - 2x - 3}$

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

$-2x + x^2 - 2y^2 - y^2 - x + 2x^2$

$\boxed{3x^2 - 3y^2 - 3x}$

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

$4x - 2x^2 - 5 + x^2$

$\boxed{-x^2 + 4x - 5}$

31. $(-3 + 4x^2 + 4x) + (5x - 2x^2 + 4)$

$-3 + 4x^2 + 4x + 5x - 2x^2 + 4$

$\boxed{2x^2 + 9x + 1}$

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

$3x - 2xy + 2y + xy - 3y - 3y - x$

$\boxed{-xy + 2x - 4y}$

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

$-2y + 3x + xy + 2xy - x - y - x - 4xy$

$\boxed{-xy + x - 3y}$

Subtract the Polynomials, leave answer in **DESCENDING** order.

34. $(3x^2 + 4x - 7) - (-2x^2 + 4x + 9)$

$3x^2 + 4x - 7 + 2x^2 - 4x - 9$

$\boxed{5x^2 - 16}$

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

$t^3 - 5t + 4t^2 - t^2 + 7t + 2t^2$

$\boxed{t^3 + 5t^2 + 2t}$

36. $(z - 4) - (3z - 7)$

$z - 4 - 3z + 7$

$\boxed{-2z + 3}$

37. $(w - 7) - (2w + 4)$

$w - 7 - 2w - 4$

$\boxed{-w - 11}$

38. $(r+6)-(-2r-2)$

$r+6+2r+2$

$\boxed{3r+8}$

39. $(j+14)-(-5j+7)$

$j+14+5j-7$

$\boxed{6j+7}$

40. $(2k^2+k-7k)-(3k^2-k-4k)-(6k^2-8k+7k)$

$2k^2+k-7k-3k^2+k+4k-6k^2+8k-7k$

$\boxed{-7k^2}$

41. $(5-t)-(-7+t)-(12+t^2)$

$5-t+7-t-12-t^2$

$\boxed{-t^2-2t}$

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

$-2x-3y-4x-2y-x+3y$

$\boxed{-7x-2y}$

43. $(-5x - 2y + 3z) - (-2x + 9y) - (-x + y - 2z)$

$-5x - 2y + 3z + 2x - 9y + x - y + 2z$

$\boxed{-2x - 12y + 5z}$

EXTENDING LEVEL QUESTIONS

Perform the Combined Operations

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

$2st - s - t + 3st - t - s + 2t$

$\boxed{5st - 2s}$

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45. $(-3x + 4y) + (6x - 5y) - (2x + 11y - 5z)$

$-3x + 4y + 6x - 5y - 2x - 11y + 5z$

$\boxed{x - 12y + 5z}$

46. $(-2xy + 9z) + (4x^2 - 11z) - (6x^2 + 8xy - 11z)$

$-2xy + 9z + 4x^2 - 11z - 6x^2 - 8xy + 11z$

$\boxed{-2x^2 - 10xy + 9z}$