

NAME _____ DATE _____ SCORE _____

Multiplying Monomials; Powers of Monomials

Simplify.

1. $a^2 \cdot a^4 \cdot a^3$ a^9

2. $(2c^3)(4c^2)$ $8c^5$

3. $(3x^2)(2x^4)(5x)$ $30x^7$

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

5. $(x^2y)(x^4y^2)$ x^6y^3

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

7. $(-a)(-bc)(-ab)$ $-a^2b^2c^2$

8. $(3bc^2d^3)(4b^2c^2)(-5d^4)$ $-60b^3c^4d^7$

9. $(\frac{1}{3}mp^2)(3m^2p)(mp)$ m^4p^4

10. $(-\frac{3}{8}mn^2)(4m^2n)(m^2n^2)$ $-\frac{3}{2}m^5n^5$

11. $a^m \cdot a^2$ a^{m+2}

12. $y^a \cdot y^{a+2}$ y^{2a+2}

13. $4^2 \cdot 4^{k+2} \cdot 4^k$ 4^{2k+4}

14. $(-x)^3(-x)^4(-x)^5$ x^{12}

15. $(a)(2a^2) + (3a^2)(4a)$ $14a^3$

16. $(3b^3)(\frac{4}{9}b) + (\frac{2}{3}b^2)(b^2)$ $2b^4$

17. $(2x^4)(4x^2) + (3x^2)(2x^3)$ $14x^6$

18. $(7y^4)(2y^2) - (2y^3)(7y^3)$ 0

19. $(x^3)^2$ x^6

20. $(a^4)^3$ a^{12}

21. $(3x)^2$ $9x^2$

22. $(4mn)^2$ $16m^2n^2$

23. $(2a^2)^4$ $16a^8$

24. $(\frac{1}{2}m^3)^2$ $\frac{1}{4}m^6$

25. $(-3xy^2)^3$ $-27x^3y^6$

26. $(-5m^2n^3)^3$ $-125m^6n^9$

27. $(-2s^3t^2)^4$ $16s^{12}t^8$

28. $(2a)^2(3a)$ $12a^3$

29. $(2a^2)(3a)^2$ $18a^4$

30. $(xy^2)^3(2x^2y)$ $2x^5y^7$

31. $(-2x^4)^2$ $4x^8$

32. $-(2x^4)^2$ $-4x^8$

33. $(-3x)^3$ $-27x^3$

34. $-(3x)^3$ $-27x^3$

35. $(-3x^2)^3$ $-243x^6$

36. $-(3x^2)^3$ $-243x^6$

37. $(3a)(3a)^3$ $81a^4$

38. $(4x)^2(4x)$ $64x^3$

39. $(2n)^3(\frac{3}{2}n)$ $27n^4$

40. $(2xy^2)^3 \cdot 4xy$ $32x^4y^7$

41. $(-3c^2d)^4(\frac{1}{9}d)$ $\frac{1}{9}c^8d^7$

42. $(3x^2y^2)^2(xy)^3$ $9x^7y^7$

Evaluate if $a = -1$ and $b = 2$.

43. $3a^2$ 3

44. $(3a)^2$ 9

45. $-5b^2$ -20

46. $(-5b)^2$ 100

47. $(-5)^2 \cdot b^2$ 100

48. a^2b^2 4

$$8) (3bc^2d^3)(4b^2c^2)(-5d^4)$$

$$-60b^3c^4d^7$$

$$9) (3x^2)(2x^4)(5x^1)$$

$$30x^7$$

$$12) y^a \cdot y^{a+2}$$

$$y^{a+a+2}$$

$$y^{2a+2}$$

$$10) (-\frac{3}{2}mn^2)(4m^2n)(m^2n^2)$$

$$-\frac{3}{2}m^5n^5$$

$$15) a(2a^2) + (3a^2)(4a)$$

$$2a^3 + 12a^3$$

$$14a^3$$

$$16) (3b^3)(\frac{4}{9}b) + (\frac{2}{3}b^2)(b^3)$$

$$\frac{4}{3}b^4 + \frac{2}{3}b^4$$

$$\frac{6}{3}b^4$$

$$2b^4$$

$$21) (3x^2)^2$$

$$3^2x^2$$

$$9x^2$$

$$24) (\frac{1}{2}m^3)^2$$

$$\frac{1^2}{2^2}m^6$$

$$\frac{1}{4}m^6$$

$$27) (-2s^3t^2)^4$$

$$+2^4s^{12}t^8$$

$$16s^{12}t^8$$

$$36) -(3x^3)^5$$

$$-3^5x^{10}$$

$$-243x^{10}$$

$$43) 3a^2$$

$$3(-1)^2$$

$$\frac{3 \cdot 1}{3}$$

$$44) (3a)^2$$

$$(3 \cdot (-1))^2$$

$$(-3)^2$$

$$9$$

$$16) (3b^3)(\frac{4}{9}b) + (\frac{2}{3}b^2)(b^3)$$

$$\frac{4}{3}b^4 + \frac{2}{3}b^4$$

$$\frac{6}{3}b^4$$

$$2b^4$$

$$41) (-3c^2d)^4 (\frac{1}{9}d)^3$$

$$(+3^4c^8d^4)(\frac{1}{9^3}d^3)$$

$$\frac{c^8d^7}{9} \text{ or } \frac{1}{9}c^8d^7$$

$$3^2=9$$

$$3^4=9^2$$