

Multiplying Exponents

$$\text{Rule: } x^a \cdot x^b = x^{a+b}$$

$$\text{Example: } a^4 \cdot a^3 = a^7$$

Multiply the following polynomials.

$$1. a \cdot a^2 \cdot a^3 =$$

$$a^{1+2+3} = \boxed{a^6}$$

$$2. (2a^2b)(4ab^2) =$$

$$(2 \cdot 4)a^{2+1}b^{1+2} = \boxed{8a^3b^3}$$

$$3. (6x^2)(-3x^5) =$$

$$(6 \cdot -3)x^{2+5} = \boxed{-18x^7}$$

$$4. b^3 \cdot b^4 \cdot b^7 \cdot b =$$

$$b^{3+4+7+1} = \boxed{b^{15}}$$

$$5. (3x^3)(3x^4)(-3x^2) =$$

$$(3 \cdot 3 \cdot -3)x^{3+4+2} = \boxed{-27x^9}$$

$$6. (4c^2)(-8c^7) =$$

$$(4 \cdot -8)c^{2+7} = \boxed{-32c^9}$$

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

$$(5 \cdot 2)x^{1+2} \cdot y^{1+3} = \boxed{10x^3y^4}$$

$$8. (3x)(-4y^2)(6x^3y) =$$

$$(3 \cdot -4 \cdot 6)x^{1+3}y^{2+1} = \boxed{-72x^4y^3}$$

$$* 9. (-2c^4)(6cd)(-cd^2) =$$

$$(-2 \cdot 6 \cdot -1)c^{4+1+1}d^{1+2} = \boxed{12c^6d^3}$$

$$10. (6k^2)(-3k)(2k^5) =$$

$$(6 \cdot -3 \cdot 2)k^{2+1+5} = \boxed{-36k^8}$$

$$11. (m^2n)(mn^3)(mn) =$$

$$m^{2+1+1}n^{1+3+1} = \boxed{m^4n^5}$$

$$12. (-4p^3)(-3p^6)(-2p^9) =$$

$$(-4 \cdot -3 \cdot -2)p^{3+6+9} = \boxed{-24p^{18}}$$

$$13. (12e^3)(2g^3)(4eh) =$$

$$(12 \cdot 2 \cdot 4)e^{3+1}g^3h = \boxed{96e^4g^3h}$$

$$14. (5f)(-3f^3)(2f) =$$

$$(5 \cdot -3 \cdot 2)f^{1+3+1} = \boxed{-30f^5}$$

$$15. (c^2h)(ch^3)(c^3h^4) =$$

$$c^{2+1+3}h^{1+3+4} = \boxed{c^6h^8}$$

$$16. (3c^2d^2)(-5cd^4) =$$

$$(3 \cdot -5)c^{2+1}d^{2+4} = \boxed{-15c^3d^6}$$

$$17. (5x^2y^3)(x^3y)(-x^2y^2) =$$

$$(5 \cdot -1)x^{2+3+2}y^{3+1+2} = \boxed{-5x^7y^6}$$

$$18. (-4m^3)(-4m^3) =$$

$$(-4 \cdot -4)m^{3+3} = \boxed{16m^6}$$

$$19. d \cdot d^2 \cdot d^3 \cdot d^4 \cdot d^5 =$$

$$d^{1+2+3+4+5} = \boxed{d^{15}}$$

$$20. (-1)(x)(-x^2)(x)(-x^2) =$$

$$(-1 \cdot -1 \cdot -1)x^{1+2+1+2} = \boxed{-1x^6} \\ = \boxed{-x^6}$$