MONOMIALS

What is a monomial? a number, variable, or product of those

Give some examples: $3, -2x, 4x^2y, -9a^2b^2c^2$

Adding & Subtracting Monomials

- Variables and exponents **must be the same** in order to add or subtract!
- ***If you can't combine anything, leave it!***

Directions: Simplify the following monomials (if possible).	
1. $17x - 25x = -8x$	**2.** $-23y^2 + 6y^2 = -17y^2$
3. $-15a^3bc + 6a^3bc = -9a^3bc$	**4.** $38x^2y - x^2y = 37x^2y$
5. $2ab + 9ac = 11ac$	**6.** $-10a^2b^2 - a^2b^2 = -11a^2b^2$
7. $-8mn + 9mn = 1mn$	**8.** $\frac{2}{5}cd^2 - \frac{1}{3}cd^2 = \frac{1}{15}cd^2$
9. $-25xy^2 - 25xy^2 = -50xy^2$	**10.** $-50ac^2d + ac^2d = -49ac^2d$
11. $3y + 9z + 4y - 3z = 7y + 6z$	**12.** $12b + 8a - 10b = 8a + 2b$
13. $13y^2 + 9y + 4y^2 - 31y = -22y + 17y^2$	**14.** $10m^2n + 7mn^2 - m^2n = 9m^2n + 7mn^2$
15. Find the sum of $16y^2$ and $-5y^2$ $16y^2 + -5y^2 = 11y^2$	**16.** Find the difference of $10x^2y$ and $2x^2y$ $10x^2y - 2x^2y = 8x^2y$
17. Subtract 9a from -15a $-15a - 9a = -24a$	**18.** From $-9cd^2$, subtract $-2cd^2$ $-9cd^2 + (+2cd^2) = -7cd^2$

Multiplying Monomials

- **Step 1:** Multiply the coefficients.
- **Step 2:** Use the **PRODUCT RULE** to simplify the exponents.

PRODUCT RULE:

$x^a \cdot x^b = x^{a+b}$

Directions: Use the product rule to simplify the following monomials.

1. $x^2 \cdot x^3$ x^5	**2.** $a^9 \cdot a$ a^{10}	**3.** $(4x^2) \cdot (3x^5)$ $12x^7$
4. $(3x^6)(5x^2)$ $15x^8$	**5.** $5x^2 \cdot 6x^4$ $30x^6$	**6.** $(-4a^3b)(3a^2b^5)$ $-12a^5b^6$
7. $(8x^4y^2)(-3x^4y^9)$ $-24x^8y^{11}$	**8.** $2y \cdot -5y^2 \cdot 3y^3$ $-30y^6$	**9.** $(-2xy)(xy)(3x^2y^3)$ $-6x^4y^5$
10. $(6m)(7m^2n)(n^4)$ $42m^3n^5$	**11.** $8c^2d \cdot 10c^3d^5$ $80c^5d^6$	**12.** $-4(rs^2)(-5r^4s)$ $16r^5s^3$
13. $(-6a^2b) \cdot \left(\frac{1}{2}ab\right)$ $-3a^3b^2$	**14.** $12y \cdot \left(\frac{2}{3}xy^4\right)$ $8xy^5$	**15.** $\frac{1}{4}(8mn) \cdot (-6m^2n^2)$ $-12m^3n^3$
16. $(2x^5y^2)(4xy^3) + (x^4y^4)(3x^2y)$ $8x^6y^5 + 3x^6y^5 = 11x^6y^5$		**17.** $(4a^3b^4)(5ab^2) + (a^2b^5)(-2a^2b)$ $20a^4b^6 + -2a^4b^6$ $18a^4b^6$
18. $19m^8n^8 - (4m^5n)(3m^3n^7)$ $19m^8n^8 - 12m^8n^8$ $7m^8n^8$		**19.** $(-5cd)(-3c^4d) - (7c^2d^2)(2c^3)$ $15c^5d^2 - 14c^5d^2$ $1c^5d^2$