Algebra II

Name _____
Pd. _____ Date _____

Monomial Review for Quiz - Use laws of exponents to simplify the following.

1. $x^2 \cdot x^4 \cdot x^9 = x^{15}$

2. $3^6 \cdot 3^5 = 3^{11}$

Mult $\Rightarrow$ Add Exponents

3. $(x+4)^8 \cdot (x+4)^{10} = (x+4)^{18}$

Keep Jack + Rose in lifeboat!

4. $(a^2)^7 = a^{14}$

Power to Power $\Rightarrow$ Mult. Exponents

5. $(3^3)^{11} = 3^{33}$

6. $\dfrac{x^{11}}{x^3} = x^8$

Dividing $\Rightarrow$ Subtract Exponent

7. $\dfrac{(a-b)^9}{(a-b)^2} = (a-b)^7$

8. $25^0 = 1$

9. $9^{-1} = \dfrac{1}{9^1} = \dfrac{1}{9}$

10. $\dfrac{11^8}{11^{12}} = \dfrac{1}{11^4}$

take difference in 8 + 12 and put it where the larger exponent "sits"

11. What is the coefficient of $7x^2$?   7

12. What is the degree of $2x^4yz^3$?

$2 \rightarrow$ degree 0
$x^4 \rightarrow$ degree 4
$y \rightarrow$ degree 1
$z \rightarrow$ degree 3
$4+1+3 = \boxed{8}$

13. Which is NOT a monomial? Why?

A. $\dfrac{x}{3}$ B. $\dfrac{3xy}{z}$ C. $3x^5y$ D. 7

dividing by variable

14. $(-3x^{-4}y^2)^3$

$-3^3 x^{-12} y^6 = \dfrac{-27y^6}{x^{12}}$

(never leave a negative exponent in final answer)

15. $(m^4n^5)^3 (m^2n^3p^4)^2$

$= m^{12}n^{15} \cdot m^4 n^6 p^8$

$= m^{16} n^{21} p^8$

16. $\dfrac{x^{2y+1}}{x^{y-4}} = \dfrac{x^{2y} \cdot x}{x^y \cdot x^{-4}}$

$= x^y \cdot x^5 = x^{y+5}$

17. $\dfrac{12k^2mn^6}{4k^4m^3n^6} = \dfrac{3}{k^2 m^2}$

18. $(2xy^4)(3x^2y) - (3x^2y^3)(4xy^2)$

$6x^3y^5 - 12x^3y^5$

$= -6x^3y^5$

19. Answer in scientific notation: $(3\times10^{15})(2\times10^{-4})$

6×10^{11}

20. Answer in scientific notation: $\dfrac{14\times10^{12}}{2\times10^{-2}}$

7×10^{14}

SIMPLIFYING POLYNOMIALS

Simplify Completely: ~~distribute~~

Example 1: $2y^3(3xy - 4y + x^2)$

$$6xy^4 - 8y^4 + 2x^2y^3$$

FOIL (distribute) + combine like terms

Example 2: $(n-7)(n^2 - 3n)$

$= n^3 - 3n^2 - 7n^2 + 21n$

$= n^3 - 10n^2 + 21n$

(make sure you subtract both terms)

Example 3: $(n-7) - (n^2 - 3n)$

$= n - 7 - n^2 + 3n$

$= -n^2 + 4n - 7$
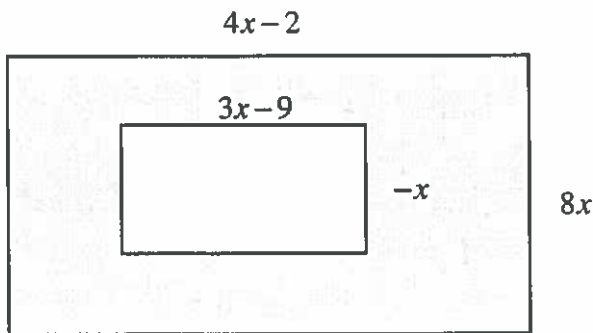
Example 4: $(2xy - y)(xy + 4y)$

$= 2x^2y^2 + 8xy^2 - xy^2 - 4y^2$

$= 2x^2y^2 + 7xy^2 - 4y^2$

Example 5: $(2xy - y) - (xy + 4y)$

$= 2xy - y - xy - 4y$

$= xy - 5y$

distribute (line up like terms if you'd like to!

Example 6: Find the area of the shaded region:

$4x - 2$

$3x - 9$

$-x$

$8x$

Example 7: $(4t - 1)(t^3 - 2t - 3)$

$$4t^4 - 8t^2 - 12t$$
$$\underline{-t^3 \qquad + 2t + 3}$$
$$4t^4 - t^3 - 8t^2 - 10t + 3$$

Area of Big Rectangle – Area of Little Rectangle
= Area of Shaded region

$(4x - 2) \cdot 8x - \left((3x - 9)(-x) \right)$

$= 32x^2 - 16x - (-3x^2 + 9x)$

$= 35x^2 - 25x$