Algebra I
Unit 7 Review

Name key

Simplify each expression. #1-6 are monomials... use exponent rules

1. $\frac{7x^3y^2}{14x^5y^2z^8} = \frac{7xxxyy}{14xxxxxyy} = \boxed{\frac{1}{2x^2}}$

2. $(3y^2)^3 = (3y^2)(3y^2)(3y^2) = (3\cdot3\cdot3\cdot y^2\cdot y^2\cdot y^2) = \boxed{27y^6}$

3. $\frac{3x^7}{6x^3} = \frac{3xxxxxxx}{2\,6xxx} = \boxed{\frac{x^4}{2}}$

4. $(3x^2y^3z)(-7x^4y^{-8})$ "cross the line to change the sign"

$(3x^2y^3z)(-7x^4/y^8) = \frac{3\cdot-7\,xxxxxxyyyz}{yyyyyyyy} = \boxed{\frac{-21x^6z}{y^6}}$

5. $\left(\frac{(2xy^2)(3x^3y)}{24x^5y}\right)^0$

Anything to the zero power is 1!!

6. $\frac{x^{-5}}{x^{-2}} = \frac{x^2}{x^5} = \frac{xx}{xxxxx} = \boxed{\frac{1}{x^3}}$

7. $2(8x^2+3x)-(5x^2-6x-9)$ Distribute the negative

$16x^2+6x-5x^2+6x+9$

$\boxed{11x^2+12x+9}$

8. $-5xy^2(2x^2y^2-3xy+y)$ 1 x 3 box or distribute 3 times

	$2x^2y^2$	$-3xy$	$+y$
$-5xy^2$	$-10x^3y^4$	$+15x^2y^3$	$-5xy^3$

$= \boxed{-10x^3y^4+15x^2y^3-5xy^3}$

9. $(n+1)(n^2-4n+5)$ 2x3 box

	n^2	$-4n$	$+5$
n	n^3	$-4n^2$	$+5n$
$+1$	n^2	$-4n$	$+5$

$= \boxed{n^3-3n^2+n+5}$

10. $(2m+1)^2 = (2m+1)(2m+1)$ 2 x 2 box or double distribute

$4m^2+2m+2m+1$

	$2m$	$+1$
$2m$	$4m^2$	$2m$
$+1$	$2m$	1

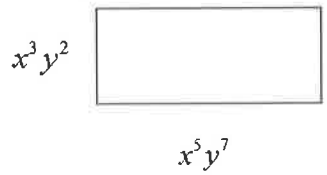
$\boxed{4m^2+4m+1}$

11. Name two differences between the simplified forms of $(-w^3)^2$ and $(-w^3)^5$.

$(-w^3)^2 = w^6$

$(-w^3)^5 = -w^{15}$

12. Find the area of the rectangle in terms of x and y. Put your answer in simplest form.



A = LW

$A = (x^3y^2)(x^5y^7) = \boxed{x^8y^9}$

13. Which expression is equivalent to $\frac{x^ay^by^c}{x^d}$? know your exponent rules!

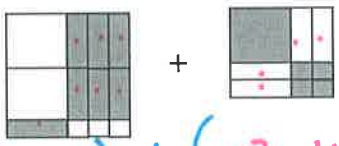
A. $x^{(a-d)}y^{(b+c)}$ B. $xy^{(a+b+c-d)}$ C. $x^{(a+d)}y^{(b+c)}$ D. $xy^{(a+b+c)}x^d$

Divide → subtract exponents

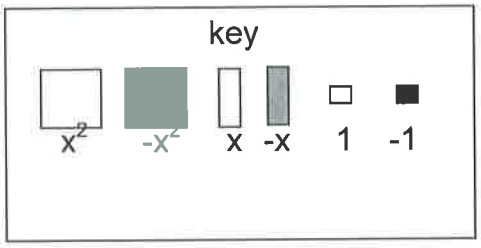
Multiply → add exponents

*must have same base!

14. Look at the two polynomials modeled below using algebra tiles. Write an expression that describes the sum of the two polynomials in terms of *x*.

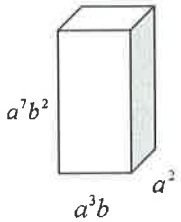


$(2x^2 - 7x + 3) + (-x^2 + 4x - 4)$



$\boxed{x^2 - 3x - 1}$

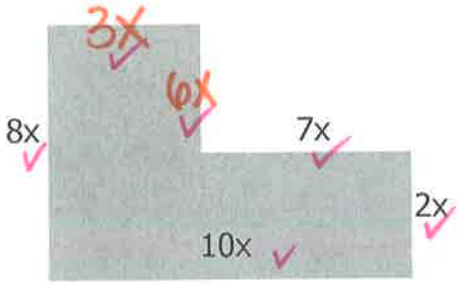
15. Find the volume of the prism in terms of a and b. Put your answer in simplest form. $V = L \cdot w \cdot h$



$V = (a^7b^2)(a^3b)(a^2)$

$= \boxed{a^{12}b^3}$

16. Find the perimeter of the following shape. Don't forget unlabeled sides!



$8x + 10x + 2x + 7x + 6x + 3x$

$\boxed{36x}$

17. For all real numbers x and y, which of the following statements is always true? exponents

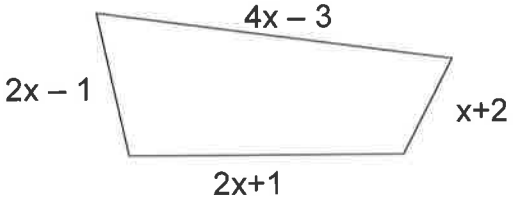
A $(3x)^4 = 12x^4$ $3^4 = 81$

B $(x^3)(x^5) = x^{(3)(5)}$ Add exponents

C $(x^2y^4)^3 = x^6y^{12}$ yes!

D $(4x^4)(y^4) = (4xy)^4$ 4 is not to the fourth power

18. Write a polynomial in simplest form that represents the perimeter of the figure. Add all sides



$(4x-3) + (x+2) + (2x+1) + (2x-1)$

$\boxed{9x - 1}$

19. Find the missing side length if the perimeter of the triangle is 15x + 7.

$15x + 7 = (2x+5) + (3x-6) + ?$

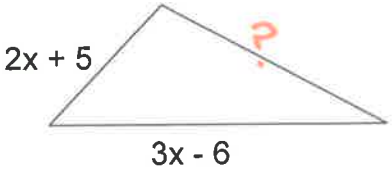
$15x + 7 = 5x - 1 + ?$

$-5x \quad -5x$

$10x + 7 = -1 + ?$

$+1 \quad +1$

$\boxed{10x + 8}$



20. Find the area of the shaded region. Remember to check your answer!

Abig - Asmall

$(3x-1)(2x+3) - x(x+2)$

$6x^2 + 7x - 3 - x^2 - 2x$

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

	2x	+3
3x	6x²	9x
−1	−2x	−3

	x	+2
−x	−x²	−2x