Algebra I $(\text{Anything})^0 = 1$ Name Key

Unit 6 Review

Remember to study any old quizzes, homework, and your notes!

Simplify each expression.

1. $\frac{7x^3y^2}{14x^5y^2z^0} = \frac{7\cancel{x}\cancel{x}\cancel{y}\cancel{y}}{14\cancel{x}\cancel{x}xxx\cancel{y}\cancel{y}} = \boxed{\frac{1}{2x^3}}$

Divide coefficients, subtract exponents

2. $(3y^2)^3 = (3y^2)(3y^2)(3y^2)$ multiply big #s

Distribute exponent $= \boxed{27y^6}$

3. $\frac{3x^7}{6x^3} = \frac{3\cancel{x}\cancel{x}\cancel{x}xxx}{6\cancel{x}\cancel{x}\cancel{x}} = \boxed{\frac{1x^4}{2}}$

4. $(3x^2y^3z)(-7x^4y^{-8}) = -21x^{2+4}y^{3+-8}z^1$

- multiply coefficients, Add exponents
- move negative exponents

$= -21x^6y^{-5}z$

$\boxed{\frac{-21x^6z}{y^5}}$

5. $\left(\frac{(2xy^2)(3x^3y)}{24x^5y}\right)^0 = \boxed{1}$

0 power!

6. $\frac{x^{-5}}{x^{-2}}$ move move

$\frac{x^2}{x^5} = \frac{\cancel{x}\cancel{x}}{\cancel{x}\cancel{x}\cancel{x}xx} = \boxed{\frac{1}{x^3}}$

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

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

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

8. $2(x+1)(x-2)-4(x^2+2x-3)$

	x	$+1$
x	x^2	x
-2	$-2x$	-2

$2(x^2-x-2)-4x^2-8x+12$

$2x^2-2x+4-4x^2-8x+12$

$\boxed{-2x^2-10x+16}$

9. $(3x-4)(x+2)$

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

$\boxed{3x^2+2x-8}$

10. $(2m+1)^2$

$(2m+1)(2m+1)$

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

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

distribute exponent

11. Which expression is equivalent to $(16a^{-2}b^{10})^{\frac{1}{2}}$? $(16)^{\frac{1}{2}}(a^{-2})^{\frac{1}{2}}(b^{10})^{\frac{1}{2}} = 4a^{-1}b^5$

$\frac{4b^5}{a^1}$

a. $\frac{8b^5}{a}$ b. $\boxed{\frac{4b^5}{a}}$ c. $4ab^5$ d. $256a^{-4}b^{20}$

12. The length of the diagonal in a square has a measure of $\sqrt[2]{36x^4}$. Which expression represents the length of the diagonal in simplest form?

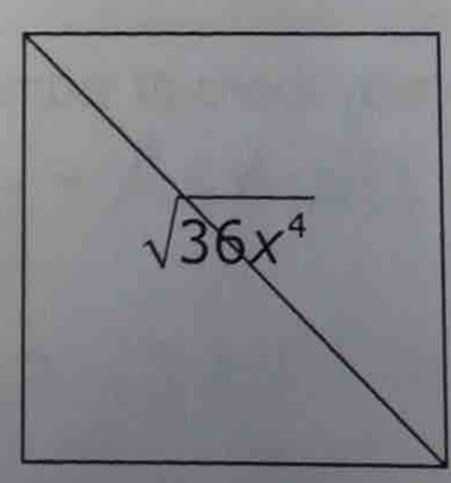
A. $\boxed{6x^2}$

B. $18x^2$

C. $72x^8$

D. $6x^4$

$\sqrt[n]{a^m} = a^{\frac{m}{n}}$



$\sqrt{36x^4} = (36x^4)^{\frac{1}{2}}$

$(36)^{\frac{1}{2}}(x^4)^{\frac{1}{2}}$

$6x^2$

$A = L \cdot W$

divide

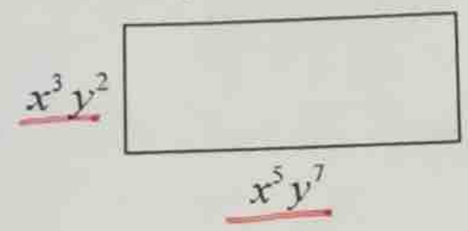
13. If the area of a rectangle is $21a^3b^2$ and the width is $7ab$, find the length.

$\frac{21a^3b^2}{7ab} = \frac{21aaabb}{7ab}$

$= \boxed{3a^2b}$

multiply

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



$(x^3y^2)(x^5y^7)$

$\boxed{x^8y^9}$

15. Which expression is equivalent to $\frac{x^a y^b y^c}{x^d}$?

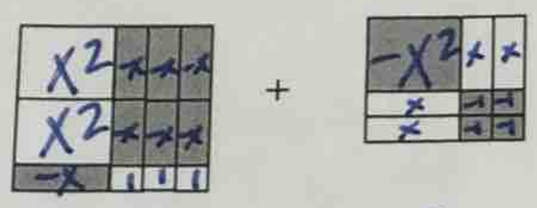
$x^{a-d}\, y^{b+c}$

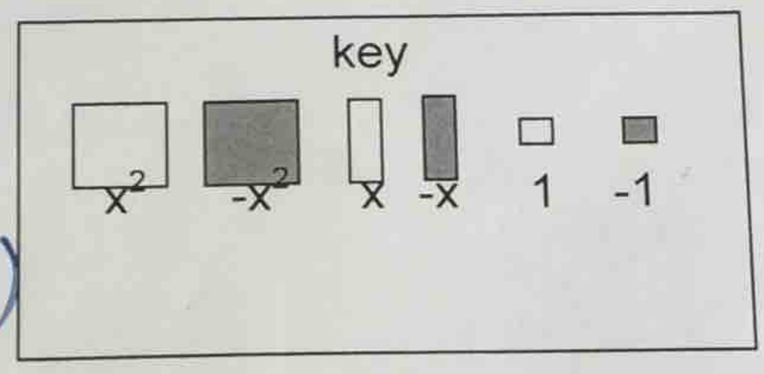
$\frac{a^m}{a^n} = a^{m-n}$

$a^m a^n = a^{m+n}$

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

16. 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*.



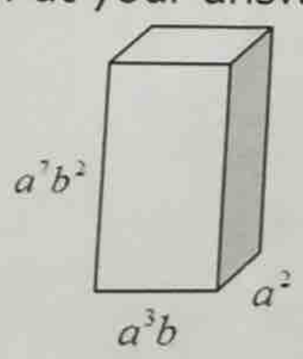


$(2x^2 - 7x + 3) + (-x^2 + 4x - 4)$

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

17. Find the volume of the prism in terms of a and b. Put your answer in simplest form.

$V = lwh$



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

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

18. Classify the following polynomials as monomial, binomial, or trinomial.

a. $2x^2 + x - 4$ 3 terms trinomial

b. $a^2b^3c^4d$ 1 term monomial (no +/- signs)

c. $x + 2$ 2 terms binomial

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

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

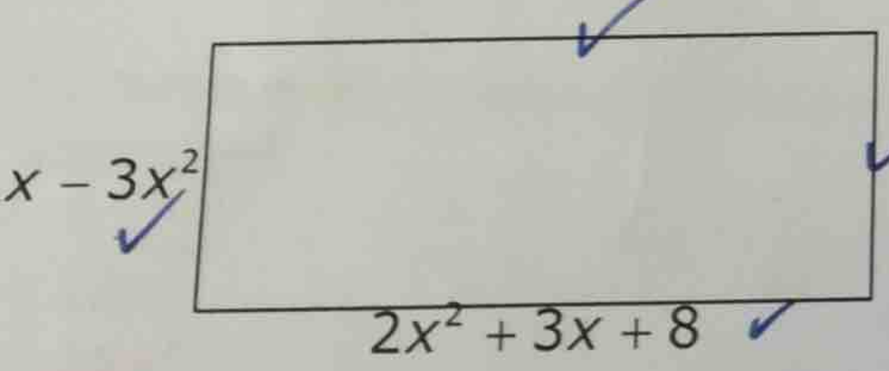
B $(x^3)(x^5) = x^{(3)(5)}$ $xxx\ xxxxx$ $x^8 \neq x^{15}$

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

D $(4x^4)(y^4) = (4xy)^4$ $(4xy)(4xy)(4xy)(4xy)$ $4 \neq 256$

20. Write a polynomial in simplest form that represents the perimeter of the figure.

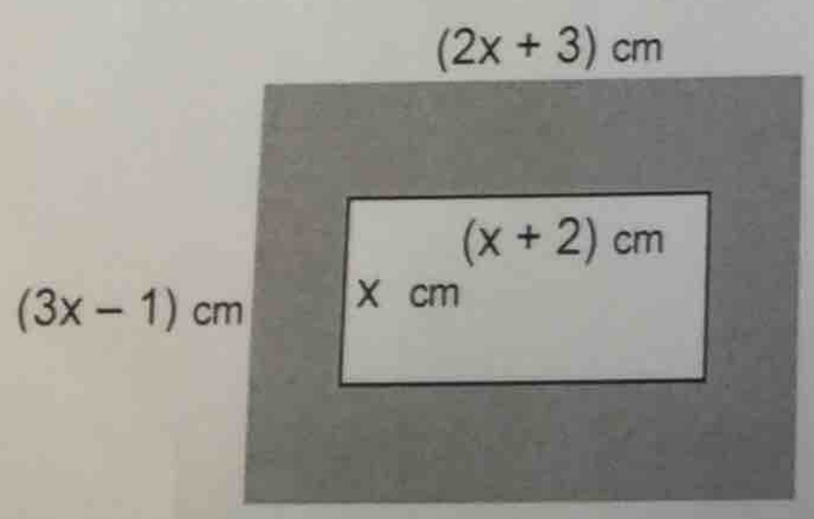
add all sides



$(x - 3x^2) + (2x^2 + 3x + 8) + (x - 3x^2) + (2x^2 + 3x + 8)$

$\boxed{-2x^2 + 8x + 16}$

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



$A_{big} - A_{small} = (6x^2 + 7x - 3) - (x^2 + 2x)$

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

$A_{big} = (3x-1)(2x+3)$

	2x	+3
3x	$6x^2$	9x
−1	−2x	−3

$6x^2 + 7x - 3$

$A_{small} = x(x+2)$

	x	+2
x	x^2	2x

$x^2 + 2x$