

Name: Key  
College Algebra 1

Date: \_\_\_\_\_  
Ms. Motis

Unit 2 Test Review- Exponents and Expressions

Directions: Match each of the following expressions with their simplified answer. Write the letter of each answer on the line provided.

1. $x^7 \cdot x^0$ $x^7$	2. $(6x^6)^2$ $6^2 x^{12}$ $36 x^{12}$
3. $(y^3)^2$ $y^6$	4. $\frac{y^8}{y^2}$ $y^6$
5. $4x(7x^{16})$ $28x^{17}$	6. $\left(\frac{y}{y}\right)^9$ $\frac{y^9}{y^9} = y^0 = 1$
7. $\frac{16y^3}{8y}$ $2y^2$	8. $(2x^4)^2$ $2^2 x^8$ $4x^8$

9. What is the difference when  $(3x^2 - 2x + 1)$  is subtracted from  $(9x^2 + 5x - 3)$ ?

$$\begin{aligned} & 9x^2 + 5x - 3 - (3x^2 - 2x + 1) \\ & 9x^2 + 5x - 3 - 3x^2 + 2x - 1 \\ & 6x^2 + 7x - 4 \end{aligned}$$

10. The perimeter of a triangle is given by the expression  $14y^2 + 9y - 5$ . Find the third side of the triangle if the other two sides measure  $y^2 - 4y + 1$  and  $2y^2 + y - 3$ .

$$14y^2 + 9y - 5 - (y^2 - 4y + 1 + 2y^2 + y - 3)$$

$$14y^2 + 9y - 5 - (3y^2 - 3y - 2)$$

$$14y^2 + 9y - 5 - 3y^2 + 3y + 2$$

$$11y^2 + 12y - 3$$

11. Simplify the expression below:

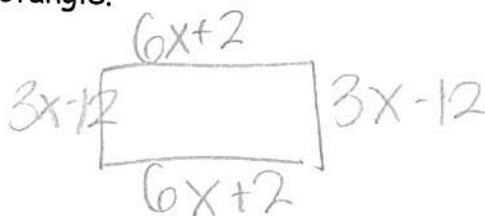
$$(4x^2y + 2xy - 3xy^2) - (4x^2y - 4xy + 2x^2y)$$

$$\begin{aligned} & \underline{4x^2y} + \underline{2xy} - 3xy^2 - \underline{4x^2y} + \underline{4xy} - \underline{2x^2y} \\ & -2x^2y + 6xy - 3xy^2 \end{aligned}$$

12. A rectangle with a length of  $6x + 2$  and a width of  $3x - 12$ .

- a. Find the perimeter of the rectangle.

$$\begin{aligned} & 6x + 2 + 3x - 12 \\ & 2(9x - 10) \\ & 18x - 20 \end{aligned}$$



- b. Find the area of the rectangle.

$$\begin{aligned} & \overbrace{(6x+2)(3x-12)} \\ & 18x^2 - 72x + 6x - 24 \\ & 18x^2 - 66x - 24 \end{aligned}$$

13. Simplify the following:

$$\begin{aligned} & \overbrace{6x^2(2x^2 - 9x + 4)} \\ & 12x^4 - 54x^3 + 24x^2 \end{aligned}$$

14. Find the product of  $7x + 3$  and  $5x^2 - 3x + 4$ .

$$\begin{array}{r} 5x^2 - 3x + 4 \\ 7x \phantom{+ 3} \\ +3 \phantom{+ 5x^2 - 3x} \\ \hline 35x^3 - 21x^2 + 28x \\ 15x^2 - 9x + 12 \\ \hline 35x^3 - 6x^2 + 9x + 12 \end{array}$$

15. Find the quotient of the following:

$$\frac{16b^2 + 4b - 40}{4} = 4b^2 + b - 10$$

16. Find the quotient of  $3x^2 + 9x - 7$  and  $3x$ .

$$\frac{3x^2 + 9x - 7}{3x} = x + 3 - \frac{7}{3x}$$

17. The area of a rectangle is  $6x^3 - 3x^2 + 18x$  and the width is  $3x$ . Find the expression that represents the length of the rectangle.

$$\frac{6x^3 - 3x^2 + 18x}{3x} = 2x^2 - x + 6$$