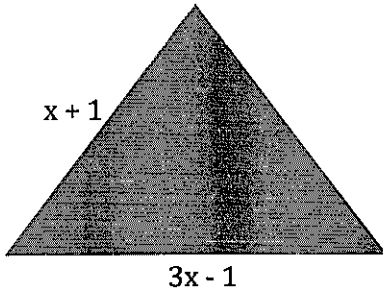


Name SINGLETON

Date \_\_\_\_\_

Unit 6 Polynomials Unit Study Guide

1. The perimeter of the triangle below is  $8x - 6$

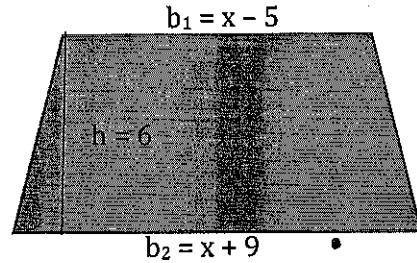


$$(8x - 6) - (4x)$$

What expression represents the length of the missing side?

$$4x - 6$$

2. The area of a trapezoid is found by using the formula  $A = \frac{1}{2} h(b_1 + b_2)$ , where A is the area, h is the height, and  $b_1$  and  $b_2$  are the lengths of the bases.



What is the area of the above trapezoid?

$$\frac{6(x - 5 + x + 9)}{2} = \frac{36(2x + 4)}{8}$$

$$3(2x + 4) = \boxed{6x + 12}$$

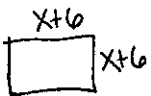
3. What expression is equivalent to  $(-4k^3)^4$ ?

$$256k^{12}$$

4. Simplify the expression. Write the product in standard form:  $-5z^4(5z - 3yz)$

$$-25z^5 + 15yz^5$$

5. Cassidy makes cookie bars using a square pan that has a side measure of  $x$ . She decides that she needs a new pan that is 6 inches longer on each side. What expression represents the area of the new pan?



$$(x + 6)(x + 6) \quad \text{FOIL or BOX}$$

$$x^2 + 6x + 6x + 36$$

$$\boxed{x^2 + 12x + 36}$$

6. What is the product of  $(4x + 6)$  and  $(x + 2)$ ?

$$(4x + 6)(x + 2) \quad \text{FOIL or BOX}$$

$$4x^2 + 8x + 6x + 12$$

$$\boxed{4x^2 + 14x + 12}$$

7. What expression is equivalent to:

$$(3x^2y)^4(4x^3y^3)$$

$$(81x^8y^4)(4x^3y^3)$$

$$\boxed{324x^{11}y^7}$$

8. A square has a side length of  $4x + 7$ . What expression is equivalent to the area of the square minus the perimeter of the square?

Area

$$(4x + 7)(4x + 7)$$

$$16x^2 + 28x + 28x + 49$$

Perimeter

$$4(4x + 7)$$

$$\boxed{16x + 28}$$

$$\boxed{16x^2 + 56x + 49}$$

$$(16x^2 + 56x + 49) - (16x + 28)$$

$$\boxed{16x^2 + 40x + 21}$$

9. The expression  $6y^2 + 10y + 2$  represents the area of a square. The area of a rectangle is represented by  $8y^2 - y + 1$ . What expression represents the combined area of the square and rectangle?

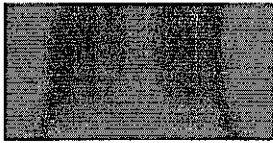
$$(6y^2 + 10y + 2) + (8y^2 - y + 1)$$

$$\boxed{14y^2 + 9y + 3}$$

10. Simplify:  $4b(5c + 8d)$

$$20bc + 32bd$$

11. A rectangle has the dimensions shown.



(w) units

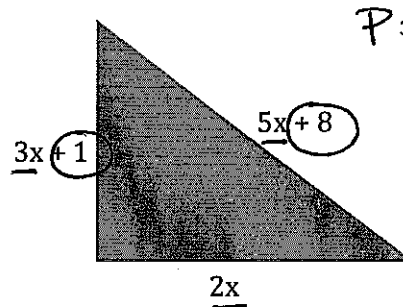
(3w + 4) units

What expression represents the area of this rectangle in square units?

$$w(3w + 4)$$

$$\boxed{3w^2 + 4w}$$

12. What algebraic expression represents the perimeter of this triangle?



$$P = 10x + 9$$

combine like terms

13. What is the difference of  $(14b^2 - 9) - (9b - 17)$ ?

$$14b^2 - 9b + 8$$

14. Simplify:  $(x - 8)^2$

$$(x - 8)(x - 8)$$

$$x^2 - 8x - 8x + 64$$

$$\boxed{x^2 - 16x + 64}$$

15. What is the simplified form of the expression below?

$$9m(m - 12) - 14m(3m - 20)$$

$$9m^2 - 108m - 42m^2 + 280m$$

$$\boxed{-33m^2 + 172m}$$

16. Simplify the product.

Foil or Box Method

$$(8 - 10r)(8 + 10r)$$

$$64 + 80r - 80r - 100r^2$$

$$\boxed{-100r^2 + 64}$$

17. Simplify:  $(4x + y^3)^2$

$$(4x + y^3)(4x + y^3)$$

$$16x^2 + 4xy^3 + 4xy^3 + y^6$$

$$\boxed{16x^2 + 8xy^3 + y^6}$$

18. What expression is equivalent to  $\frac{z^6}{z^{-6}}$ ?

Move any negative exponents!

$$\frac{z^6}{z^{-6}} = z^6 z^6 = \boxed{z^{12}}$$

19. Solve:  $(5x^4y^3z^6)^3$

$$125x^{12}y^9z^{18}$$

20. What expression is equivalent to  $\frac{a^4b^{-3}}{c}$

$$\frac{a^4}{b^3c}$$

21. What expression is equivalent to  $(7b^4)^2$ ?

$$49b^8$$

22. What expression is equivalent to  $(a^6b^7)(a^{10})$ ?

$$a^{16}b^7$$

23. What expression is equivalent to  $\frac{b^{12}}{b^7}$  when  $b \neq 0$

$$b^5$$

24. What expression is equivalent to  $(8k^3)(3k)(k^5)$ ?

$$24k^9$$

25. What expression is equivalent to  $\frac{x^8y^9}{x^3y^5}$  given  $x \neq 0$  and  $y \neq 0$

$$x^5y^4$$

26. What expression is equivalent to  $g^{-9}g^5$

$$g^{-9}g^5 = \frac{g^5}{g^9} = \boxed{\frac{1}{g^4}}$$

27. What expression is equivalent to  $\frac{g^{30}h^5}{g^{16}h^{18}}$  when  $g \neq 0$  and  $h \neq 0$

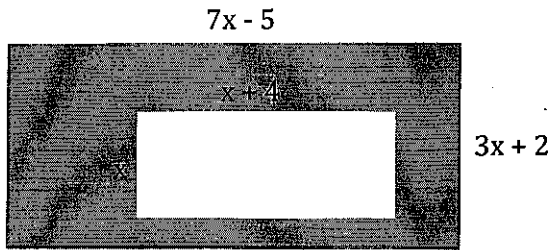
$$\frac{g^{14}}{h^{13}}$$

28. What expression is equivalent to  $\frac{32x^{10}}{8x^4}$

$$4x^6$$

Area of large rectangle  
minus Area of Small rectangle

29. Calculate the area of the shaded region in the figure below:



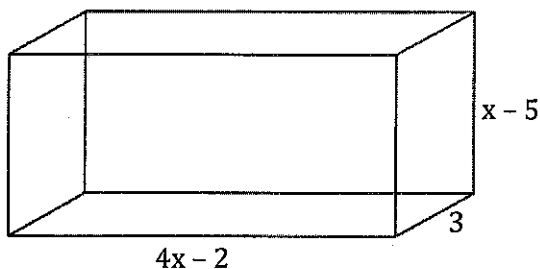
$$\begin{aligned} &(7x-5)(3x+2) && x(x+4) \\ &(21x^2+14x-15x-10) && (x^2+4x) \\ &(21x^2-x-10) &-& (x^2+4x) \\ &\boxed{20x^2-5x-10} && -x^2-4x \end{aligned}$$

30. Which expression is equivalent to:

$$(2x-4)(3x^2-6x+2)$$

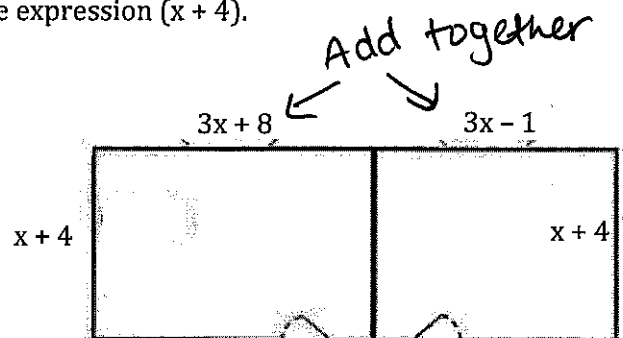
$$\begin{aligned} &6x^3 - 12x^2 + 4x - 12x^2 + 24x - 8 \\ &\boxed{6x^3 - 24x^2 + 28x - 8} \end{aligned}$$

31. The dimensions, in feet, of a rectangular solid are shown below. What is the volume in cubic feet of the rectangular solid? ( $V = lwh$ )



$$\begin{aligned} &V = l \cdot w \cdot h \\ &(4x-2)(3)(x-5) \\ &(12x-6)(x-5) \\ &12x^2 - 60x - 6x + 30 \\ &\boxed{V = 12x^2 - 66x + 30} \end{aligned}$$

32. Ryan wants to remodel his house by knocking down a wall between his rectangular living room and kitchen. On the blueprints, the width of both rooms is defined by the expression  $(x+4)$ .



If the length of the living room is  $(3x+8)$  and the length of the kitchen is  $(3x-1)$ , what expression models the area of the newly created room once the wall is knocked down?

$$\begin{aligned} &(6x+7)(x+4) \\ &6x^2 + 24x + 7x + 28 \\ &\boxed{A = 6x^2 + 31x + 28} \end{aligned}$$