Name _____ Block _____ Date _____

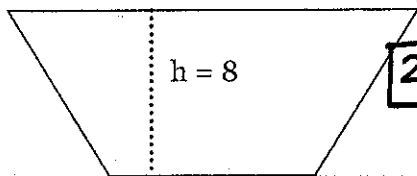Unit 6: Polynomials REVIEW SHEET (SEMESTER)

1.) Find the area of the trapezoid using the formula:

$A = \frac{1}{2}h(b_1 + b_2)$

$\dfrac{8(4x+3+2x-5)}{2}$

$4x + 3$

h = 8

$2x - 5$

$4(6x-2)$

$\boxed{24x-8}$

2.) What is the leading coefficient when the product is written in standard form?
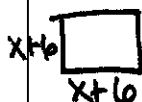
$-2y^4(3y^3 - xy)$

$-6y^7 + 2xy^5$

Standard form: $2xy^5 - 6y^7$

$\boxed{2}$

leading coefficient

3.) Kathy makes brownies using a square pan that has side measure of x. She decides she needs a new pan that has is 6 inches longer on each side. What is the area of her new brownie pan?

x+6

x+6

$(x+6)(x+6)$

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

4.) What is the product of $(2x + 3)$ and $(x - 2)$?

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

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

$\boxed{2x^2 - x - 6}$

5.) The expression $2x^2 - 6x + 4$ represents the area of a square. The expression $9x^2 + 7x - 1$ represents the area of a rectangle. What is the combined area of the two shapes?

$\boxed{11x^2 + x + 3}$

combine like terms

6.) A square has a side length of $2x - 4$. What is the difference between the area of the square and the perimeter of the square?

2x-4

2x-4   2x-4

2x-4

$P = 8x - 16$

Area

$(2x-4)(2x-4)$

$4x^2 - 8x - 8x + 16$

$4x^2 - 16x + 16$

$(4x^2 - 16x + 16) - (8x - 16) = \boxed{4x^2 - 24x + 32}$

7.) Simplify the expression:

$(4x^3y^2)^3(2x^2y^5)$
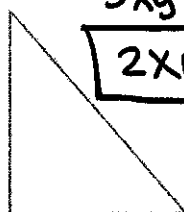
$(64x^9y^6)(2x^2y^5)$

$\boxed{128x^{11}y^{11}}$

8.) Write an expression equivalent to $\dfrac{x^{12}y^8}{x^8y^{12}}$

if $x \neq 0$ and $y \neq 0$.

$\boxed{\dfrac{x^4}{y^4}}$

9.) The perimeter of the triangle below is $7xy^2 + 10x - 2y$. Find the length of the missing side.

$-5xy^2 - 3x$

$\boxed{2xy^2 + 7x - 2y}$

$3xy^2$

$2xy^2 + 3x$

add the given side lengths and subtract from the perimeter

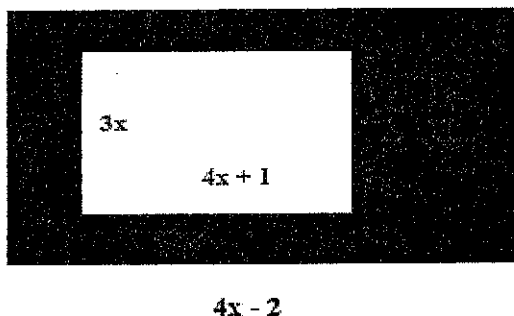|	
10.) Simplify the expression below: $$(4xy^2)(3x^4y^3)$$ $$12x^5y^5$$	**11.)** Find the perimeter of a triangle with the following side lengths: Combine like terms $y - 2y + 4,$ and $7y - 3$ $$\boxed{6y+1}$$
12.) Find the difference: $$(-7x^2 + 4x + 6) - (-3x^2 + 5x - 1)$$ $-7x^2 +4x +6 +3x^2 -5x +1$ $$\boxed{-4x^2 - x + 7}$$	**13.)** Simplify the expression below: $$3x(4x^3 - 9x + 5) - x(7x^2 + 2x - 6)$$ $12x^4 -27x^3 +15x -7x^3 -2x^3 +6x$ $$\boxed{12x^4 - 7x^3 - 29x^2 + 21x}$$
14.) Find the product: $(r - 6)^2$ $$(r-6)(r-6)$$ $$r^2 -6r -6r +36$$ $$\boxed{r^2 - 12r + 36}$$	**15.)** Simplify: $$\frac{p^5 q^{-3}}{p q^2}$$ $$\boxed{\frac{p^4}{q^5}}$$
16.) Simplify: $$(4x + y^3)^2$$ $$(4x+y^3)(4x+y^3)$$ $$16x^2 +4xy^3 +4xy^3 +y^6$$ $$\boxed{16x^2 + 8xy^3 + y^6}$$	**17.)** Which expression is equivalent to $\dfrac{y^{-4}}{y^4}$? A. y^8 B. $\dfrac{1}{y^8}$ ⟵ (circled) C. 1 D. -1
18.) What is the <u>coefficient of the x term</u> when the expression below is simplified? → zero because there isn't an x-term $$6x(3x^2 - 2x) + 5x(-x^2 + 7x)$$ $18x^3 -12x^2 -5x^3 +35x^2$ $$\boxed{13x^3 + 23x^2}$$	**19.)** Simplify: $$\frac{10a^4b - 25a^2b^3 - 5ab}{5ab}$$ $$\boxed{2a^3 - 5ab^2 - 1}$$
20.) Write an equivalent expression for the monomial below: $$(-9m^4r^2s^3)^3$$ $$\boxed{-729m^{12}r^6s^9}$$	**21.)** Simplify: $$\frac{12a^3b^2c}{18ab^4c} \quad \boxed{\frac{2a^2}{3b^2}}$$
22.) Which expression is equivalent to $p^{-7}p^4$ when $p \neq 0$? A. $\dfrac{1}{p^3}$ (circled) $p^{-7}p^4$ B. p^3 $$\frac{p^4}{p^7} = \frac{1}{p^3}$$ C. p^{11} D. $p^{\frac{7}{4}}$	

23.)

Find the area of the shaded region:

Area of large minus Area of small

$6x(4x-2)$ $3x(4x+1)$

$(24x^2 \underline{-12x}) - (12x^2 \underline{+3x})$

$24x^2 - 12x - 12x^2 - 3x$

$\boxed{12x^2 - 15x}$

3x

4x + 1

4x - 2

6x

24.) A rectangular box has dimensions $(x + 6), (x + 2),$ *and* $(x - 1)$. Write an expression that represents the **volume** of the box.

$(x+6)(x+2)$

$x^2 + 8x + 12$

$(x-1)(x^2 + 8x + 12)$

$x^3 + 8x^2 \underline{+12x} - x^2 \underline{-8x} - 12$

$\boxed{V = x^3 + 7x^2 + 4x - 12}$

25.) Kerry wants to remodel his house by knocking down a wall between two adjoining rectanguar rooms. The width of both rooms is $x + 4$. The length of Room 1 is $3x + 6$ and the length of room 2 is $(3x - 3)$. Write an expression that models the area of the new room after thew all is knocked down.

3x + 6   3x - 3

x + 4   x + 4
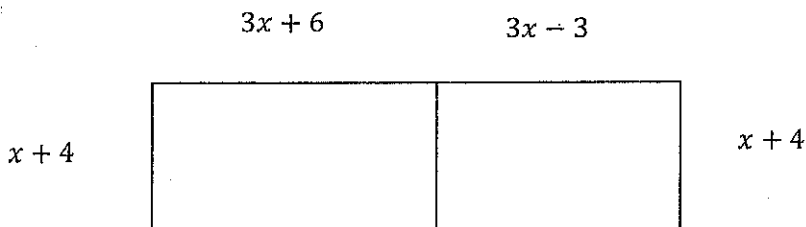
$(6x+3)(x+4)$

$6x^2 + 24x + 3x + 12$

$\boxed{6x^2 + 27x + 12}$

26.) Find the product:

$(2x - 5)(x^2 + x - 3)$

$2x^3 + 2x^2 \underline{-6x} - 5x^2 \underline{-5x} + 15$

$\boxed{2x^3 - 3x^2 - 11x + 15}$

27.) A rectangle has a perimeter of 68.
$2x + 2y = 68$
- Let x equal the width of the rectangle.
- Let y equal the area of the rectangle.   x, length, y

Write a quadratic binomial to model the area of the rectangle.

28.) David has a rectangle and a right triangle.

- The length of the rectangle is 5 less than its width.
- The length of the shorter leg of the triangle is equal to the rectangle's width.
- The length of the longer leg of the triangle is twice the length of the rectangle.

w | w-5

w, 2(w-5)
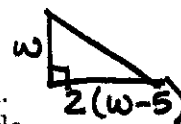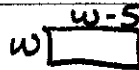
Write a function, *f(w)*, that represents the combined area of the rectangle and triangle.

Rect.   Tri.

$w(w-5)$ $\dfrac{w(2w-10)}{2}$

$w^2 - 5w$ $\dfrac{2w^2 - 10w}{2} = w^2 - 5w$

$w^2 - 5w + w^2 - 5w$

$\boxed{2w^2 - 10w}$