Key

Name: _____ Period: _____

QCA#3 PreAP Review Day 2

A negative exponents means reciprocal

Simplifying Expressions:

A double distribution

1. Simplify:

$3x(x+3) = 3x^2 + 9x$

$-4(x+3) = -4x - 12$

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

$\boxed{3x^2 + 5x - 12}$

$3x^2 + 9x - 4x - 12$ CLT

2. Simplify:

$x(2x+8) = 2x^2 + 8x$

$-4(2x+8) = -8x - 32$

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

$2x^2 + 8x - 8x - 32$ CLT

$\boxed{2x^2 - 32}$

3. Simplify:

get rid of

$$\dfrac{6h^4 p}{12h^5 p^{-2}} = \boxed{\dfrac{p^3}{2h}}$$

Subtract exponents

$h^{4-5} = h^{-1} = \frac{1}{h}$

$p^{1-(-2)} = p^3$

Standard Form:

1) Solve for 'y'
2) Scale equation

4. Given $4x - 2y = 12$, **find** $4y$.

1) $2y = 4x - 12$

2) $2(2y) = 2(4x - 12) \rightarrow 4y = \boxed{8x - 24}$

5. Given $3x - y = 4$, **find** $6y$.

1) $y = 3x - 4$

2) $6(y) = 6(3x - 4) \rightarrow 6y = \boxed{18x - 24}$

6. Convert to slope intercept form:

$m = -\dfrac{A}{B}$

$b = \dfrac{C}{B}$

a) $2x - 4y = 8$ $m = \dfrac{-2}{-4} = \dfrac{1}{2}$ $\boxed{y = \frac{1}{2}x - 2}$ $b = \frac{8}{-4} = -2$

b) $3x + 4y = 20$ $m = \dfrac{-3}{4}$ $b = \dfrac{20}{4}$ $\boxed{y = \frac{-3}{4}x + 5}$

Geometric Applications:

7. The width of a rectangle is 10 cm less than the length. If the area is 71 square cm. Write an equation to represent the area of the rectangle. Do Not Solve.

$w = \ell - 10$ $A = 71$ $A = \ell w$

$A = \ell(\ell - 10)$ $A = \ell^2 - 10\ell$ $\boxed{71 = \ell^2 - 10\ell}$

8. The length of a rectangle is $(3x - 4)$ **feet and the width is** $(2x)$ **feet. Write an equation to represent the situation if the area of the rectangle is 118 square feet. Do Not Solve.**

$A = \ell w$ $A = 118$

$\boxed{118 = 2x(3x - 4)}$

$\boxed{118 = 6x^2 - 8x}$

Domain and Range:

9. What is the range of the function $f(x) = -2x + 10$ **when the domain is** $\{-4, -1, 0, 2\}$?

18 12 10 6

$R: \{ 6, 10, 12, 18 \}$

10. What is the range of the function $f(x) = 3x^2 + 4$ **when the domain is** $\{-3, -2, 0, 4\}$

31 16 4 52

$\frac{f}{s}$ $R: \{ 4, 16, 31, 52 \}$ or $y =$ look up in table

Solutions of Inequalities

11. Jessie bought items for his pool party. He purchased x bags of chips at $3.50 each and y liters of soda at $2 each. He had ~~less than $30~~ to spend. What is a reasonable number of bags of chips and liters of soda that Jessie purchased? $3.50x + 2y < 30$
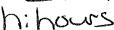
    a. (6,6)   b. (5,5)   c. (7,5)   d. (4, 8)

    $33 < 30$ $27.50 < 30$ $34.50 < 30$ $30 < 30$

    NO   yes   NO   NO

12. An automobile repair shop charges a service fee of $50 plus $20 per hour for the mechanic's time. A customer receives an estimate of (at least $150) for repairing his car. What is the minimum amount of hours the repair shop is estimating it will take?

h : hours

$$50 + 20h \geq 150$$
$$-50 \qquad\qquad -50$$
$$20h \geq 100$$
$$h \geq 5$$

$\boxed{5 \text{ hours}}$

Systems of Equations:

13. Match the systems to their solution

a. $\begin{cases} x + 3y = 8 \\ x - y = 12 \end{cases}$ $(-10) + 3(-29) = -97$ NO

    $(11) + 3(-1) = 8 \checkmark$ yes

    $(11) - (-1) = 12 \checkmark$ yes

    1. $(-10, -29) \rightarrow$ C

b. $\begin{cases} 4x + 3y = 6 \\ 3x + 5y = -1 \end{cases}$ $4(-10) + 3(-29) = -127$ no

    2. $(11, -1) \rightarrow$ A

    $4(3) + 3(-2) = 6 \checkmark$ yes

    $3(3) + 5(-2) = -1 \checkmark$ yes

c. $\begin{cases} 2x - y = 9 \\ -3x + y = 1 \end{cases}$ $2(-10) - (-29) = 9 \checkmark$ yes

    3. $(3 -2) \rightarrow$ B

    $-3(-10) + (-29) = 1 \checkmark$ yes

14. Write the system that could be used to compare the following t-shirt companies:

    *T-Right costs $40 for the first 10 shirts and $2.50 for each extra shirt   C: cost

    *Shirts-R-Us costs $60 for the first 10 and $1.50 for each extra shirt   t : t-shirt

    T-right : $C = 40 + 2.50(t - 10)$ *these 10 pd for in the $40

    Shirts-R.US : $C = 60 + 1.50(t - 10)$

Evaluate Functions

If $f(x) = \dfrac{x+4}{3}$ and $g(x) = 2x^2 - 7$, find each value:

15. $[f(-10)] - [g(-2)]$

$f(-10) = \dfrac{-10+4}{3}$ $g(-2) = 2(-2)^2 - 7$

$\dfrac{(-10+4)}{3} - (2(-2)^2 - 7) \rightarrow (-2) - (1)$

$\boxed{-3}$

16. $[g(0)] + [f(2)]$ $g(0) = 2(0)^2 - 7) = -7$

    $f(2) = \dfrac{2+4}{3} = 2$ $-7 + 2 = -5$

$(2(0)^2 - 7) + \left(\dfrac{(2+4)}{3}\right) \rightarrow (-7) + (2)$

$\boxed{-5}$