SEMESTER 2 FINAL EXAM REVIEW #3 Name_____

1 Simplify completely:

$$\frac{x^2-16}{2x-6} \div \frac{x+4}{x^2+7x-12}$$

$= \frac{x^2-16}{2x-6} \cdot \frac{x^2+1x-12}{x+4}$

$= \frac{(x+4)(x-4)}{2(x-3)} \cdot \frac{(x+4)(x-3)}{x+4}$

$= \boxed{\frac{(x-4)(x+4)}{2}}$

or $\frac{x^2-16}{2}$

2. Simplify completely:

$$\frac{8x^3+2x^2}{4x}$$

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

$= \frac{2 \cdot x \cdot x(4x+1)}{2 \cdot 2 \cdot x}$

$= \boxed{\frac{x(4x+1)}{2}}$

or $\frac{4x^2+x}{2}$

3. Simplify completely:

$$\frac{7x+7}{x^2} \cdot \frac{x^3}{x+1}$$

$= \frac{7(x+1)}{x \cdot x} \cdot \frac{x \cdot x \cdot x}{(x+1)}$

$= \boxed{7x}$

4. There are 15 blue chips and 12 red chips in a box. If you choose one chip, what is the probability that you will draw a red chip?

$P(\text{red}) = \frac{12}{27} = \boxed{\frac{4}{9}}$

5. Simplify:

$(3x^2 \quad x \quad 8) \quad (7x \quad 19x^2 \quad 7)$

$3x^2 - x - 8 - 7x - 9x^2 + 7$

$= \boxed{-6x^2 - 8x - 1}$

6. Simplify: $\frac{9x^2y^{13}}{-3x^2y^4}$

$= \frac{3 \cdot 3 \cdot x^2 \cdot y^4 \cdot y^9}{-1 \cdot 3 \cdot x^2 \cdot y^4}$

$= \frac{3y^9}{-1}$

$= \boxed{-3y^9}$

7. Multiply and simplify:

$$(2a+5)(3a-1)$$

	$3a$	-1
$2a$	$6a^2$	$-2a$
$+5$	$15a$	-5

$= \boxed{6a^2+13a-5}$

8. Factor completely:

$9x^2 - 27x + 18$

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

$-2 \cdot -1 = 2$, $-2 + -1 = -3$

$= \boxed{9(x-2)(x-1)}$

9. Factor completely:

$$24y^2 - 4y - 8$$

$4(6y^2 - y - 2)$

$12 \cdot -2 = -24$, $-4 + 3 = -1$

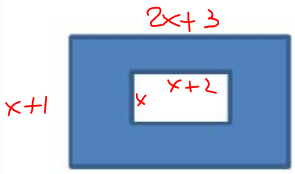
	$2y$	1
$3y$	$6y^2$	$3y$
-2	$-4y$	-2

$= \boxed{4(3y-2)(2y+1)}$

10. Find the slope of the line containing (4,-2) and (7,9).

$m = \frac{9-(-2)}{7-4} = \frac{11}{3}$

11. What is the area of the shaded region?



$A = (2x+3)(x+1) - x(x+2)$

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

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

12. Solve, then graph on a number line.

$4c-(6c+12) > 12+2(c-8)$

$4c-6c-12 > 12+2c-16$

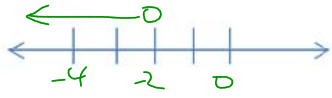
$-2c-12 > 2c-4$

$+2c \quad +4 \quad +2c+4$

$\frac{-8}{4} > \frac{4c}{4}$

$-2 > c$

or $c < -2$



13. Solve and graph

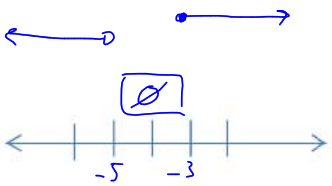
$-2 \le 2x+4$ *and* $x+4 < -1$

$-4 \quad -4 \qquad -4 \quad -4$

$\frac{-6}{2} \le \frac{2x}{2}$ $\qquad x < -5$

$-3 \le x$

$x \ge -3$ and $x < -5$



14. What are the x-intercepts of $x^2-6x+5=0$

$(x-5)(x-1)=0$

$x-5=0 \quad x-1=0$

$\boxed{x=5 \text{ or } x=1}$

15. A student has scores of 12, 9, 8, and 11. What score must the student earn on the fifth test in order to have an average score of 11?

$\frac{12+9+8+11+x}{5} = 11$

$40+x = 55$

$x = 15$

The student must earn a score of 15.

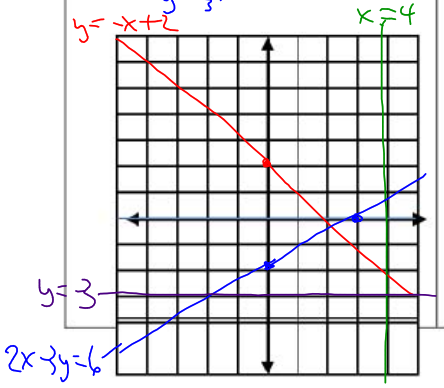
16. Graph and label the lines

a) y=-x+2 c) x=4

b) 2x-3y=6 d) y=-3

$-3y = -2x+6$

$y = \frac{2}{3}x-2$



17. Write a function for the situations described:

a) It costs $35 to rent a car and $0.48 per mile let m = # miles, C = cost

$C(m) = 35+.48m$

b) There are 73 loaves of bread and the kids eat 7 loaves per day.

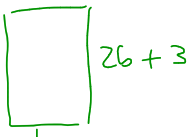
let d = # days, L = loaves left

$L(d) = 73-7d$

c) A kite starts 4 feet off the ground and climbs 200 feet per minute let h = height in ft, m = minutes

$h(m) = 4+200m$

18. The height of a rectangle is three more than twice the base. The area is 119 sq in. What is the height?



$b(2b+3) = 119$

$2b^2+3b = 119$

$2b^2+3b-119 = 0$

b	-7
$2b^2$	-14b
17b	-119

-238

$17 \quad -14$

3

$(2b+17)(b-7)=0$

$2b+17=0$ or $b-7=0$

$2b=-17$

$b=-8.5$ or $b=7$

$\text{height} = 2(7)+3$

$= 17$ in

The height is 17 in.