Name: _Key_

Solving Equations & Evaluating

1. **Evaluate each expression if x = 3, y = -2 and z = 4.**

   a. $2xyz - y$

   $\boxed{-46}$
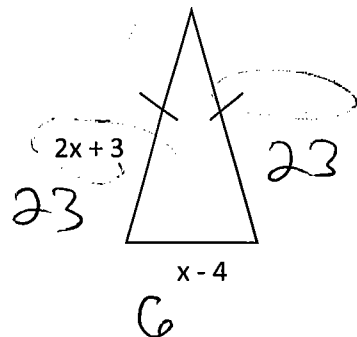
   c. $y^2 + 4(x+z)-(z-y)$

   $4 + 28 - (6)$

   $\boxed{26}$

2. **Find the dimensions for the isosceles triangle pictured if the perimeter is 52 cm.**

   $2x + 3 + 2x + 3 + x - 4 = 52$

   $5x + 2 = 52$

   $\boxed{x = 10}$

   2x + 3 ··· 23

   23

   x - 4

   6

3. **Solve each for x.**

   a. $\sqrt{-2x + 8} = 12$

   $-2x + 8 = 144$

   $-2x = 136$

   $\boxed{x = -68}$

   d. $\frac{2x+1}{5} = \frac{3}{4}$

   $8x + 4 = 15$

   $8x = 11$

   $\boxed{x = \frac{11}{8}}$

   b. $2(x-4) = 16$

   $2x - 8 = 16$

   $2x = 24$

   $\boxed{x = 12}$

   e. $\frac{x}{3} + 12 = 9$

   $x + 36 = 27$

   $\boxed{x = -9}$

   c. $-3(-x+2) - 7 = 7(x+1)$

   $3x - 6 - 7 = 7x + 7$

   $-20 = 4x$

   $\boxed{x = -5}$

   f. $(13x-14)^2 = 9$

   3 or -3

   $13x - 14 = 3$

   $13x = 17$

   $\boxed{x = \frac{17}{13}}$

   $13x - 14 = -3$

   $13x = 11$

   $\boxed{x = \frac{11}{13}}$

Solving Inequalities

4. **Solve and GRAPH each inequality on a number line.**

   a. $-6(2x-10) + 12x \leq 180$

   $-12x + 60 + 12x \leq 180$

   $60 \leq 180$

   All real #'s

   b. $3x + 1 > 7$ or $5(x-1) < -10$

   $3x > 6$ $5x - 5 < -10$

   $x > 2$ $5x < -5$

   $x < -1$

5. Find the error in each problem. If there isn't one, right "ALL GOOD".

Student A   Student B

Solving Absolute Value & Inequalities

6. Solve each absolute value. Check your answers. Circle all final answers.

a. $3|2x+1| = -12$

could be + or –4
not possible to get
–12.

NO solution

b. $\frac{|x-3|}{5} + 7 = 12$

$\frac{|x-3|}{5} = 5$

must be 25 or -25
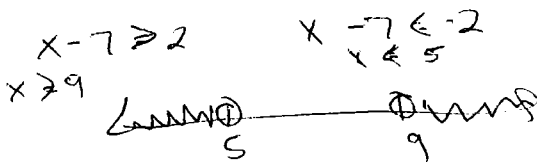
$x - 3 = 25$ $x - 3 = -25$
$\boxed{x = 28}$ $\boxed{x = -22}$

7. Solve each absolute value inequality and graph the answer on a number line.

a. $2|x-7| + 1 > 5$
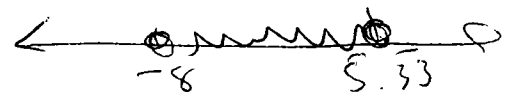
$2|x-7| > 4$

$|x-7| > 2$

$x - 7 > 2$ $x \frac{-7}{x} < -2$
$x > 9$ $x < 5$

b. $|3x + 4| \le 20$

$3x + 4 \le 20$ $3x + 4 \ge -20$

$3x \le 16$ $3x \ge -24$

$x \le 5\frac{1}{3}$ $x \le -8$

8. Write and solve an inequality to match the scenario.

The Seaholm Soccer team is hosting their annual car wash. They purchased $150 in supplies and charge $4 per car and $6 per truck. If they washed 15 trucks, at least how many cars must they wash to break even?

$4c + 6T = 150$

$4c + 6(15) = 150$

$4c + 90 = 150$

$4c = 60$

$\boxed{c = 15}$

$\boxed{\text{at least } 15 \text{ cars}}$

Chapter 2 Stuff
Find the slope of each line.

1. $3x - 5y = 15$ $\boxed{\dfrac{3}{5}}$

$\dfrac{-5y}{-5} = \dfrac{-3x + 15}{-5}$

2. through $(-2, 7)$ and $(4, 1)$

$\dfrac{7 - 1}{-2 - 4} = \dfrac{6}{-6} = \boxed{-1}$

Write an equation in slope-intercept form for each scenario.

3. a. through $(6, 1)$ and perpendicular to $y = \dfrac{3}{2}x + \dfrac{1}{4}$

$y = -\dfrac{2}{3}x + b$

$\dfrac{-2}{3}$

$1 = -\dfrac{2}{3}(6) + b$

$1 = -4 + b \quad b = 5$

$\boxed{y = -\dfrac{2}{3}x + 5}$
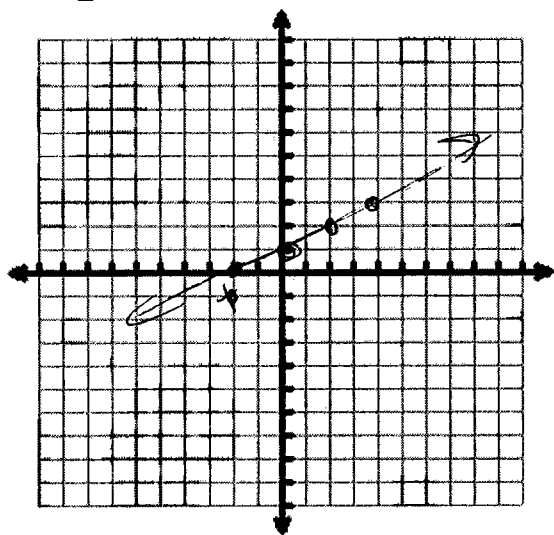
b. through $(0,3)$ & parallel to $2x + 3y = 18$

$\boxed{y = -\dfrac{2}{3}x + 3}$

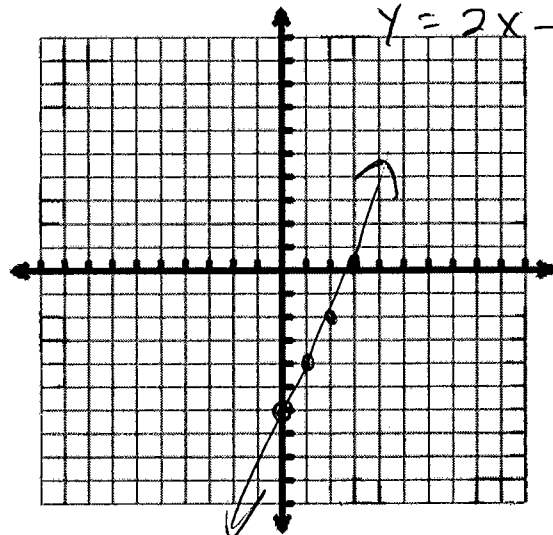$\dfrac{3y}{3} = \dfrac{-2x + 18}{3}$

$y = \boxed{-\dfrac{2}{3}}x + 6$

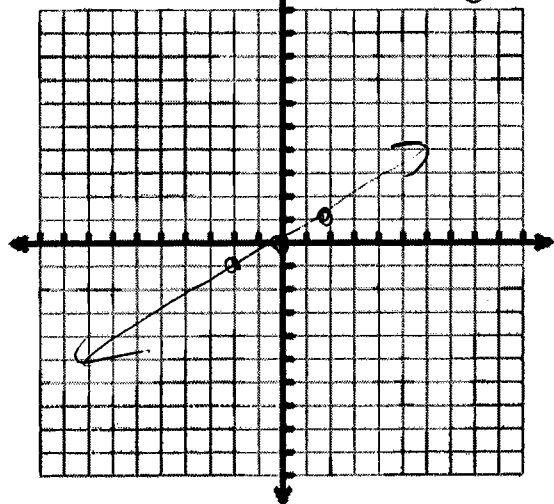**Graph each function.**

4. $y = \dfrac{1}{2}x + 1$

5. $4x - 2y = 12 \rightarrow$

$\dfrac{-2y}{-2} = \dfrac{-4x + 12}{-2}$

$y = 2x - 6$

7. $y - 4 = \frac{1}{2}(x-8)$

$y = \dfrac{1}{2}x - 4 + 4 \qquad y = \dfrac{1}{2}x$

10. Write in slope intercept form the equation of a line Through (1, 5) and (−3, 3)

$$\frac{3-5}{-3-1} = \frac{-2}{-4} = \frac{1}{2}$$

$$y = \frac{1}{2}x + b$$

$$5 = \frac{1}{2}(1) + b$$

$$b = 4.5$$

$$\boxed{y = \frac{1}{2}x + 4.5}$$

11. Write the equation of a line Through (−4, 1) with an undefined slope

↓ vertical lines

$$\boxed{x = -4}$$

12. The table below displays the enrollment at Westside High during the years 1996–2001.

Year	Enrollment
1996	1582
1997	1635
1998	1674
1999	1723
2000	1745
2001	1801

a. Given that the equation of this line of best fit is $y = 42x + 1588$, estimate the enrollment in 2015 (use 1996 as year zero).

↳ 19 years later

$$y = 42(19) + 1588 \qquad \boxed{2,386}$$

b. Explain what the 42 means in the context of this problem.

enrollment increases 42 students each year.

c. Interpret the y-intercept of 1588 in context.

the school enrollment started @ 1588 kids in 1996.

13. Find the slope and all intercepts of the line $3x - 2y = 18$.

x: 6

y: −9

Slope $\frac{3}{2}$

14. At a school play, children's tickets cost $3 each and adult tickets cost $7 each. The total amount of money earned from ticket sales equals $210. Write a linear model that relates the number of children's tickets sold, *c*, to the number of adult tickets sold, *a*.

a. Write the equation.

$$3C + 7A = 210$$

b) How many children's tickets were sold if 24 adult tickets were sold?

$$3C + 7(24) = 210$$
$$3C + 168 = 210$$
$$3C = 42$$
$$\boxed{14 = C}$$

c) Explain the meaning of the *c*-intercept.

If 0 adults came, then 70 kids can go.

15. Mr. Thompson is on a diet. He currently weighs 260 pounds. He loses 4 pounds per month. Write a linear model that represents Mr. Thompson's weight after m months.

$$y = -4m + 260$$

b) After how many months will Mr. Thompson reach his goal weight of 220 pounds?

$$220 = -4m + 260$$

$$-40 = -4m$$
$$10 = m$$

16. A 12 mile cab ride costs $8.10, while a 23 mile cab ride cost $11.40. Write an equation to model how much a cab ride will costs for x amount of miles. Then find out how much a 16 mile cab ride would cost.

$$(12, 8.10) \quad (23, 11.40)$$

$$\frac{11.40 - 8.10}{23 - 12} = \frac{3.30}{11} = .3$$

$$y = .3x + b$$
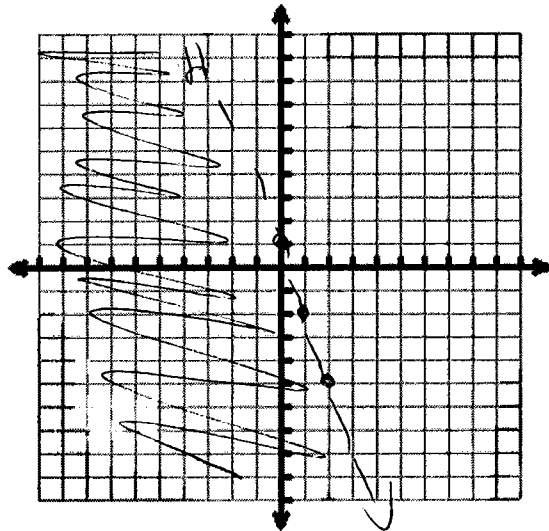$$8.10 = .3(12) + b$$
$$8.10 = 3.60 + b$$
$$4.50 = b$$

$$y = .3x + 4.50$$

$$\$9.30$$

17. Graph and shade the following linear inequalities.

$y < -3x + 1$
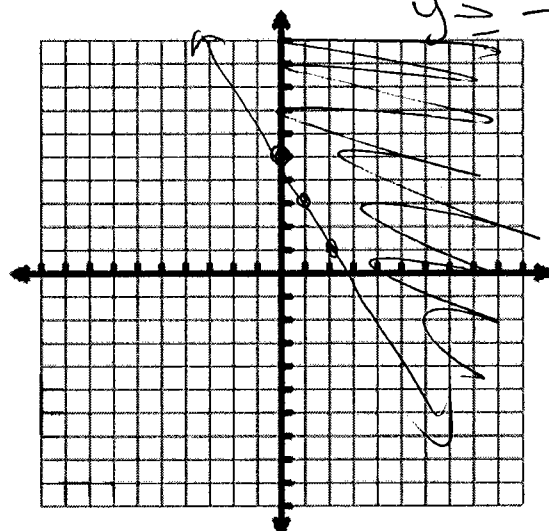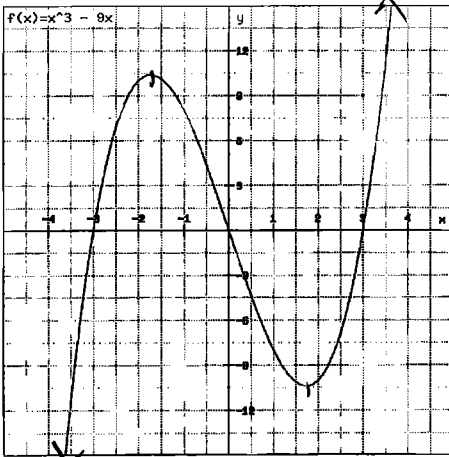

$4x + 2y \geq 10 \rightarrow 2y \geq -4x + 10$
$y \geq -2x + 5$

18. Answer the function questions for the graph below. Assume the ends of the graph go on forever.

f(x)=x^3 − 9x

A. Domain: $\mathbb{R}$

Range: $\mathbb{R}$

B. Increasing: $(-\infty, -1.75)$ $(1.75, \infty)$

Decreasing: $(-1.75, 1.75)$

C. x-intercept(s): $-3, 0, 3$

y-intercept: 0

End Behavior: ↓↑