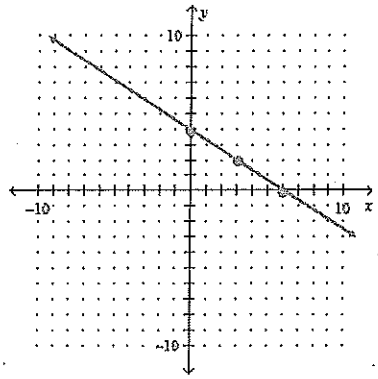
Chapter 2 – Practice Test

No calculator will be allowed on this portion of the test.

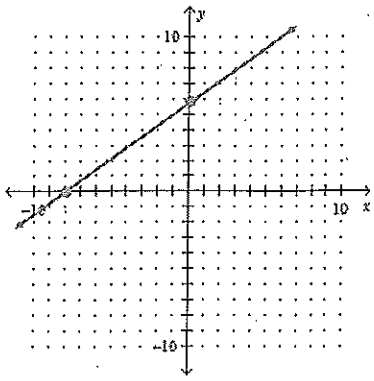
1. Graph the line: $y = -\frac{2}{3}x + 4$

Clearly plot at least 2 points that lie on the line.



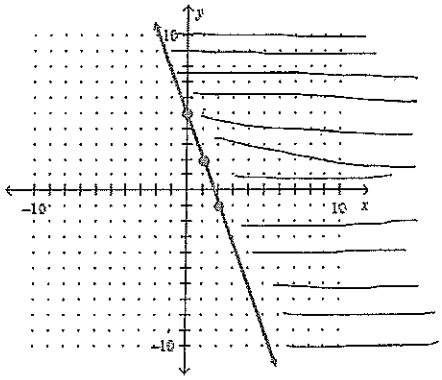
2. Graph the line: $-3x + 4y = 24$

Clearly plot at least 2 points that lie on the line. Find (0, ?) and (?, 0)



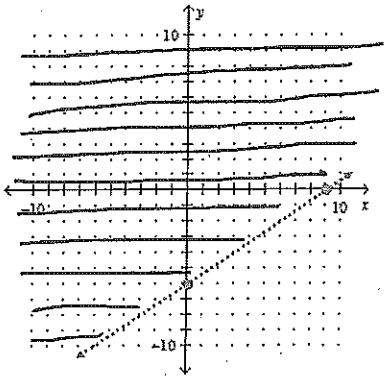
3. Graph the inequality: $y \geq -3x + 5$

Clearly plot at least 2 points that lie on the boundary line.

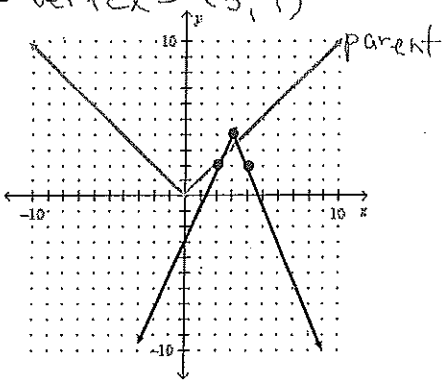


4. Graph the inequality: $2x - 3y < 18$

Clearly plot at least 2 points that lie on the boundary line.



5. Graph the parent graph $y = |x|$ and the graph of $y = -2|x - 3| + 4$. *Clearly* plot the vertex and at least *two other points for each graph.* Vertex = (3, 4)



You may use a calculator on the rest of this test.
Show your work on every problem!

6. Find the slope of the line passing through the points (-8 , 8) and (1 , -2).

$$m = \frac{-2-8}{1-(-8)} = \frac{-10}{9}$$

7. Write an equation of a line that has slope 8 and y-intercept -1.

$$y = 8x - 1$$

8. Write the equation of the line, in slope-intercept form, that passes through the point (-5 , -6) and has slope 2.

$y = mx + b$
$-6 = 2(-5) + b$ → $-6 = -10 + b$
$4 = b$
$y = 2x + 4$

9. Find the slope-intercept equation of the line passing through the points (2 , 1) and (-43 , 19).

$m = \frac{19-1}{-43-2} = \frac{18}{-45} = -\frac{2}{5}$
$1 = -\frac{2}{5}(2) + b$
$1 = -\frac{4}{5} + b$
$b = 1\frac{4}{5}$
$y = -\frac{2}{5}x + 1\frac{4}{5}$

10. Tell whether **Line 1** and **Line 2** are *parallel*, *perpendicular*, or *neither*. Explain/show work.

Line 1 passes through (4 , -6) and (6 , -2). $m_1 = \frac{-2-(-6)}{6-4} = \frac{4}{2} = 2$

Line 2 passes through (7 , -8) and (11 , -6). $m_2 = \frac{-6-(-8)}{11-7} = \frac{2}{4} = \frac{1}{2}$

Neither. The slopes are not equal nor are they opposite reciprocals.

11. Determine whether the relation is a function. Explain why or why not.

(22, 14), (10, 14), (22, 15), (13, 16), (14, 16)

No - The input "22" has more than one output. (14 and 15)

12. Which equation has the steeper graph, $y = \frac{1}{5}x - 2$ or $y = \frac{3}{8}x + 3$? Explain.

$\frac{3}{8} > \frac{1}{5}$ so $y = \frac{3}{8}x + 3$ is steeper.

13. Consider the equation $y = -5x + 5$.

a. Write an equation that passes through the point (6 , -1) and is ***parallel*** to the given equation.

$-1 = -5(6) + b$
$-1 = -30 + b$
$b = 29$
$y = -5x + 30$

b. Write an equation that passes through the point (6 , -1) and is ***perpendicular*** to the given equation.

$m = \frac{1}{5}$
$-1 = \frac{1}{5}(6) + b$
$-1 = \frac{6}{5} + b$
$b = -\frac{11}{5}$
$y = \frac{1}{5}x - \frac{11}{5}$

14. Is the ordered pair (5 , -1) a solution of the inequality $3x - 4y \geq 20$? Explain.

$3(5) - 4(-1) \geq 20$?
$15 + 4 \geq 20$
No.

15. The pet store has dog bones that sell for \$3.75 a pound and pig ears that sell for \$2.50 a pound.

a.) Write an equation in standard form that represents how much of each type of dog treat can be bought with exactly \$42. $3.75x + 2.50y = 42$

b.) Find the x-intercept and the y-intercept. **Explain what they mean in the context of the problem.**

X-intercept = the x-value when $y = 0$; it's the number of dog bones you could buy if you bought 0 pig ears. [11.2] 16.8

y-intercept = the y-value when $x = 0$; it's the number of pig ears you could buy if you bought 0 bones.

17. The value y of a copier x years after it was purchased can be modeled by the equation $y = 3000 - 500x$.

a. What is the slope of the line for this equation?

-500

Describe what the slope represents.

The copier loses $500 in value each year.

b. What is the y-intercept of the line for this equation?

3000

Describe what the y-intercept represents.

The copier was valued at $3000 when new.

16. The amount of money in Amy's college fund can be modeled by the equation y = 5000 + 1500x where x = her age in years.

a. What is the slope of the line for this equation?

1500

Describe what the slope represents.

Her college fund increases $1500 each year.

b. What is the y-intercept of the line for this equation?

5000

Describe what the y-intercept represents.

She started with $5000 in the fund.

17. The table shows the population p (in millions) of Florida over a four year span.

Year	2000	2001	2002	2003
Population (in millions)	15.6	16.0	16.3	16.6

4-digit year used

a. Approximate the best –fitting line for the data. $y = 0.33x - 644.37$ or $y = 0.33x + 15.63$

2-digit year used

b. Using this model, what will be the population in 2010? 18.93 million

Solve the absolute value equation.

18. $|x + 7| = 18$

$x + 7 = 18$ $\quad$ $x + 7 = -18$

$x = 11$ $\quad$ $x = -25$

19. The function P(s) = 4s gives the perimeter of a square with a side length of s.

Find P(9) and **explain what it means.**

$P(9) = 4(9) = 36$

The perimeter of a square with side length 9 is 36.

Solve and graph the absolute value inequality.

20. $|2x - 7| < 31$

$2x - 7 < 31$ and $2x - 7 > -31$

$2x < 38$ $\quad 2x > -24$

$x < 19$ $\quad x > -12$

and

21. On September 14, the height of a building under construction was 32 feet tall. By September 18, it was 96 feet tall. Find the average rate of change in the height of the building per day. Include units in your answer.

$(14, 32)$ $\quad (18, 96)$

$m = \frac{96 - 32}{18 - 14} = \frac{64}{4} = 16 \frac{ft}{day}$