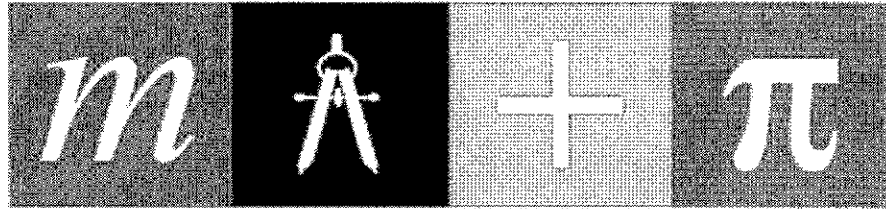


Carusi Middle School

SUMMER



ASSIGNMENT for students entering **Introduction to**

Functions

(Students must also complete their grade level packet)

Show all work on each page using pencil only. If more room is required, attach lined paper to the packet.

*****Please bring this packet with you the first day of school *****

NAME: _____

Intro to Functions: Summer Standards

Multi-step Inequalities

Compound Inequalities

Absolute Value Equations and Inequalities

Finding Slope given 2 points

Putting equations into slope intercept form

Finding the equation of a line given slope and 1 point

Finding the equation of a line given 2 points

Graphing Slope Intercept Form

Putting equations into Standard Form

Finding x and y intercepts

Graphing Standard Form

Pythagorean Theorem

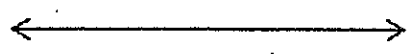
1.) $\frac{1}{2}(x-2) < 21$



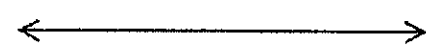
2. $3r + 3 > 63 - r$



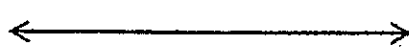
3. $12 - 8m \geq 60$



4. $-(3x + 5) \leq -13 - 6$



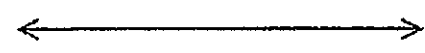
5. $-2(x - 7) > -10 - 6x$



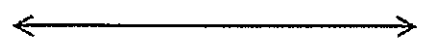
6. $-2(x + 7) \leq -14 + 2x$



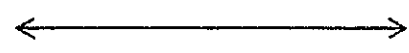
7.) $7x - 2(3x + 11) \leq 17$



8.) $-3(2x - 4) - 1 < -25 + 6x$



9.) $-(x - 1) + 5 \geq -10 - 3x$



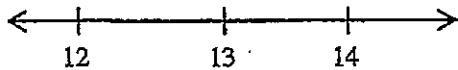
Compound Inequalities

Worksheet 2

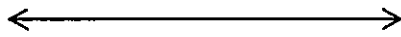
1. $6 < x - 6 \leq 8$

2. $-5 < x - 3 < 6$

3. $-4 < 2 + x < 1$



4. $8 \leq 2x + 6 \leq 18$



5. $-4 < -3x - 13 \leq 26$



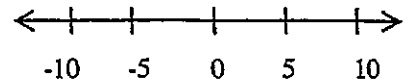
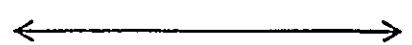
6. $-13 < 5 - 2x < 9$



7. $6 + 2x > 20$ or $8 + x \leq 0$

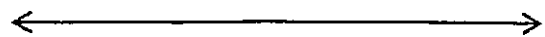
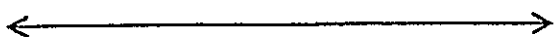


8. $-3x - 7 \geq 8$ or $-2x - 11 \leq -31$

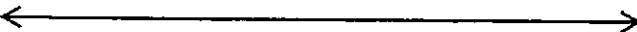


9. $2x + 7 < 3$ or $5x + 5 \geq 10$

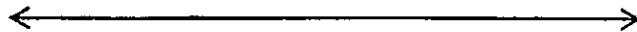
10. $3x + 8 > 17$ or $2x + 5 \leq 7$




1.) $|2x - 1| = 12$




2.) $\frac{|6 - x|}{-4} = -3$



3.) $|-3x + 5| + 15 = 6$



4.) $7\left|\frac{2}{3}x - 5\right| = 35$

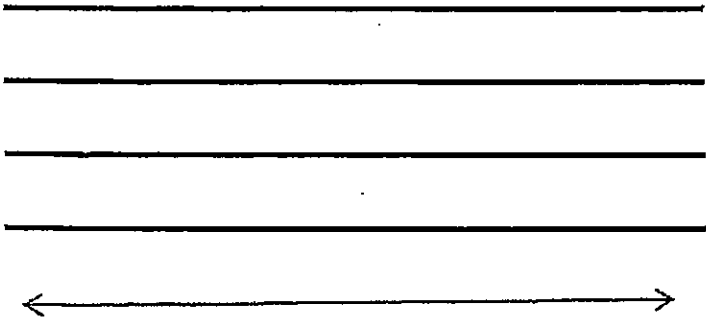


$|x| = a$
 $x = a$ $x = -a$

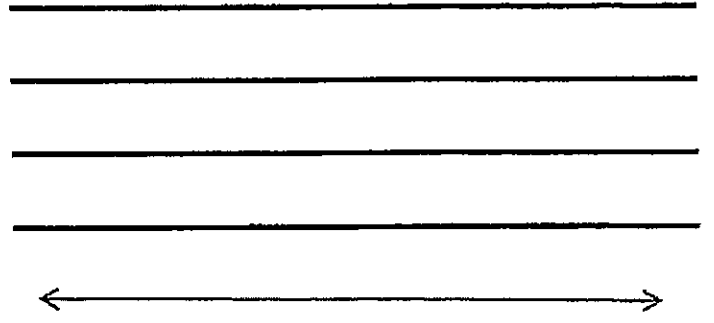
Name: _____

_____ : Absolute Value Inequalities

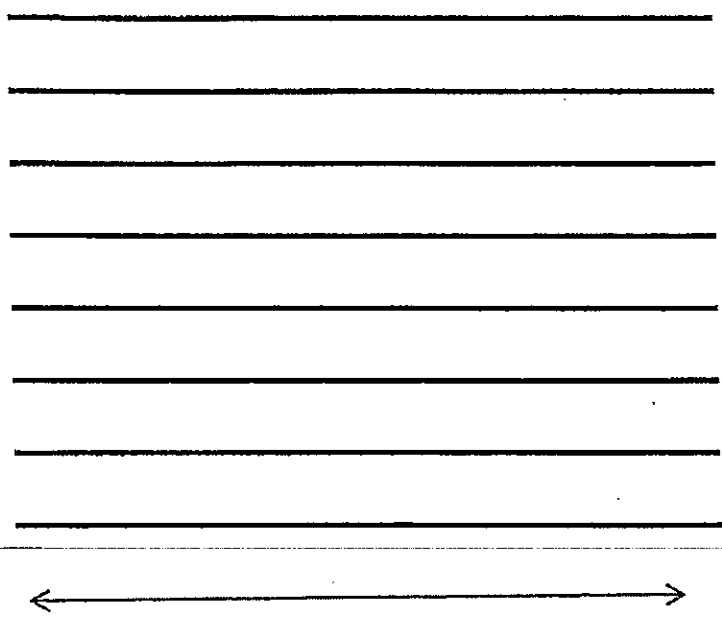
1.) $|x + 9| \leq 16$



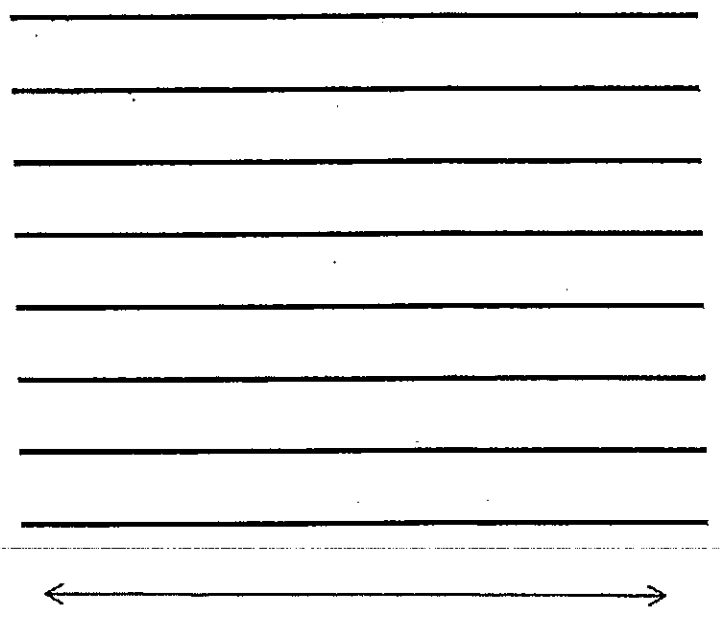
2.) $|\frac{1}{4}x| > 8$



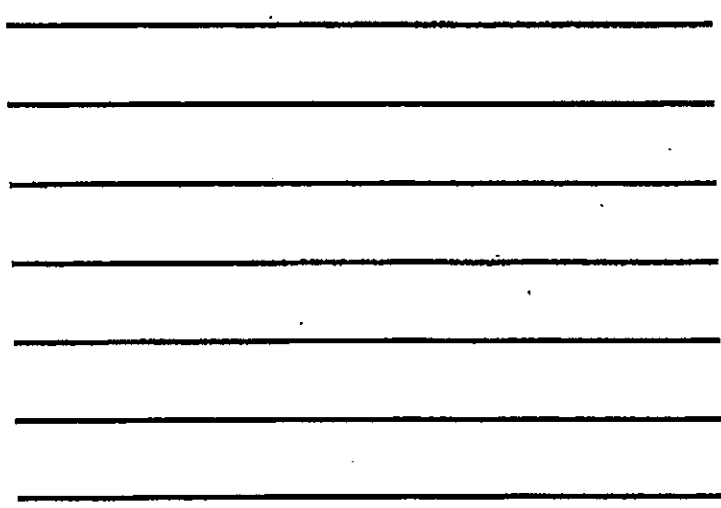
3.) $17 + |6x| \geq 20$



4.) $-4.5|3 - 2x| \leq -9$



5.) $|x - \frac{4}{5}| - 3 < \frac{2}{5}$



Less than: AND, GREATER: OR
 $x < 10$ } $x > 10$
 $-10 < x < 10$ } $x > 10$ OR $x < -10$

1.) (2, 7) (11, 3)

2.) (-4, -1) (-12, -9)

3.) (6, 20) (7, 10)

 $m =$

4.) (-6, 2) (5, 8)

5.) (8, 3) (8, 6)

6.) (5, 3) (-4, 3)

7.) (-4, 0) (4, 20)

8.) (7, 9) (0, 23)

9.) (-4, 7) (-4, -7)

$$\text{SLOPE} \\ m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{RISE}}{\text{RUN}} = \frac{\Delta y}{\Delta x}$$

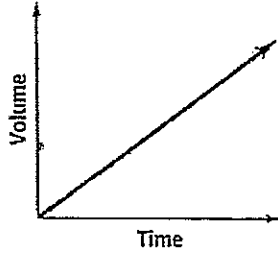
4-1 Practice

Using Graphs to Relate Two Quantities

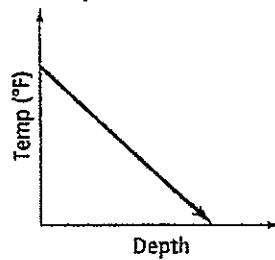
Form G

What are the variables in each graph? Describe how the variables are related at various points on the graph.

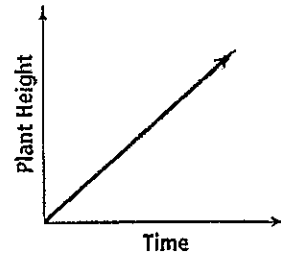
1. Volume of Pool Water



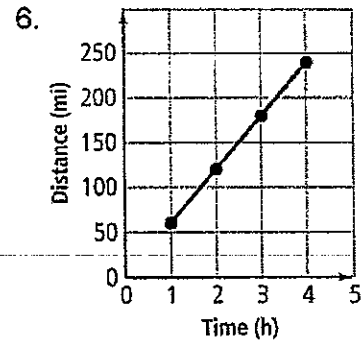
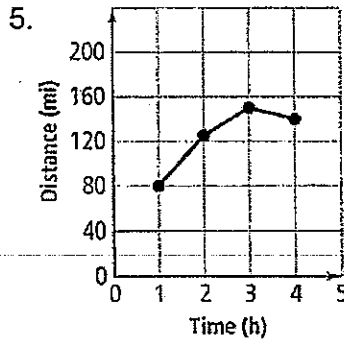
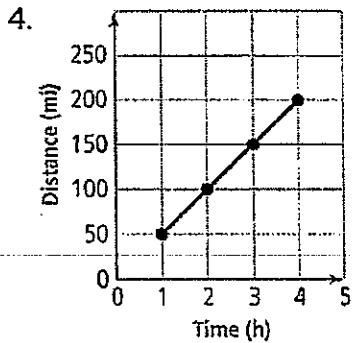
2. Temperature of Water



3. Plant Height



Match each graph with its related table. Explain your answers.



A.

Time (h)	Distance (mi)
1	60
2	120
3	180
4	240

B.

Time (h)	Distance (mi)
1	80
2	125
3	150
4	140

C.

Time (h)	Distance (mi)
1	50
2	100
3	150
4	200

4-1 Practice (continued)

Using Graphs to Relate Two Quantities

Form G

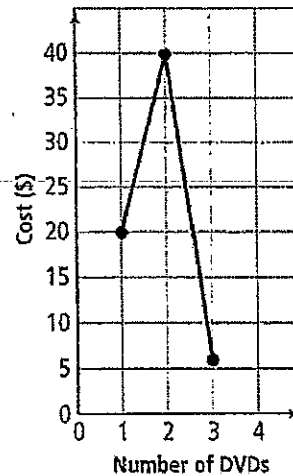
Sketch a graph to represent the situation. Label each section.

7. You buy two shirts. The third one is free.

8. You warm up for gym class, play basketball, and then cool down.

9. The temperature warms up during the day and then decreases at night.

10. **Error Analysis** DVDs cost \$19.99 each for the first 2 purchased. After that, they cost \$5.99 each. Describe and correct the error in sketching a graph to represent the relationship between the total cost and the number of DVDs purchased.



11. Sketch a graph of each situation. Are the graphs the same? Explain.
 - a. your distance from school as you leave your house and walk to school
 - b. your distance from school as you leave school and walk to your house

Cumulative Review

Chapters 1–4

Multiple Choice

For Exercises 1–8, choose the correct letter.

- Which statement is equivalent to $4x - 6y + 8y - 6x - 12y$?
A. $10x - 26y$ C. $-2x - 10y$
B. $12x - 18y$ D. $-12y$
- Jacob scored 5 points more than $\frac{4}{5}$ of Sarai's test score. Which equation represents the relationship between Jacob's test score, J , and Sarai's test score, S ?
F. $\frac{4}{5}J + 5 = S$ H. $\frac{4}{5}J - 5 = S$
G. $\frac{4}{5}S + 5 = J$ I. $\frac{4}{5}S - 5 = J$
- The height of the flagpole, F , and the length of its shadow, S , are proportional to Harry's height, h , and the length of his shadow, l . Which proportion represents the relationship?
A. $\frac{l}{h} = \frac{S}{F}$ C. $\frac{F}{l} = \frac{S}{h}$
B. $\frac{S}{h} = \frac{l}{F}$ D. $\frac{S}{F} = \frac{h}{l}$
- Which ordered pair is a solution of $y = -6x - 7$?
F. $(0.5, -4)$ G. $(2, -19)$ H. $(-2, -5)$ I. $(3, 11)$
- What is the value of $15 - (6^2 - 5^2)$?
A. -104 B. -74 C. 74 D. 4
- Which values of x and y will make the expression $3(-2x - y)^2$ equal to 3?
F. $x = -2$ and $y = 1$ H. $x = -1$ and $y = 3$
G. $x = -2$ and $y = -3$ I. $x = -1$ and $y = -3$
- The sum of two consecutive integers is 153. Which equation can be used to find the first integer n ?
A. $2n + 1 = 153$ C. $n + 1 = 153$
B. $2n = 153$ D. $2n + 2 = 153$
- Which property is illustrated by $a(b + c) = ab + ac$?
F. Associative Property of Addition H. Commutative Property of Addition
G. Associative Property of Multiplication I. Distributive Property

Cumulative Review (continued)

Chapters 1–4

9. Simplify $3(-5x - 7) - (6x)$.
10. Admission to the movie is \$7.50 for adults and \$3.50 for students. The theater's goal is to receive \$1500 in revenue for the evening. Write an equation that models this relationship.
11. Evaluate $-3a(2b - 4c)$ for $a = -3$, $b = 2$, and $c = -7$.
12. The profit of a company is modeled by $P = 4t + 15,500$, where P is the profit and t is the time in months. What is the dependent variable?
13. Use words to describe the relationship modeled by the equation $y = -8x + 17$.
14. Simplify $9^3 \div 3^3 - 5(8 - 4) + 9^2$.
15. **Vocabulary** What is the term for a relation in which each input value corresponds to exactly one output value?
16. Simplify $(ab^2 + 10 + a) - (6ab^2 - 2ab + 8)$.
17. What is the function rule that represents the relationship found in the following ordered pairs? $(-5, 22)$, $(10, -23)$, $(4, -5)$, $(-7, 28)$, $(6, -11)$
18. What is the value of the expression $(-8)(6) - (-4)(-5) + (-3)(-6)$?
19. A student wrote a number pattern such that each number is 3 more than 4 times the previous number. What is the sixth term in the pattern if the first term is 6?
20. One lap around a track measures 400 meters. Kelvin runs 8 laps around the track for a race. How many kilometers did he run?

5-1 Practice

Form G

Rate of Change and Slope

Determine whether each rate of change is constant. If it is, find the rate of change and explain what it represents.

Hockey Team's Offense

Games	Goals
1	2
2	4
3	6

1.

Miles Per Gallon

Gallons	Miles
1	28
3	84
5	140
7	196

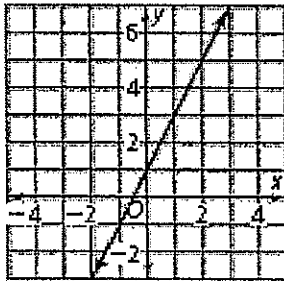
2.

Cars Washed

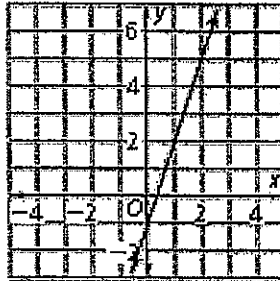
Hours	Cars
1	4
2	8
3	12
4	16

3.

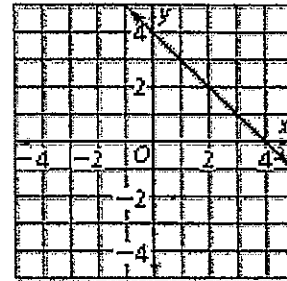
Find the slope of each line.



4.



5.



6.

Find the slope of the line that passes through each pair of points.

7. $(2, 1), (0, 0)$

8. $(4, 5), (6, 2)$

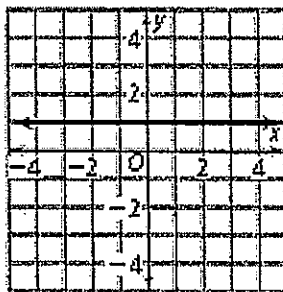
9. $(3, 8), (7, 3)$

10. $(1, 0), (-4, 2)$

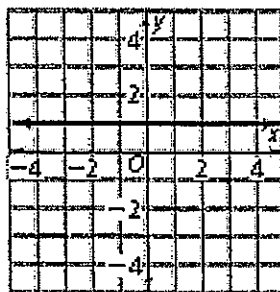
11. $(8, -4), (-6, -3)$

12. $(-2, -3), (6, 5)$

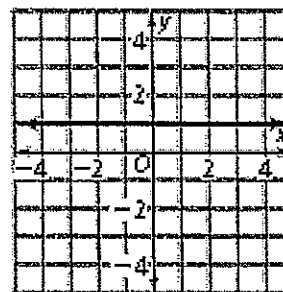
Find the slope of each line.



13.



14.



15.

5-1

Practice (continued)

Form G

Rate of Change and Slope

Without graphing, tell whether the slope of a line that models each situation is *positive*, *negative*, *zero*, or *undefined*. Then find the slope.

16. The cost of tickets to the amusement park is \$19.50 for 1 ticket and \$78 for 4 tickets.
17. The late fee is \$2 regardless of the number of days the movie is late.
18. On the trip, Jerry had his cruise control set at 60 mi/h for 4 hours.
19. The contract states that every day past the agreed upon completion date the project is not finished, the price is reduced by \$25.

State the independent variable and the dependent variable in each situation. Then find the rate of change for each situation.

20. Shelly delivered 12 newspapers after 20 minutes and 36 papers after 60 minutes.
21. Two pounds of apples cost \$3.98. Six pounds cost \$11.94.
22. An airplane ascended 3000 feet in 10 minutes and 4500 feet in 15 minutes.

Find the slope of the line that passes through each pair of points.

23. $(-5, 0), (-5, 5)$
24. $(-2, -4), (-1.5, -1.5)$
25. $(4.75, -3.575), (2.25, 1.425)$
26. $(-\frac{1}{4}, \frac{3}{4}), (\frac{1}{2}, -\frac{3}{4})$
27. $(\frac{2}{9}, \frac{3}{7}), (\frac{1}{9}, \frac{4}{7})$
28. $(-3.35, 6.5), (5.65, -3.5)$

29. **Writing** Explain why the slope of a horizontal line is always zero.
30. **Writing** Describe how to draw a line that passes through the origin and has a slope of $\frac{2}{3}$.

Each pair of points lies on a line with the given slope. Find x or y .

31. $(7, 4), (3, y)$; slope = $\frac{1}{4}$
32. $(5, y), (6, 4)$; slope = 0
33. $(x, 5), (-3, 6)$; slope = -1
34. $(-12, 9), (x, -2)$; slope = $-\frac{1}{2}$

5-3 Practice

Form G

Slope-Intercept Form

Find the slope and y -intercept of the graph of each equation.

1. $y = 3x - 5$

2. $y = -5x + 13$

3. $y = -x - 1$

4. $y = -11x + 6$

5. $y = -5$

6. $y = \frac{1}{2}x + 5$

7. $y = -6.75x + 8.54$

8. $y = -\frac{2}{3}x - \frac{1}{9}$

9. $y = 2.25$

Write an equation of a line with the given slope m and y -intercept b .

10. $m = -1, b = 3$

11. $m = 4, b = -2$

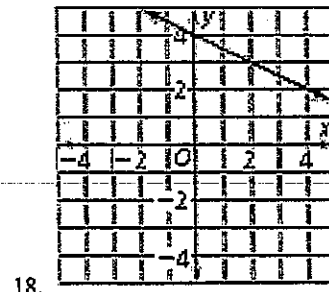
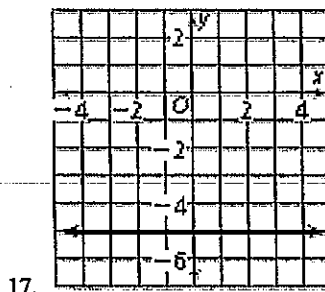
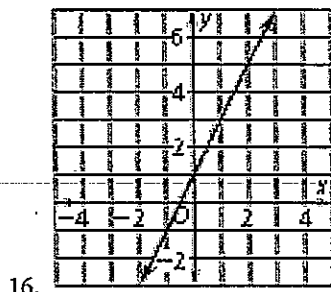
12. $m = -5, b = -8$

13. $m = 0.25, b = 6$

14. $m = 0, b = -11$

15. $m = 1, b = \frac{3}{8}$

Write an equation in slope-intercept form of each line.



Write an equation in slope-intercept form of the line that passes through the given points.

19. $(3, 5)$ and $(0, 4)$

20. $(2, 6)$ and $(-4, -2)$

21. $(-1, 3)$ and $(-3, 1)$

22. $(-7, 5)$ and $(3, 0)$

23. $(10, 2)$ and $(-2, -2)$

24. $(0, -1)$ and $(5, 6)$

25. $(3, 2)$ and $(-1, 6)$

26. $(-4, -3)$ and $(3, 4)$

27. $(2, 8)$ and $(-3, 6)$

5-3 Practice (continued)
Slope-Intercept Form

Form G

Graph each equation.

28. $y = x + 3$

29. $y = 4x - 1$

30. $y = -x + 6$

31. $y = 3x - 2$

32. $y = -5x + 1$

33. $y = -7x - 4$

34. Hudson is already 40 miles away from home on his drive back to college. He is driving 65 mi/h. Write an equation that models the total distance d travelled after h hours. What is the graph of the equation?

35. When Phil started his new job, he owed the company \$65 for his uniforms. He is earning \$13 per hour. The cost of his uniforms is withheld from his earnings. Write an equation that models the total money he has m after h hours of work. What is the graph of the equation?

Find the slope and the y -intercept of the graph of each equation.

36. $y + 4 = -6x$

37. $y + \frac{1}{2}x = -4$

38. $3y - 12x + 6 = 0$

39. $y - 5 = \frac{1}{3}(x - 9)$

40. $y - \frac{2}{5}x = 0$

41. $2y + 6a - 4x = 0$

Name: _____

$y = mx + b$

Extra Practice: Slope-Intercept Form

Put each in slope-intercept form.

1.) $-4x + y = 9$

2.) $11 + y = 7x$

3.) $5y = 3x + 30$

4.) $16 - 2y = 8x$

5.) $3 = y + 4x$

6.) $y + \frac{3}{5}x = 9$

Extra Practice: Slope-Intercept Form

7.) $4y + 12x = -36$

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

9.) $6y + 24 - 5x = 0$

10.) $2y + 7x = 16 + 7x$

11.) $y - \frac{7}{5}x = 8$

12.) $\frac{1}{3}y = 4x - 5$

Write the equation of the line in slope-intercept form using the given slope and y-intercept

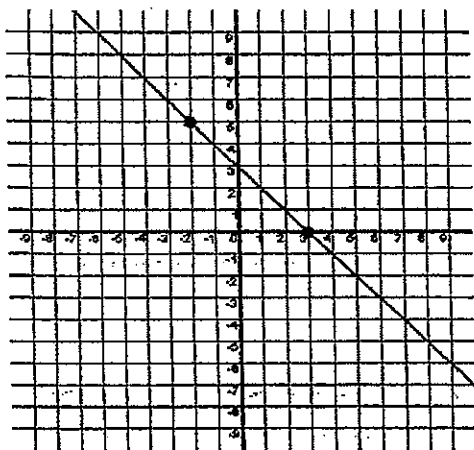
1.) $\frac{2}{3}$; (0,8)

2.) -6; (0, -5)

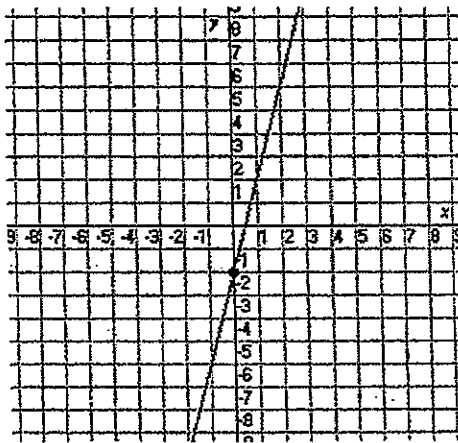
3.) $-\frac{1}{3}$ $(0, \frac{7}{4})$

Write the equation of the given line in slope-intercept form.

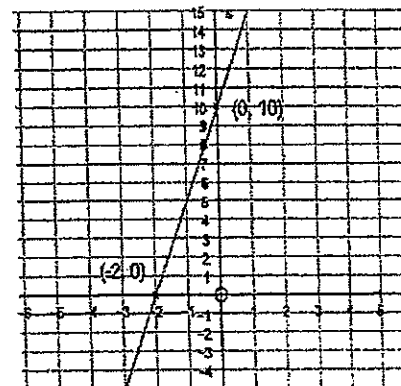
4.)



5.)



6.)



Write the equation of the line in slope-intercept form given the slope and a point on the line.

7.) $m = 5$; (7, -3)

8.) $m = -\frac{4}{7}$; (14, 0)

9.) $m = \frac{1}{8}$; (-10, 5)

Write the equation of the line going through the two given points.

1.) $(18, -5)$ $(10, -9)$

2.) $(1, -3)$ $(3, 1)$

3.) $(-4, 3)$ $(-1, 6)$

4.) $(5, 6)$ $(12, 6)$

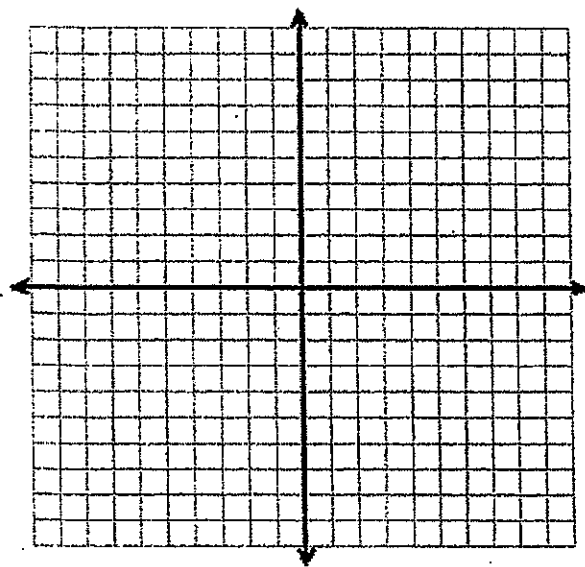
5.) $(-10, -4)$ $(5, 2)$

6.) $(0, 5)$ $(7, 2)$

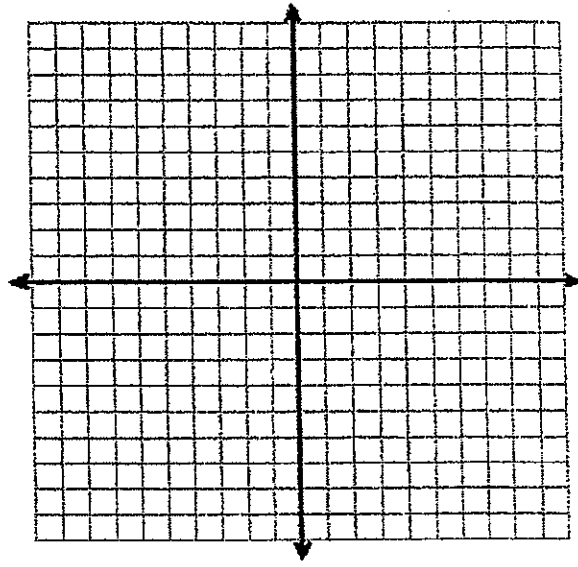
GRAPH Both on Same plane
Each graph must have at least 3 points

Worksheet # 9

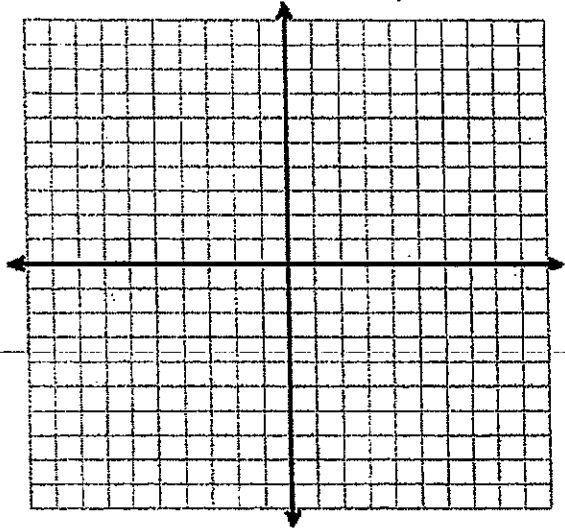
1.) (A) $y = -\frac{2}{5}x - 9$ (B) $x = 7$



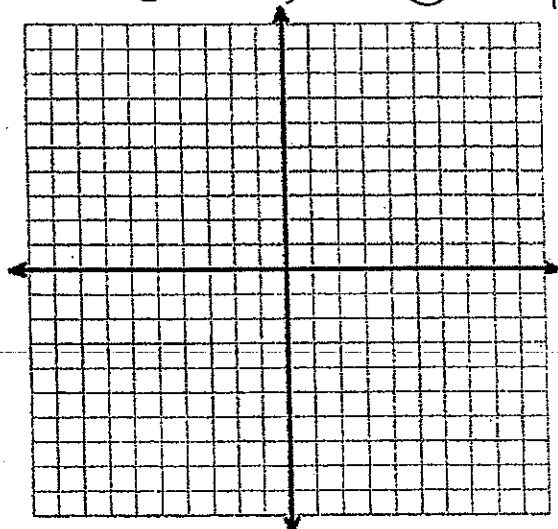
2.) (A) $y = \frac{3}{7}x + 2$ (B) $y = -3$



3.) (A) $y = 8x + 8$ (B) $y = x$



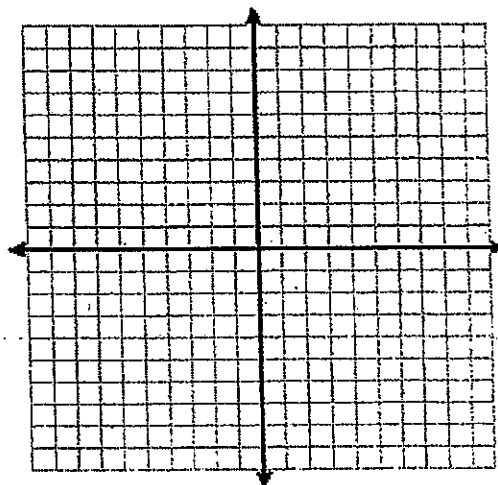
4.) (A) $y = -\frac{4}{9}x$ (B) $y = -\frac{4}{9}x + 5$



For # 5 and 6. Put each in to Slope Intercept Form. Then graph on same coordinate plane.

5.) $\frac{1}{4}x - y = 6$

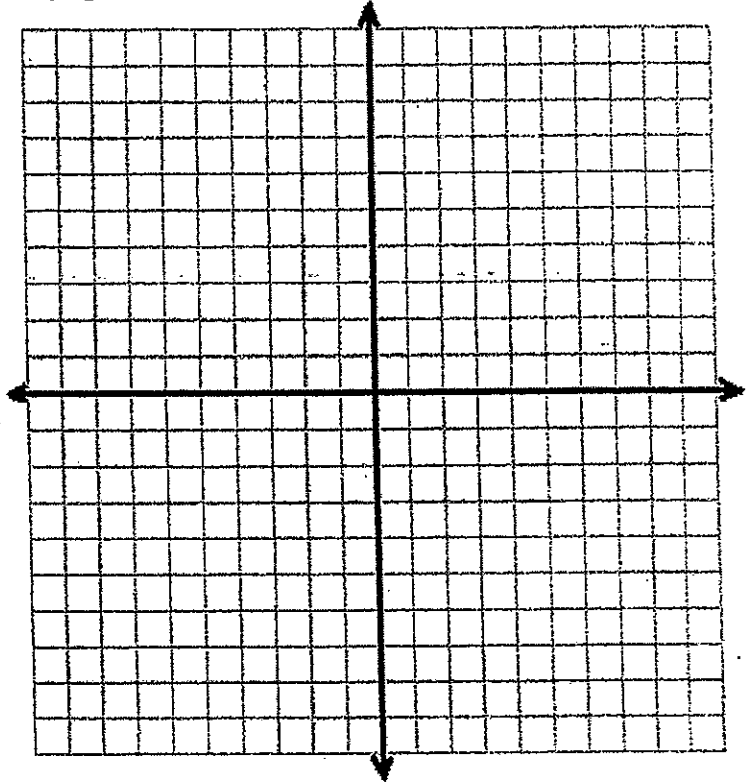
6.) $\frac{1}{9}y = \frac{1}{4}x - 6$



MUST HAVE 3 POINTS PLOTTED FOR EACH.

Put each equation into slope-intercept form. Then graph.

1.) $y - \frac{3}{4}x = 2$

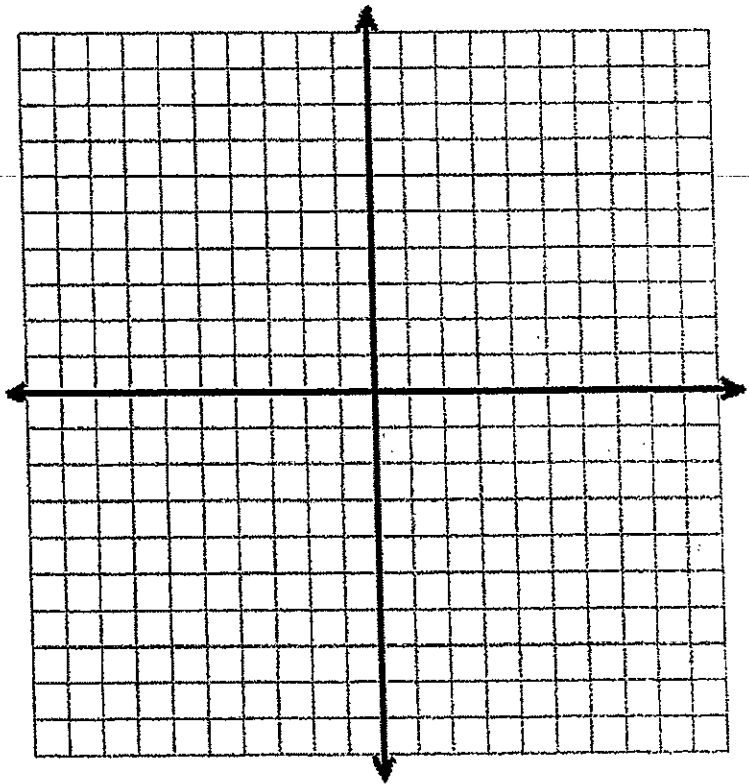


Slope-Int Form: _____

2.) $10 - y = 7x$

Slope-Int Form: _____

3.) $-8 + y = -5x$



Slope-Int Form: _____

4.) $6y = -42 + 5x$

Slope-Int Form: _____

⊥ Negative Reciprocal (opposite) $-\frac{3}{4} \perp \frac{4}{3}$

WS 11

Find a line that is parallel and a line that is perpendicular to each given line.

1.) $y + 3 = \frac{5}{12}x$

2.) $6x + 7y = 30$

Equation Parallel: _____

Equation Parallel: _____

Equation Perpendicular: _____

Equation Perpendicular: _____

3.) Find the line that is parallel to $y = -4x + 1$ and goes through the point $(-6, 17)$

4.) Find the line that is perpendicular to $y = -4x + 1$ and goes through the point $(12, -5)$

5-5 Practice

Standard Form

Form G

Find the x - and y -intercepts of the graph of each equation.

1. $x + y = 7$

2. $x - 3y = 9$

3. $2x + 3y = -6$

4. $-4x - 2y = -8$

5. $5x - 4y = -12$

6. $-2x + 7y = 11$

Draw a line with the given intercepts.

7. x -intercept: 4
 y -intercept: 5

8. x -intercept: -3
 y -intercept: 1

9. x -intercept: -6
 y -intercept: -8

Graph each equation using x - and y -intercepts.

10. $-5x + y = -10$

11. $-3x - 6y = 12$

12. $4x - 12y = -24$

For each equation, tell whether its graph is a *horizontal* or a *vertical* line.

13. $y = -2$

14. $x = 0$

15. $y = -0.25$

16. $x = \frac{3}{5}$

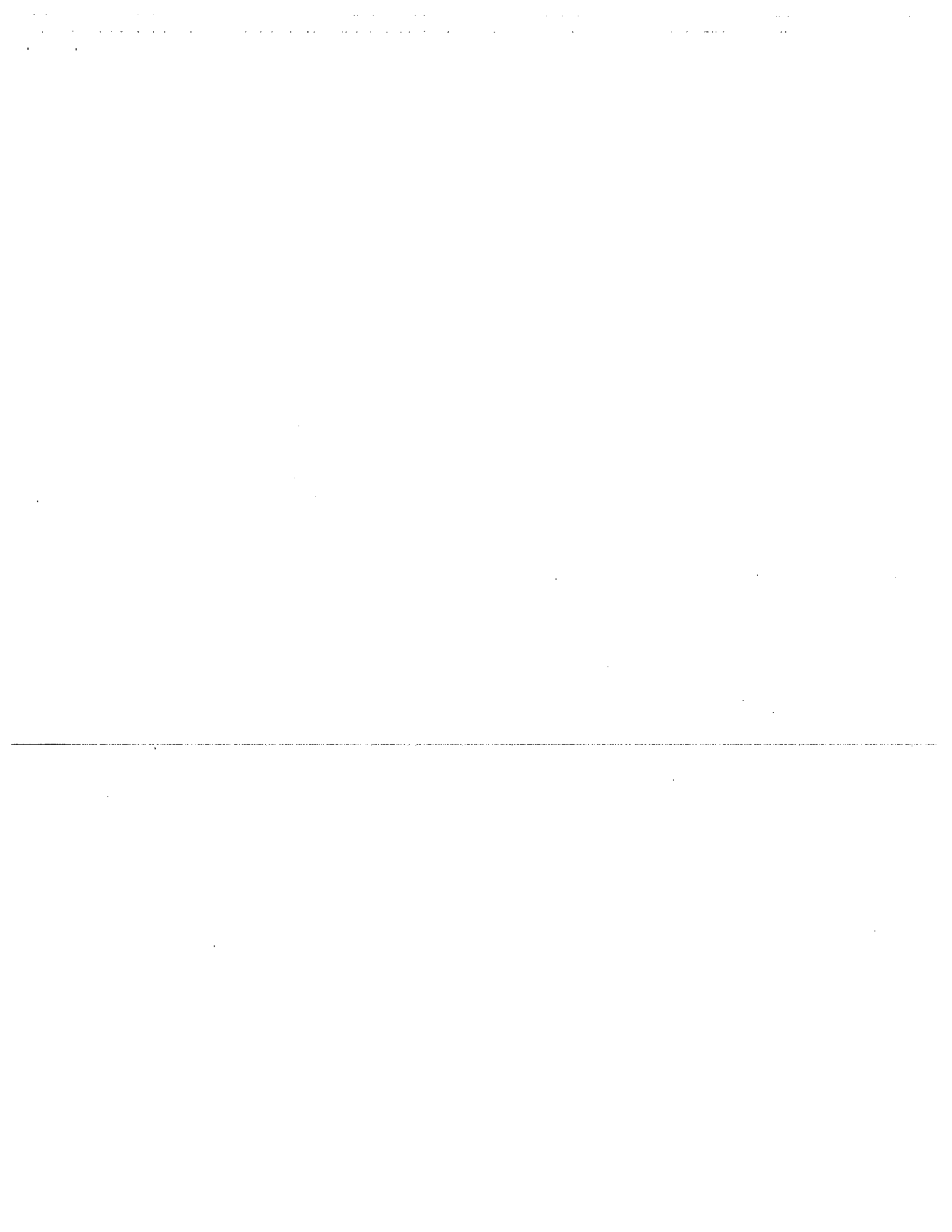
Graph each equation.

17. $y = 6$

18. $x = -2$

19. $y = -7$

20. $x = 3$



5-5 Practice (continued)
Standard Form

Form G

Write each equation in standard form using integers.

21. $y = x - 4$

22. $y - 4 = 5(x - 8)$

23. $y + 6 = -3(x + 1)$

24. $y = -\frac{3}{5}x + 2$

25. $y = \frac{1}{2}x - 10$

26. $y - 3 = \frac{7}{9}(x + 4)$

27. You have only nickels and dimes in your piggy bank. When you ran the coins through a change counter, it indicated you have 595 cents. Write and graph an equation that represents this situation. What are three combinations of nickels and dimes you could have?

For each graph, find the x - and y -intercepts. Then write an equation in standard form using integers.

28.

29.

Find the x - and y -intercepts of the line that passes through the given points.

30. $(4, -2), (5, -4)$

31. $(1, 1), (-5, 7)$

32. $(-3, 2), (-4, 10)$



PUT EACH EQUATION INTO STANDARD FORM: $Ax + By = C$

1.) $16 + 3y = 5x$

2.) $\frac{1}{3}x + 4y = 11$

3.) $1.3x + 2.45y = 7$

4.) $8y = -4(x + 4)$

5.) $y = \frac{2}{3}x + 5$

6.) $3.5y = 0.12 + 4x$

7.) $-\frac{1}{6}x - \frac{5}{9}y = 10$

8.) $8y = \frac{3}{8} - \frac{5}{12}x$

9.) $.5x + \frac{2}{7}y = 15$

Write each in **Standard Form**, then find the x and y intercepts.

1.) $3y - 5x = 45$

2.)

$20 + 4y = \frac{2}{7}x$

3.)

$y = \frac{2}{3}x + 7$

x-int: _____ y-int: _____ x-int: _____ y-int: _____ x-int: _____ y-int: _____

4.) $5.2x + 3.5y = 18.2$

5.)

$\frac{1}{4}y - \frac{3}{5}x = 10$

6.)

$4.8x = 1.2y - 9.6$

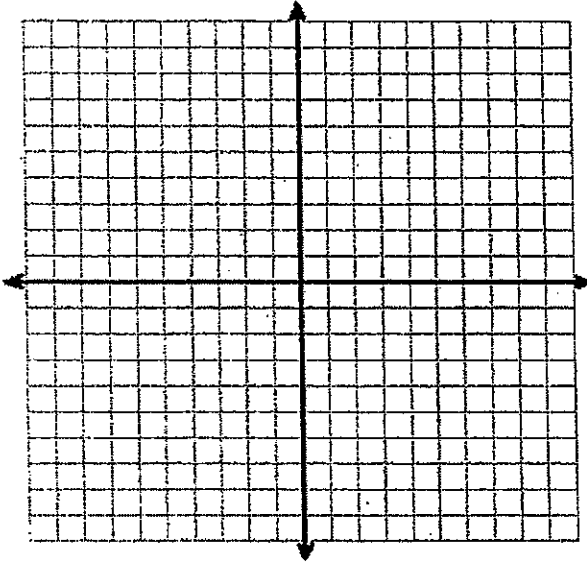
x-int: _____ y-int: _____ x-int: _____ y-int: _____ x-int: _____ y-int: _____

Graph each line using the x and y intercepts

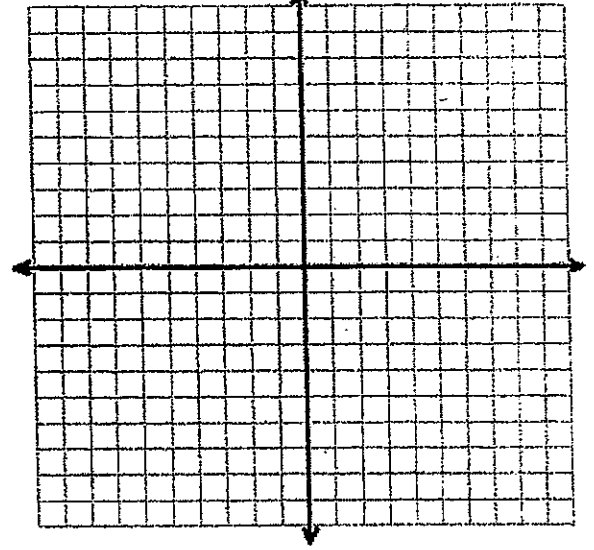
1.) $5x + 2y = 20$

2.) $-4x + 4y = -32$

x - int: _____ y - int: _____



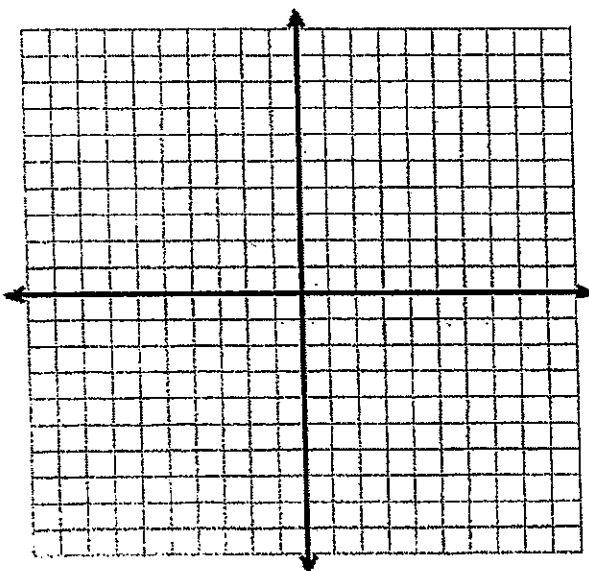
x - int: _____ y - int: _____



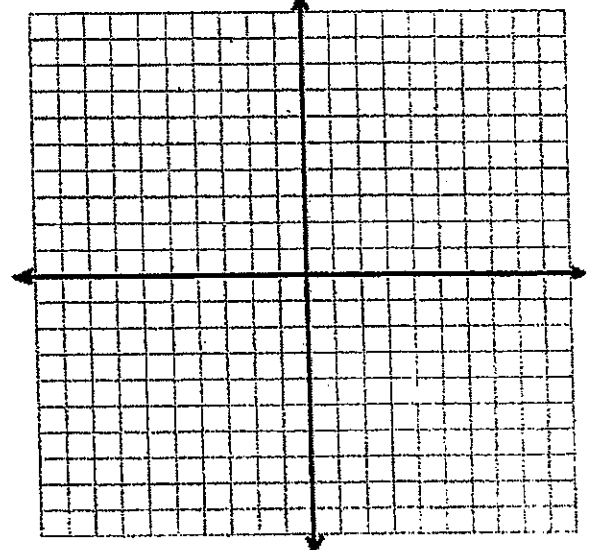
3.) $3y - 4x = 24$

4.) $2x - y = 8$

x - int: _____ y - int: _____



x - int: _____ y - int: _____



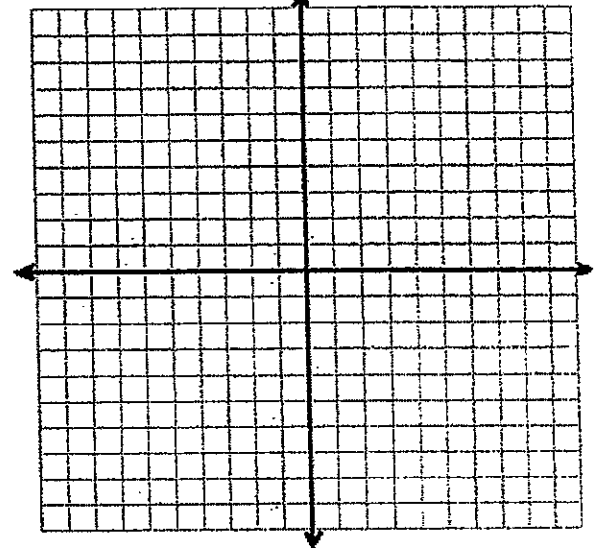
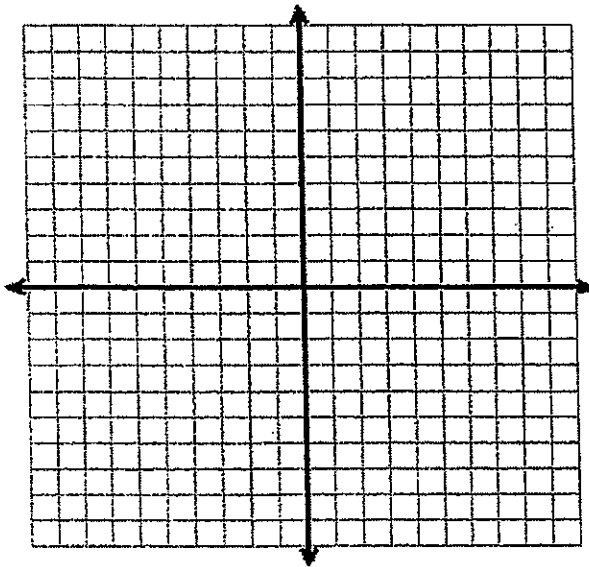
Graph each line using the x and y intercepts. PUT INTO STANDARD FORM FIRST

1.) $7x = 28 - 4y$

2.) $\frac{2}{3}x + \frac{1}{2}y = 4$

x - int: _____ y - int: _____

x - int: _____ y - int: _____

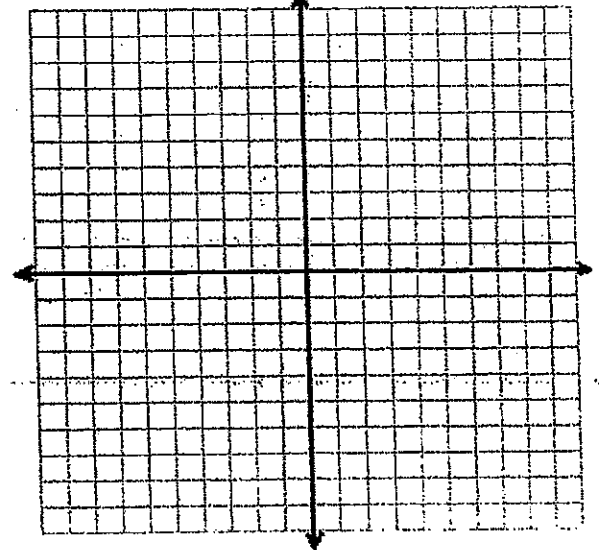
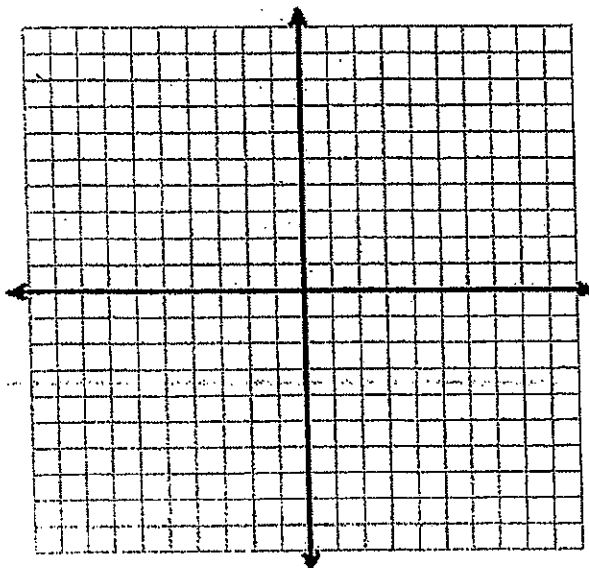


3.) $3y = 6(x + 4)$

4.) $1.2x + .6y = 6$

x - int: _____ y - int: _____

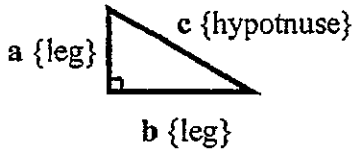
x - int: _____ y - int: _____



Pythagorean Theorem

WS 14

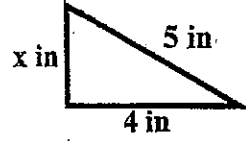
Pythagorean Theorem only applies to right triangles.



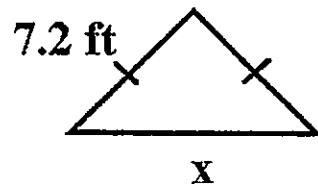
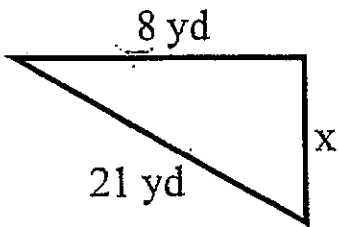
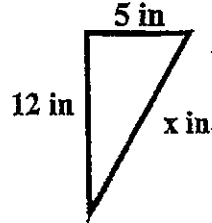
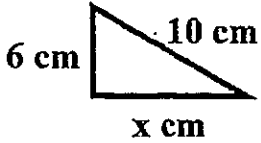
$$\{\text{leg}\}^2 + \{\text{leg}\}^2 = \{\text{hypotnuse}\}^2$$

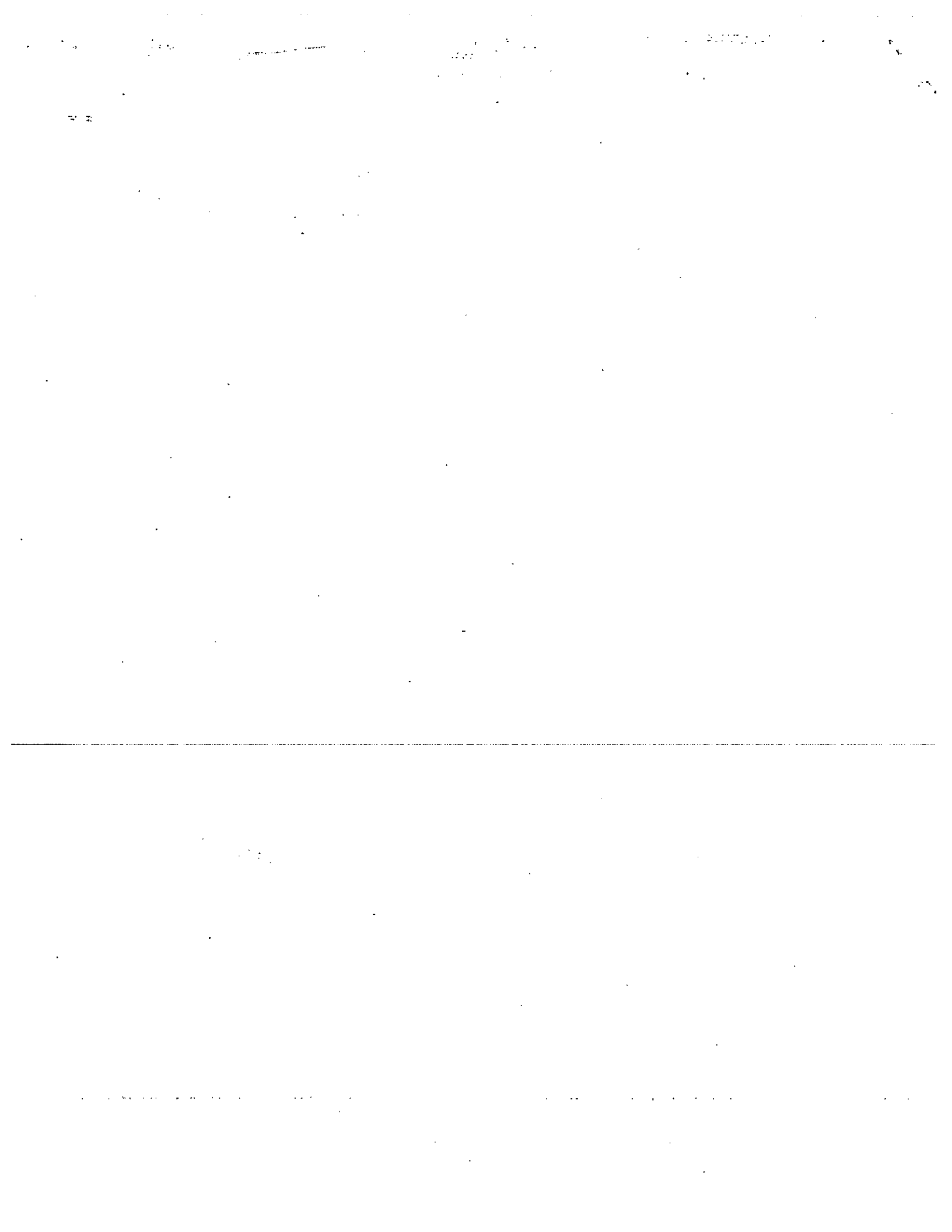
$$a^2 + b^2 = c^2$$

Example



$$\begin{aligned} 3^2 + x^2 &= 5^2 \\ 9 + x^2 &= 25 \\ \sqrt{x^2} &= \sqrt{16} \\ x &= 4 \end{aligned}$$





5-6 Practice

Parallel and Perpendicular Lines

Form G

Write an equation of the line that passes through the given point and is parallel to the graph of the given equation.

1. $(3, 2); y = 3x - 2$

2. $(-4, -1); y = 2x + 14$

3. $(-8, 6); y = -\frac{1}{4}x + 5$

4. $(6, 2); y = \frac{2}{3}x + 19$

5. $(10, -5); y = \frac{3}{2}x - 7$

6. $(-3, 4); y = 2$

Determine whether the graphs of the given equations are *parallel*, *perpendicular*, or *neither*. Explain.

7. $y = 4x + 5$

$-4x + y = -13$

8. $y = \frac{7}{9}x - 7$

$y = -\frac{7}{9}x + 3$

9. $y = \frac{7}{8}$

$x = -4$

10. $y = -6x - 8$

$-x + 6y = 12$

11. $3x + 6y = 12$

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

12. $y = 4x + 12$

$x + 4y = 32$

Determine whether each statement is *always*, *sometimes*, or *never* true. Explain.

13. Two lines with different slopes are perpendicular.

14. The slopes of vertical lines and horizontal lines are negative reciprocals.

15. A vertical line is perpendicular to the x -axis.

5-6**Practice** (continued)

Form G

Parallel and Perpendicular Lines

Write an equation of the line that passes through the given point and is perpendicular to the graph of the given equation.

16. $(2, -1); y = -2x + 1$

17. $(5, 7); y = \frac{1}{3}x + 2$

18. $(3, -6); x + y = -4$

19. $(-9, 3); 3x + y = 5$

20. $(-8, 3); y + 4 = -\frac{2}{3}(x - 2)$

21. $(0, -5); x - 6y = -2$

22. **Open-Ended** Write the equations of three lines whose graphs are parallel to one another.

23. **Open-Ended** Write the equations of two lines whose graphs are perpendicular to one another.

24. What is the slope of a line that is parallel to the x -axis?

25. What is the slope of a line that is perpendicular to the x -axis?

26. What is the slope of a line that is parallel to the y -axis?

27. What is the slope of a line that is perpendicular to the y -axis?

28. On a map, Sandusky St. passes through coordinates $(2, -1)$ and $(4, 8)$. Pennsylvania Ave. intersects Sandusky St. and passes through coordinates $(1, 3)$ and $(6, 2)$. Are these streets perpendicular? Explain.

29. **Writing** Explain how you can determine if the graphs of two lines are parallel or perpendicular without graphing the lines.