

Introduction to Linear Regression

Name _____ Pd. _____

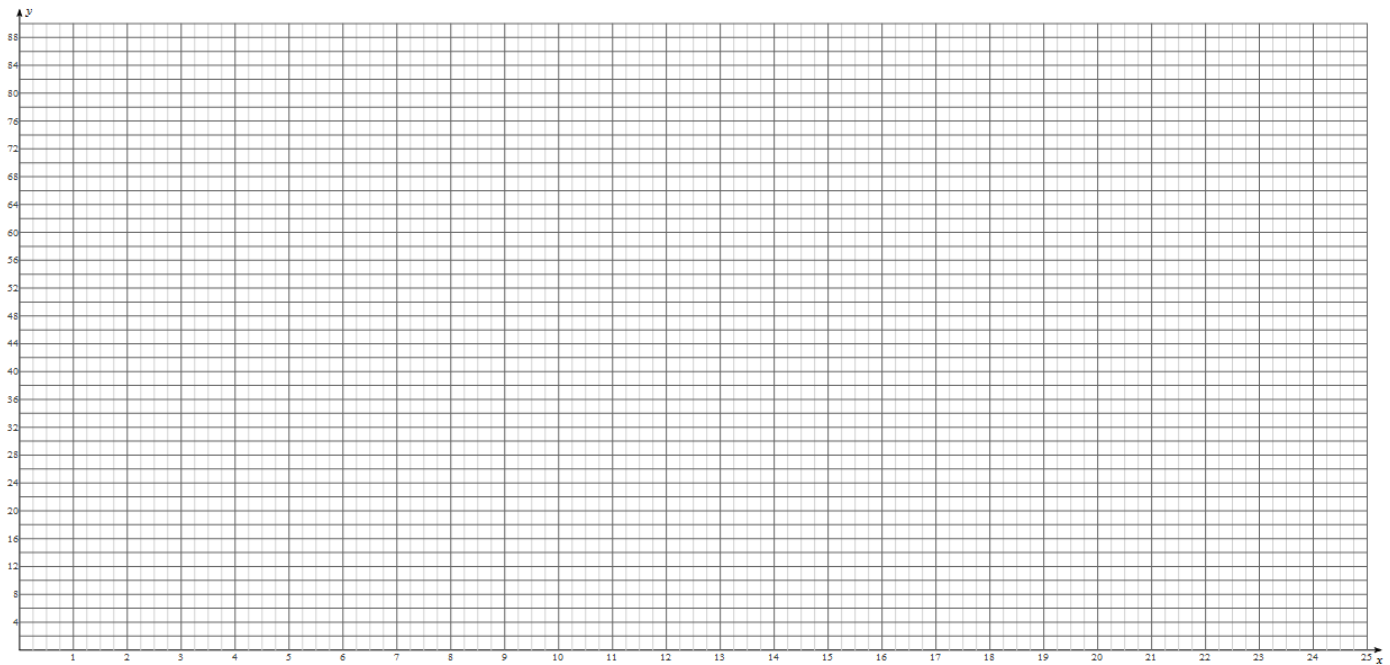
Algebra I – Mr. Allen-Black

A pediatrician took a random sampling of 7 of her patients in order to analyze their ages and heights. The ages and heights are listed below:

Age	Height
7 yrs.	45"
15 yrs.	62"
10 yrs.	55"
2 yrs.	36"
18 yrs.	72"
13 yrs.	63"
8 yrs.	44"

1) Which variable in this situation is the independent variable?

2) Which variable is the dependent variable?



3) On the grid above, label each axis clearly and graph each data point.

4) Draw a “line of best fit” for the data you plotted. Give the best estimate possible for the equation of the line in slope-intercept form. (We will be looking at other types of functions to model data, but today we are going to focus on linear models.)

5) Based on your line, how tall would you expect a 5 year old child to be? Explain how you used either your graph or your equation to answer this question.

6) Based on your line, how tall would you expect a newborn baby to be? Explain how you used either your graph or your equation to answer this question.

7) Based on your line, how tall would you expect a 23 year old to be? Do you think that the linear model is a good predictor of height?

Skill Review

Date _____ Period _____

Solve each equation.

8) $1 + 10x = -49$

9) $2 = \frac{v-6}{5}$

10) $n - 5 = n - 2 - 3$

11) $6x + x + 16 = 4 + 8x + 3x$

Write an inequality that represents each phrase.

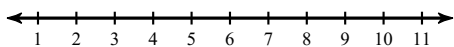
12) Mrs. Gulamali's classroom holds at most 35 students.

Write a compound inequality that represents each phrase.

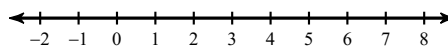
13) The circumference of a women's basketball must be between 28.5 inches and 29 inches.

Solve each inequality and graph its solution.

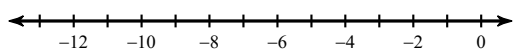
14) $-2n + 6 < n - 3$



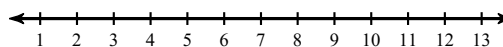
15) $-2(x - 2) < -2 + x$

**Solve each compound inequality and graph its solution.**

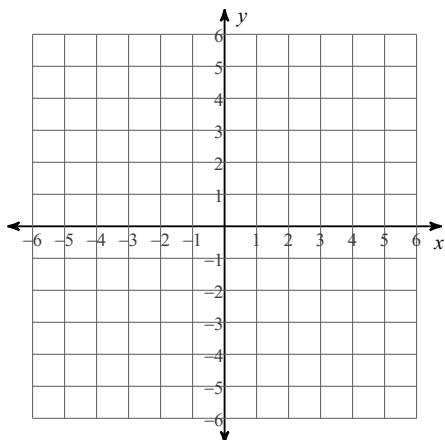
16) $8v < -80$ or $v - 2 \geq -6$



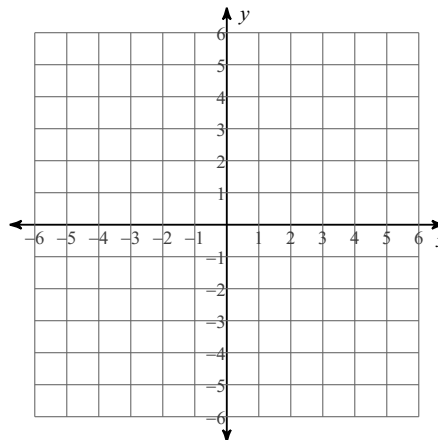
17) $10 + b > 17$ and $\frac{b}{5} \leq 2$

**Sketch the graph of each line.**

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



19) $2x - 3y = 9$



Write the slope-intercept form of the equation of the line described.

20) through: $(-5, 3)$, parallel to $y = -2x$

21) through: $(1, 5)$, perp. to $y = -\frac{1}{2}x - 2$

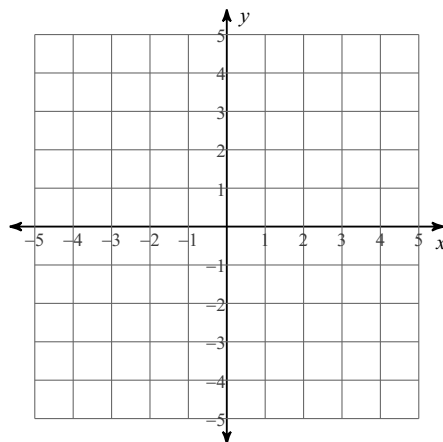
Write the slope-intercept form of the equation of the line through the given points.

22) through: $(-3, 5)$ and $(-4, -2)$

Solve each system by graphing.

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

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



Solve each system by substitution.

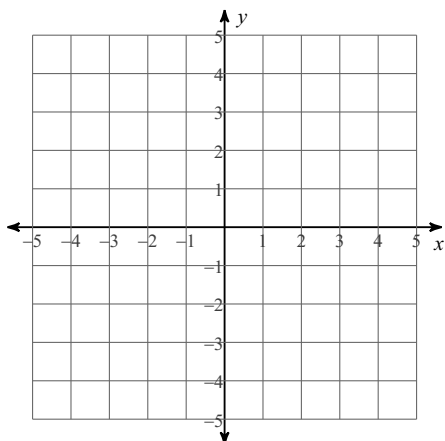
24) $y = 2x + 13$
 $2x + 3y = 7$

Solve each system by elimination.

25) $-9x - 4y = 15$
 $3x + 2y = -3$

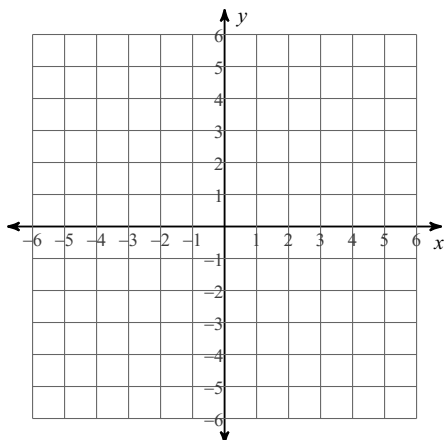
Sketch the solution to each system of inequalities.

26) $2x - y > -3$
 $4x + y > -3$

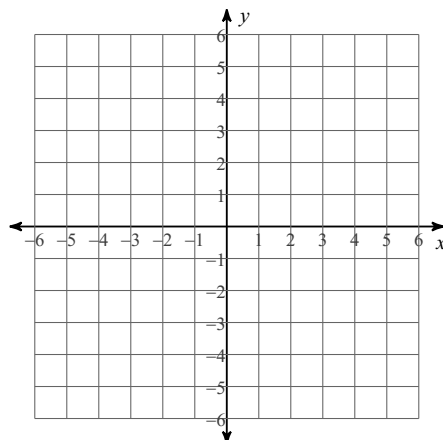


Graph each quadratic function.

27) $y = -(x - 2)^2 + 1$



28) $y = 3(x - 2)^2 - 6$



Convert the quadratic function to Standard Form.

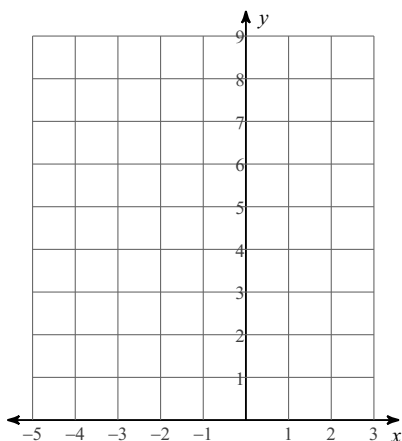
29) $y = 3(x + 2)^2 - 5$

Find the vertex of each parabola, and then write the equation in vertex form.

30) $y = 2x^2 + 8x + 7$

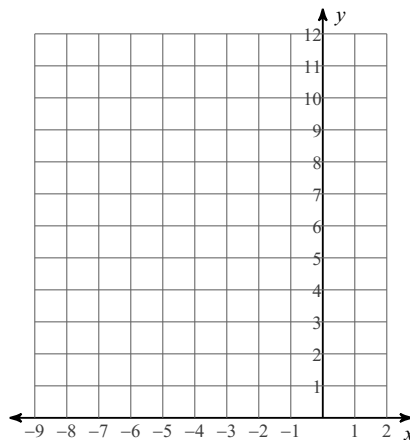
Sketch the graph of each function.

31) $y = x^2 + 6x + 13$



Sketch the graph of each function. Don't forget about the shading.

32) $y > 2(x + 4)^2 + 3$



Factor Completely

33) $x^2 - 8x + 15$

34) $2x^2 - x - 15$

Solve each equation by factoring.

35) $x^2 - 3x - 6 = 4$

36) $7x^2 - 19x - 10 = -4$

Solve each equation with the quadratic formula.

37) $10x^2 + 8x - 20 = 0$