

For #1-3, write the equation of the line described in both slope-intercept form and standard form with integer coefficients. Show all work/steps to justify your answers.

1. The slope of the line is $\frac{2}{3}$ and the y-intercept is $(0, 2)$.

$m = \frac{2}{3}$ $b = 2$

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

$3\left(-\frac{2}{3}x + y\right) = (2) \cdot 3$
 $-2x + 3y = 6$

Slope-Intercept: $y = \frac{2}{3}x + 2$

Standard: $-2x + 3y = 6$

2. The line passes through the points $(-3, 5)$ and $(1, 2)$.

$m = \frac{\Delta y}{\Delta x} = \frac{5-2}{-3-1} = \frac{3}{-4} = -\frac{3}{4}$

$y = -\frac{3}{4}x + \frac{11}{4}$

$y = mx + b$

$2 = -\frac{3}{4}(1) + b$

$\frac{8}{4} = -\frac{3}{4} + b$

$b = \frac{11}{4}$

$4\left(\frac{3}{4}x + y\right) = \left(\frac{11}{4}\right) \cdot 4$

$3x + 4y = 11$

Slope-Intercept: $y = -\frac{3}{4}x + \frac{11}{4}$

Standard: $3x + 4y = 11$

3. The line passes through $(6, 0)$ and is parallel to $-x + 2y = 2$. $\rightarrow 2y = x + 2$

Parallel \rightarrow Same slope

$m = \frac{1}{2}$ $(6, 0)$

$y = \frac{1}{2}x + (-3)$

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

$y = mx + b$

$0 = \frac{1}{2}(6) + b$

$0 = 3 + b$

$b = -3$

$2\left(-\frac{1}{2}x + y\right) = (-3) \cdot 2$

$-x + 2y = -6$

Slope-Intercept: $y = \frac{1}{2}x + (-3)$

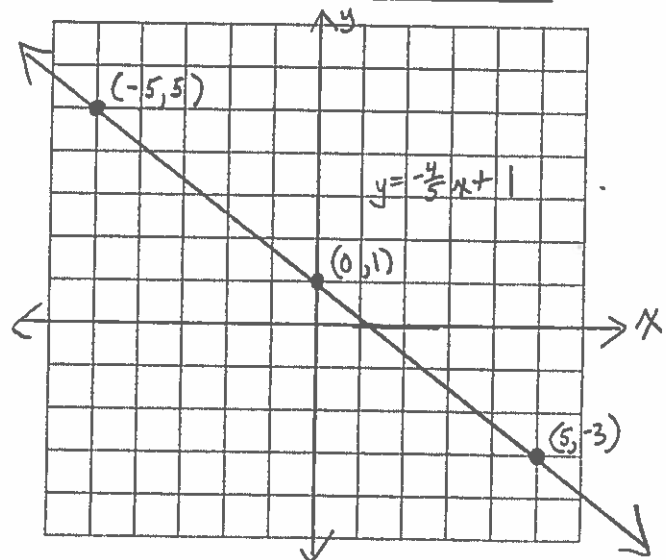
Standard: $-x + 2y = -6$

4. Sketch the graph of $y = -\frac{4}{5}x + 1$.

Completely label your graph.

$m = -\frac{4}{5}$

y-int: $(0, 1)$



5. Sketch the graph of the line that has a slope of 3 and passes through $(-3, -5)$. Write the equation of this line in slope-intercept form. Show all work and completely label your graph.

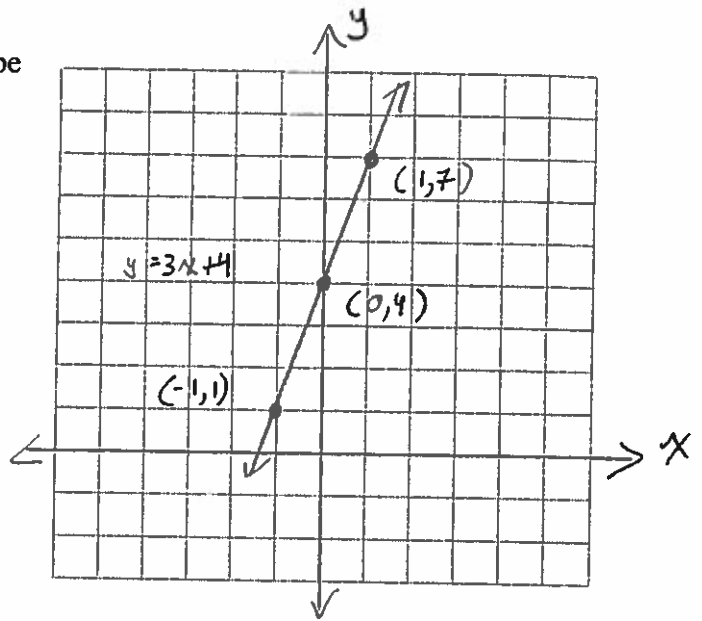
$$y = mx + b$$

$$y = 3x + 4$$

$$-5 = 3(-3) + b$$

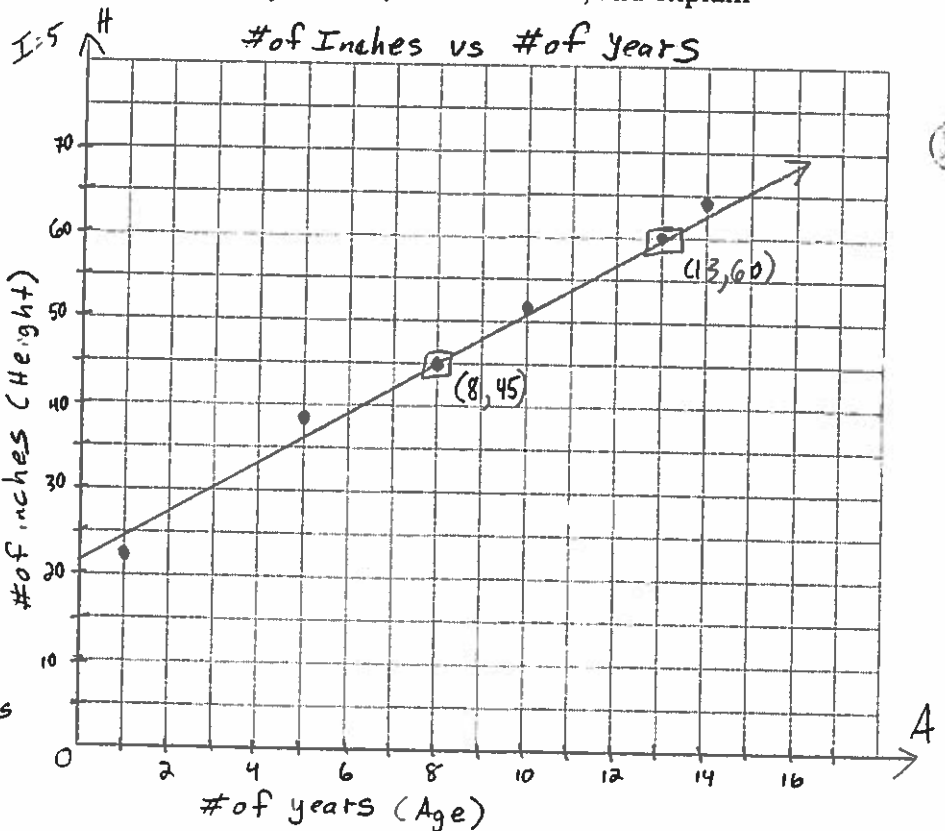
$$-5 = -9 + b$$

$$b = 4$$



- 6A. Construct a scatter plot of the data in the table. (USE TAILS!)
- 6B. Find a linear model that you think best represents the data. Make sure you draw this line on your graph. Identify the points you used, show all work, and explain your model.

A	H
Age In Years	Height In Inches
1	25
5	38
8	45
10	52
13	60
14	64



$A = \# \text{ of years } (A, H)$
 $H = \# \text{ of inches}$
 1 $(8, 45)$ $(13, 60)$
 $m = \frac{\Delta H}{\Delta A} = \frac{60 - 45}{13 - 8} = \frac{15}{5} = 3 \text{ inches per year}$

2 $y = mx + b$
 $45 = 3(8) + b$
 $45 = 24 + b$
 $b = 21$
 $H = 3A + 21$ where H is the height in inches when the boy is A years old.

- 6C. Use your model to predict the height of this boy at 18 years old.

$A = 18$ $H = 3A + 21$
 $H = 3(18) + 21$
 $H = 54 + 21$
 $H = 75 \text{ inches}$

The 18 year old boy would be about 75 inches tall. [6 ft 3 inches]