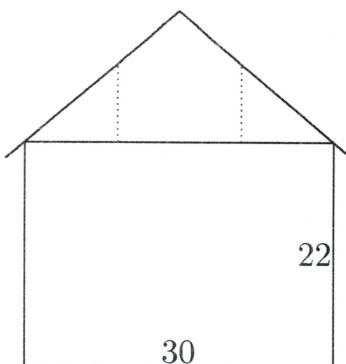


Name: _____

Date: _____

Homework sheet: Alg2H
Lines, slopes, and more: Intro 1

1. (Book1 152**) Palo Alto building code does not permit building a house that is more than 35 feet tall. An architect working on the design shown below would like the roof to be sloped so that it rises 10 inches for each foot of horizontal run.



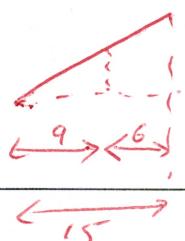
$$1 \text{ ft} = 12 \text{ inches}$$

- (a) Given the other dimensions in the diagram, will the builder be allowed to carry out this plan?

$$\left. \begin{array}{l} \text{Vertical height: } 15 \text{ ft} \\ \text{Horizontal run: } 9 \text{ ft} \end{array} \right\} \leftarrow = 15 \text{ ft} : 10 \frac{\text{in}}{\text{ft}} = 150 \text{ in} = 12.5 \text{ ft.} \\ = 12 \text{ ft } 6 \text{ in.}$$

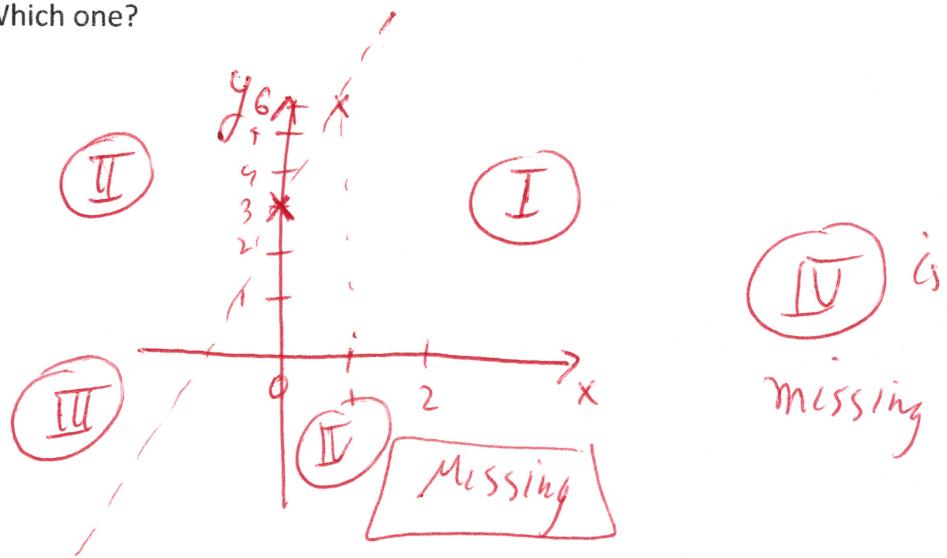
Total height: $22 \text{ ft} + 12.5 \text{ ft} = 34.5 \text{ ft}$
less than 35.

- (b) Two vertical supports (shown dotted in the diagram) are to be placed 6 feet from the center of the building. How long should they be?

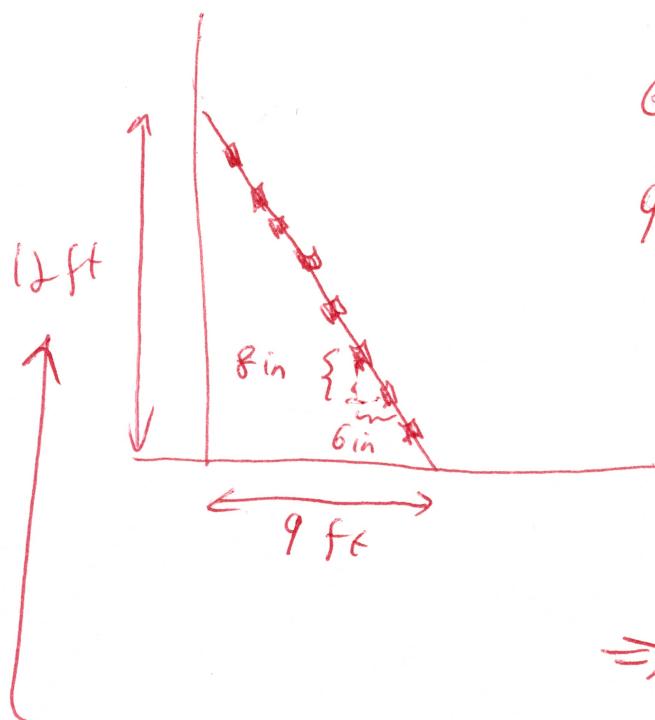


$$9 \text{ ft} : 10 \frac{\text{in}}{\text{ft}} = 90 \text{ inches} \\ = 7 \text{ ft } 6 \text{ inches} = 7.5 \text{ ft}$$

2. (Book 1 153**) The line through $(1, 6)$ and $(0, 3)$ passes through every quadrant except one. Which one?



3. (Book 1 159**) A ladder is leaning against the side of a building. Each time I step from one rung to the next, my foot moves 6 inches closer to the building and 8 inches further from the ground. The base of the ladder is 9 ft from the wall. How far up the wall does the ladder reach?



$$6 \text{ inch} \rightarrow 8 \text{ inch}$$

$$9 \text{ ft} \rightarrow ?$$

$$\frac{8}{6} = \frac{4}{3}$$

$$\frac{?}{9} = \frac{4}{3}$$

$$? = 9 \cdot \frac{4}{3} = 12$$

$$\frac{9 \text{ ft}}{6 \text{ in}} = \frac{9 \cdot 12}{6} = 18$$

$$\Rightarrow 8 \text{ in} \times 18 = 144 \text{ in} = \boxed{12 \text{ ft}}$$

4. (Book 1 155**) Suppose that n represents an integer. What expression represents the next larger integer? the previous integer? the sum of these three consecutive integers?

n integer

$n+1$ next integer

$n-1$ previous integer

$$(n-1) + n + (n+1) = \boxed{3n} \leftarrow \text{sum of three}$$

5. (Book 1 164**) Solve the following for x :

$$(a) \frac{x}{2} + \frac{x}{5} = 6$$

$$\frac{5x + 2x}{10} = 6 \quad 5x + 2x = 60 \quad x = \frac{60}{7} = \boxed{8\frac{4}{7}}$$

check.

$$(b) \frac{x}{3} + \frac{x+1}{6} = 4$$

$$\frac{2x + x+1}{6} = 4 \quad 3x + 1 = 24 \quad x = \frac{23}{3} = \boxed{7\frac{2}{3}}$$

check

$$(c) \frac{x}{5} - \frac{x+2}{10} = 1$$

$$\frac{2x - (x+2)}{10} = 1 \quad x - 2 = 10 \quad \boxed{x = 12}$$

check.