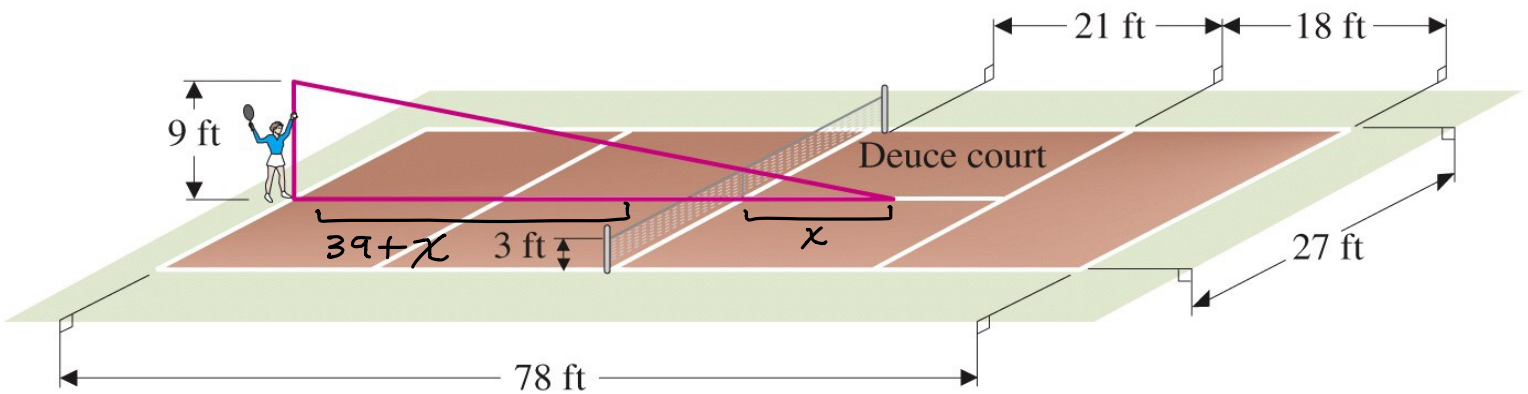


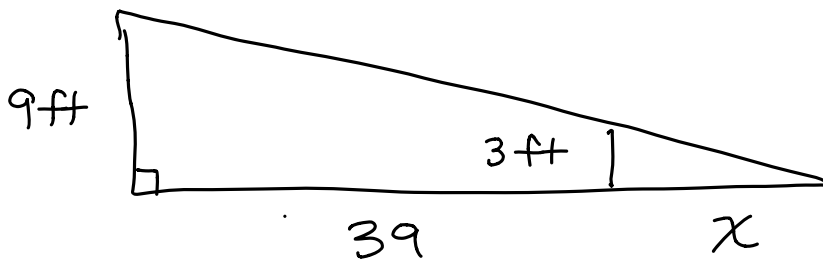
Station 2 Worksheet

Name: KEY

1. A ball is served from the center of the baseline into the deuce court. If the ball is hit 9 ft above the ground and travels in a straight line down the middle of the court, and the net is 3 ft. high, how far from the base of the net will the ball land if it just clears the top of the net? (See the figure below.) Assume all figures are exact and compute the answer to one decimal place.

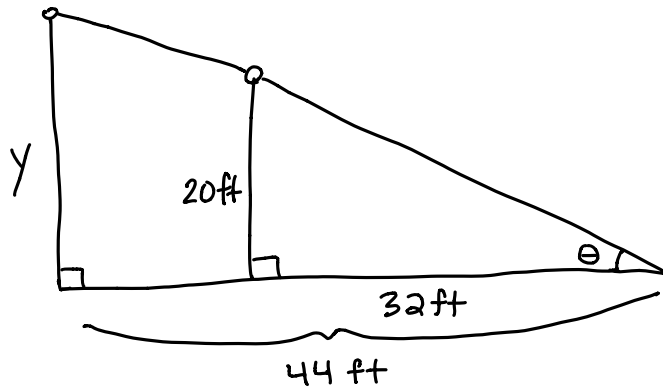


Exercise 1.2.27
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$$\begin{aligned} \frac{9}{3} &= \frac{39+x}{x} \Rightarrow 9x = 3(39+x) \\ &\Rightarrow 9x = 117 + 3x \\ &\Rightarrow 6x = 117 \\ &\Rightarrow \boxed{x = 19.5 \text{ ft}} \end{aligned}$$

2. A flag pole that is 20 ft high casts a 32 ft shadow. At the same time, a second flagpole casts a 44 ft. shadow. How tall is the second flagpole?

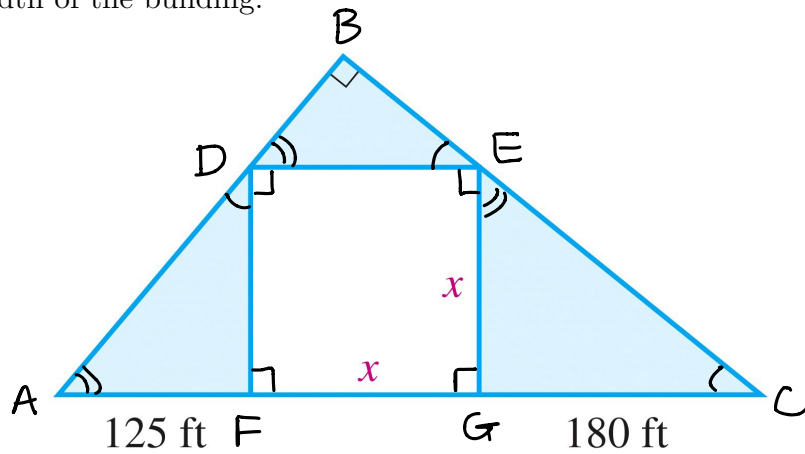


$$\frac{y}{20} = \frac{44}{32} \Rightarrow 32y = (20)(44)$$

$$\Rightarrow 32y = 880$$

$$\Rightarrow \boxed{y = 27.5 \text{ ft}}$$

3. A contractor wants to build a square building on a triangular lot (see the figure below). Find the width of the building.



Exercise 1.2.39
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$$\triangle ADF \sim \triangle ECG$$

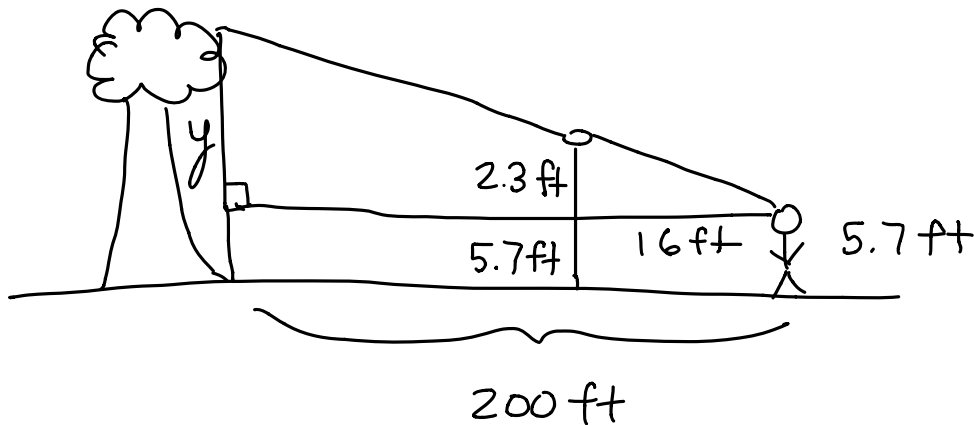
$$\Rightarrow \frac{\overline{DF}}{\overline{CG}} = \frac{\overline{AF}}{\overline{EG}}$$

$$\Rightarrow \frac{x}{125} = \frac{180}{x}$$

$$\Rightarrow x^2 = 22,500$$

$$\Rightarrow \boxed{x = 150 \text{ ft}}$$

4. A surveyor's assistant positions an 8 ft vertical pole so that the top of the pole and the top of a distant tree are aligned in the surveyor's line of sight. The surveyor's eye level is 5.7 ft above the ground, the distance between the surveyor and the pole is 16 ft, and the distance between the surveyor and the tree is 200 ft. How tall is the tree?



$$\frac{y}{2.3} = \frac{200}{16} \Rightarrow 16y = (2.3)(200)$$

$$\Rightarrow 16y = 460$$

$$\Rightarrow y = 28.75$$

$$\text{tree height: } 28.75 + 5.7 = \boxed{34.45 \text{ ft}}$$