Jeannie is practicing on the basketball goal outside her house. She thinks that the goal seems lower than the 10 ft. goal she plays on in the gym. She wonders how far the goal is from the ground. Jeannie can not reach the goal to measure the distance to the ground, but she remembers something from math class that may help. First, she needs to estimate the distance from the bottom of the goal post to the top of the backboard. To do this, Jeannie measures the length of the shadow cast by the goal post and backboard. She then stands a yardstick on the ground so that it is perpendicular to the ground, and measures the length of the shadow cast by the yardstick. Here are Jeannie’s measurements:

Length of shadow cast by goal post and backboard: 5 ft. 9 in.

Length of yardstick’s shadow: 1 ft. 6 in.

Draw and label a picture to illustrate Jeannie’s experiment. Using her measurements, determine the height from the bottom of the goal post to the top of the backboard.

If the goal is approximately 24 inches from the top of the backboard, how does the height of the basketball goal outside Jeannie’s house compare to the one in the gym? Justify your answer.