

**7-4****Real-Life Career Activity****Builder**

Builders construct office buildings and houses by following a *blueprint*. The blueprint is a detailed scale drawing usually made by an architect or draftsman. The architect scales the drawing of the house to reduce the size to fit on blueprint paper, and labels the scale. The builder uses the scale to calculate the actual size of the house.

Suppose a builder has a blueprint with a scale of 1 inch:4 feet. On the blueprint, the house is 20 inches long. How long will the house be when it is built?

The builder first converts the scale to the same unit. 4 feet is the same as 48 inches. So the scale is 1 inch:48 inches. To find the length of the house, the builder multiplies the distance on the blueprint by 48.

$$20 \text{ inches} \times 48 = 960 \text{ inches}$$

Then the builder changes the result to feet by dividing by 12.

$$960 \text{ inches} \div 12 = 80 \text{ feet}$$

The house is 80 feet long.

**Solve.**

1. A builder has a blueprint with a scale of 1 inch:4 feet. On the blueprint, the house is 30 inches long. Find the actual length of the house.
2. A builder has a blueprint with a scale of 1 inch:3 feet. On the blueprint, the house is 30 inches wide. Find the actual width of the house.
3. A builder has a blueprint with a scale of 1 inch:4 feet. The ceiling of the living room is 8 feet above the floor. What is the measurement of the ceiling on the blueprint?

