Example: Using Similar Triangles to Find Shadow Lengths

Problem:

A 6 foot tall man is standing close to a 200 foot building. If the man casts a shadow of 8.5 feet, how long will the shadow of the building be?

Solution:

Because the sun is shining at the same angle on both the man and the building, it creates similar triangles. This means we can use the ratios of corresponding sides to solve for the building's shadow. The ratio of the building to the man is equal to the ratio of the building's shadow to the man's shadow.

Using the information given, 200 divided by 6 equals x divided by 8.5.

Cross multiply to get 8.5 times 200 equals 6x.

Solve this equation. 1700 equals 6x, which means that 283.33 equals x.

The building will cast a shadow 283.33 feet long.