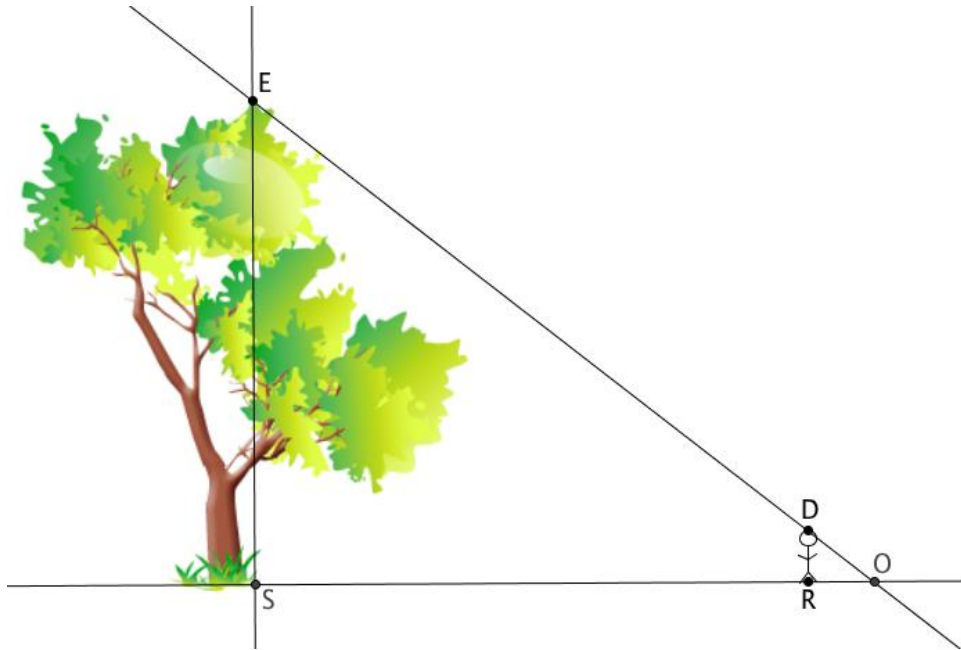


## Problem Set

1. The world's tallest living tree is a redwood in California. It's about 370 feet tall. In a local park, there is a very tall tree. You want to find out if the tree in the local park is anywhere near the height of the famous redwood.



- Describe the triangles in the diagram, and explain how you know they are similar or not.
  - Assume  $\triangle ESO \sim \triangle DRO$ . A friend stands in the shadow of the tree. He is exactly 5.5 feet tall and casts a shadow of 12 feet. Is there enough information to determine the height of the tree? If so, determine the height. If not, state what additional information is needed.
  - Your friend stands exactly 477 feet from the base of the tree. Given this new information, determine about how many feet taller the world's tallest tree is compared to the one in the local park.
  - Assume that your friend stands in the shadow of the world's tallest redwood, and the length of his shadow is just 8 feet long. How long is the shadow cast by the tree?
2. A reasonable skateboard ramp makes a  $25^\circ$  angle with the ground. A two-foot-tall ramp requires about 4.3 feet of wood along the base and about 4.7 feet of wood from the ground to the top of the two-foot height to make the ramp.
- Sketch a diagram to represent the situation.
  - Your friend is a daredevil and has decided to build a ramp that is 5 feet tall. What length of wood is needed to make the base of the ramp? Explain your answer using properties of similar triangles.
  - What length of wood is required to go from the ground to the top of the 5-foot height to make the ramp? Explain your answer using properties of similar triangles.