

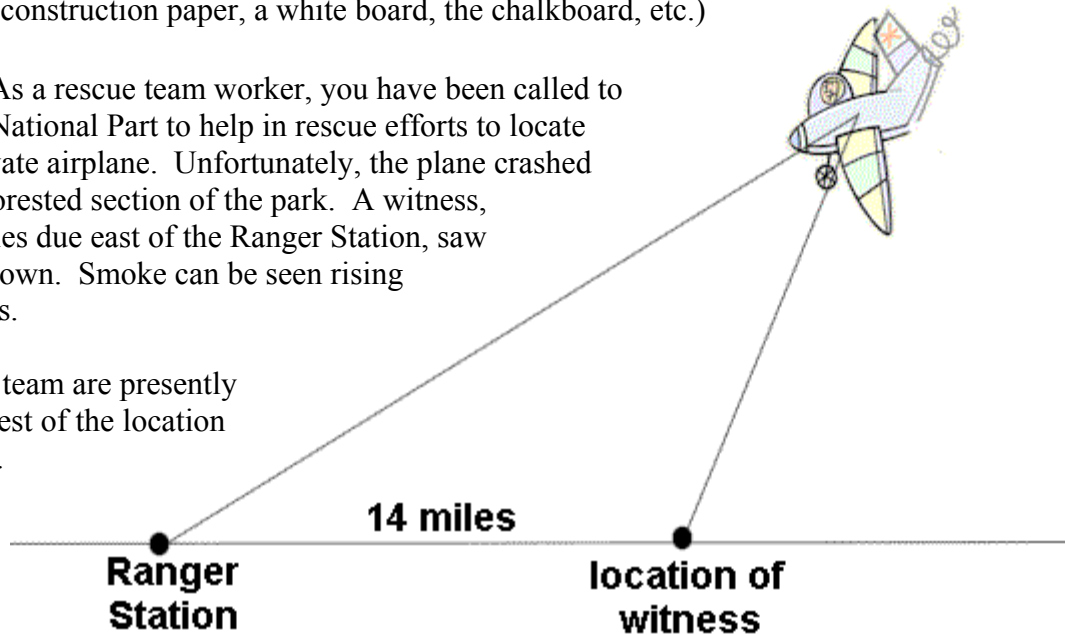
# Lab: Working on a Rescue Team

Using Law of Sines and Law of Cosines

**Materials:** Masking tape, protractor, calculator, string, a large flat surface upon which to work (a large piece of construction paper, a white board, the chalkboard, etc.)

**Scenario:** As a rescue team worker, you have been called to Yellowstone National Park to help in rescue efforts to locate a downed private airplane. Unfortunately, the plane crashed in a densely forested section of the park. A witness, located 14 miles due east of the Ranger Station, saw the plane go down. Smoke can be seen rising above the trees.

You and your team are presently 8 miles due west of the location of the witness.



**This diagram depicts the scene with the plane ON THE GROUND and its location in relation to the Ranger Station and the witness.**

## Directions:

1. Using string and tape, set up an oblique triangle depicting the situation shown above. The downed airplane is northeast of the location of the witness. Tape the string to your surface at each end. Your string should be longer than the actual sides of your triangle. Keep the tape outside of the triangle.
2. Label the Park Ranger Station as S, the location of the witness as W, and the downed plane as P.
3. Forest Rangers at the station and at the witness location have devices to determine angle readings. These readings are radioed to your rescue team. Use your protractor to simulate the taking of these readings. Determine the number of degrees in angles S and W. Since you do not know the location of the plane, you cannot physically measure angle P. How do you determine the size of angle P?
4. Find the distance from the Ranger Station to the plane.
5. Find the distance from the location of the witness to the plane.
6. Label your position as R. Connect R to P. Find your direct distance to the plane.
7. Your rescue team begins a direct trek toward the plane. After trekking for 4 miles, you are radioed by a helicopter that has arrived on the scene. The helicopter informs you that an impassable rock cavern is ahead on your current path. You are informed that you will need to travel one mile due east to avoid the cavern. After traveling one mile, you resume a direct path to the smoking plane. Considering the detour, how far did your rescue team travel to get to the plane?

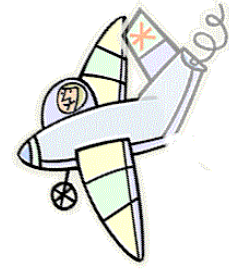
# Data collection sheet:

Name \_\_\_\_\_

Working on a Rescue Team Lab

$\angle S = \underline{\hspace{2cm}}^\circ$  and  $\angle W = \underline{\hspace{2cm}}^\circ$

$\angle P = \underline{\hspace{2cm}}^\circ$



How did you determine the size of  $\angle P$ ?

\_\_\_\_\_

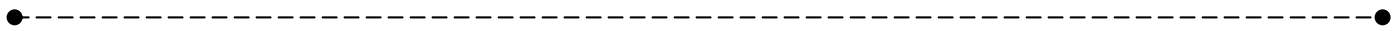
\_\_\_\_\_

Distance from the Ranger Station to the plane \_\_\_\_\_

Distance from the witness to the plane \_\_\_\_\_

Distance from R to the plane \_\_\_\_\_

How far did the rescue team actually travel to reach the plane? \_\_\_\_\_



Organize your calculations below: