

Task

Similar Triangles to Measure Heights

“Field Trip”

The group will be using what they have learned about similar triangles (using proportions) to determine the height of various “Falcon Landmarks”. Students have learned how to solve for missing side(s) given 2 similar triangles. Students discovered that the angle of approach is congruent to the angle of departure by reflecting a laser light into a mirror, tracing its path on paper and measuring the angles.

The group will be assigned 1 or 2 landmarks. They will be provided a mirror, laser and tape measure. Using the notes to record the measurements and diagram, show equations and work, and provide the height of the landmark. The group must take 2 measurements of each landmark. Use 2 different group members looking into the mirror using the laser. The distance from the mirror to the landmark must be different for each measurement (this will be explained before the “field trip”).

Identify the group members assigned to specific tasks:

Mirror person #1 _____ Height to his/her eyes: _____ inches

Mirror person #2 _____ Height to his/her eyes: _____ inches

Data recorder: _____

Measurement manager: _____

Place the mirror on the floor some distance from the “base” of the landmark—measure the distance to the “crosshairs”. The mirror person must move away from the mirror until he/she sees the landmark on the crosshairs of the mirror—measure the distance from the crosshairs to the person’s feet directly below his/her eyes.

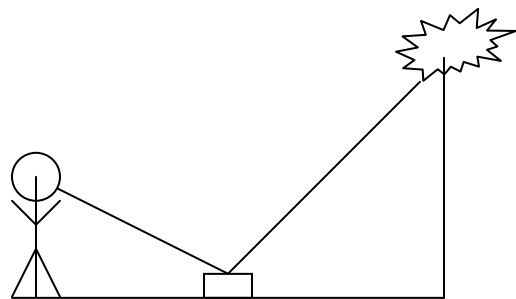
Repeat this process with the other mirror person and the mirror at another location on the floor. The students will do the calculations back in the classroom so make sure they record the measurements neatly and accurately!!

Using the diagram below label the measurements and show the proportions that allow the student to determine the missing height.

E - Height of Eyes

P - Distance from person to crosshairs

M - Distance from base of landmark to crosshairs



Falcon Landmarks

1. Small Café: Find the height to the top of the “class of the year-2000” banner
2. Large Café: Find the height to the top of 1 of the “1st class pillars” such as CARING
3. Mobiles: Height of roof from sidewalk between the mobile suites.
4. Gym: Find the height of a basketball rim (this should be easy to verify!)
5. Neibch’s Gym: Find the height to the bottom of the DVC logo.
6. Athletic Hallway outside of Contest Gym: Find the height to the tip of the Falcon’s beak.
7. Front Circle: Height of the “EXIT” sign.
8. Contest Gym: Find the height to the top of the American flag.

Rubric: Grades for this task will be based on students adhering to the directions, finding reasonable measurements, diagrams, calculations and final answer.

	0	1	2	3
Following Directions				
Measurements				
Diagrams				
Calculations				
Final Solutions				