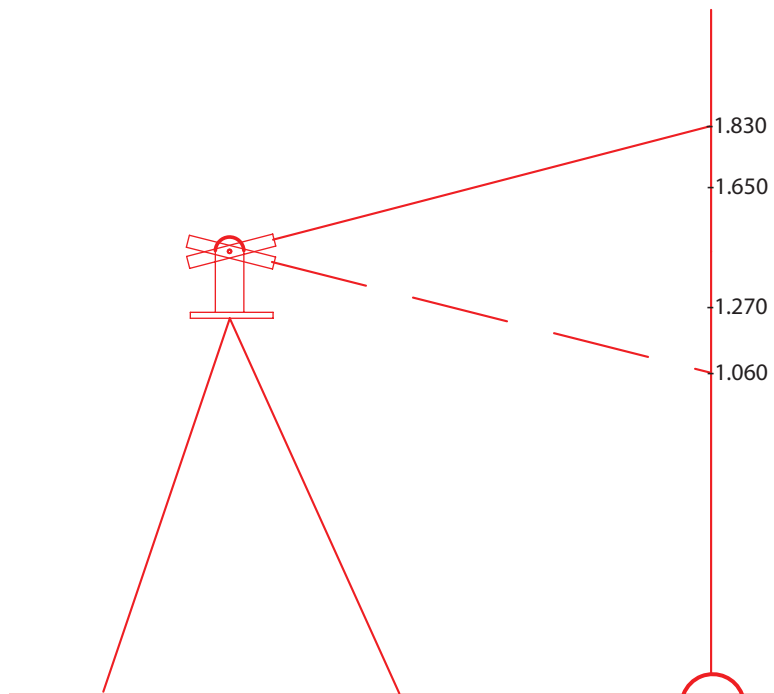


Problem
148

by Dave Lindell, L.S.

Nick sets up his one-second instrument to start some trigonometric leveling. He measures one direct and one reverse zenith distance to four points on the backsight rod, as shown in the table below. What is the elevation of the trunnion axis of the instrument if the bench mark elevation is 381.353 meters?

ROD READING	DIRECT	REVERSE
1.830 meters	87°24'00"	272°35'46"
1.650 meters	88°36'42"	271°23'04"
1.270 meters	91°10'22"	268°49'24"
1.060 meters	92°35'12"	267°24'34"



Problem
149

by Benjamin Bloch, Ph.D.

Given: Triangles ABC and AFG are both equilateral. $AB = BD = a$. AP is perpendicular to BC. Angles are shown for this symmetric diagram.

- Find all sides in terms of a
- Find the value of all areas in terms of a
- Which is larger, the area of the square or the total area of the remaining triangles when the square is removed? Answer the question by calculating the approximate ratio of the area of the shaded square to the area formed by the large equilateral triangle minus the square.

