$$\frac{PN}{AP}, \quad \frac{AN}{AP}, \quad \text{and} \quad \frac{PN}{AN}.$$

(Most accurate results will be obtained by taking P at some distance from A, and measuring in millimetres.)

8. Take P in other line, at different distance from A, make similar construction, measure sides of APN, and again find, to two decimal places, the values of the above ratios for 47°.

9. Calling the side opposite 47° the perpendicular, the side opposite the right angle the hypotenuse, and the remaining side the base, whether it be on the upper or lower line, are the above ratios, *i.e.*,

$$\frac{\text{perp.}}{\text{hyp.}}, \quad \frac{\text{base}}{\text{hyp.}} \quad \text{and} \quad \frac{\text{perp.}}{\text{base}},$$

always the same for 47°, or do they depend on where the point P is taken?

10. With the explanation in the preceding question, find the values of these same ratios

$$\frac{\text{perp.}}{\text{hyp.}}, \quad \frac{\text{base}}{\text{hyp.}} \quad \text{and} \quad \frac{\text{perp.}}{\text{base}},$$

for an angle of 63°, to two decimal places.

11. It is required to find the distance of a point C from an object B on the other side of a chasm. For this purpose a line CA is run at right angles to BC. AC is found to be 278 feet, and the angle to A to be 47°. What is the distance of B from C?

12. In the preceding question, if AC be 344 feet, and the angle at A be 63°, what is the distance of B from C? Find also the length of AB.

13. To find how far a distant object C is from A, a base line AB is measured of 400 ft. and the angles at A and B are found to be 75° and 80°. Then on paper a line DE of length 3 in. is drawn, and angles EDF, DEF are constructed of 75° and 80°, respectively,—and FD is measured in inches and fractions of an inch. What, approximately, is the length of CA?

14. If, in the preceding question, AB be 250 feet, and the angles at A and B be 65° and 77°, respectively, by constructing a similar triangle on paper and measuring the sides, determine approximately the distances AC and BC.