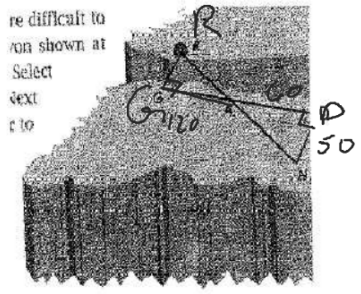
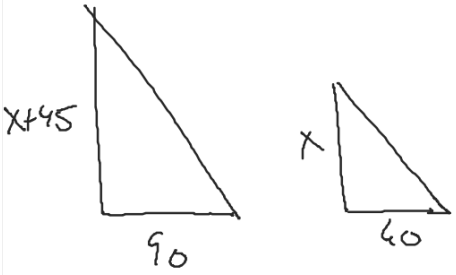
Similar triangles can also be used to find distances that are difficult to measure directly. Calculate the distance across the canyon shown at the right by sighting a rock on the opposite side at point R. Select points G and D so that GD is perpendicular to RG. Next measure a convenient distance ND (with ND perpendicular to DG), then locate point A, the intersection of RN and GD. Because

$\angle D \text{ and } \angle G \text{ are congruent and } \angle DAN \text{ and } \angle GAR \text{ are congruent, then } \Delta DAN \sim$

The distance across the canyon can be determined because the triangles are similar. If GA is 120 meters, DA is 60 meters, and ND is 50 meters, find GR, the distance across the canyon.



Calculate the distance across the river shown below by sighting a pole on the opposite bank at point C. Align points A and O on the near bank so that points C, A and O are on the same line. Next measure a convenient distance AB with AB perpendicular to AC, then locate points P by sighting the intersection of BC with OP. (OP is perpendicular to AC). You can calculate the distance across the river, OC, because $\Delta COP \sim \Delta CAB$. If AO is 45 meters, AB is 90 meters, and OP is 60 meters, find the distance across the river.



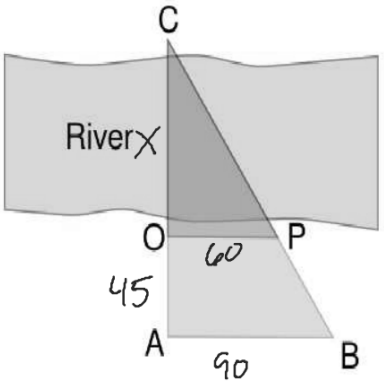
$$\frac{X}{X+45} = \frac{60}{90}$$

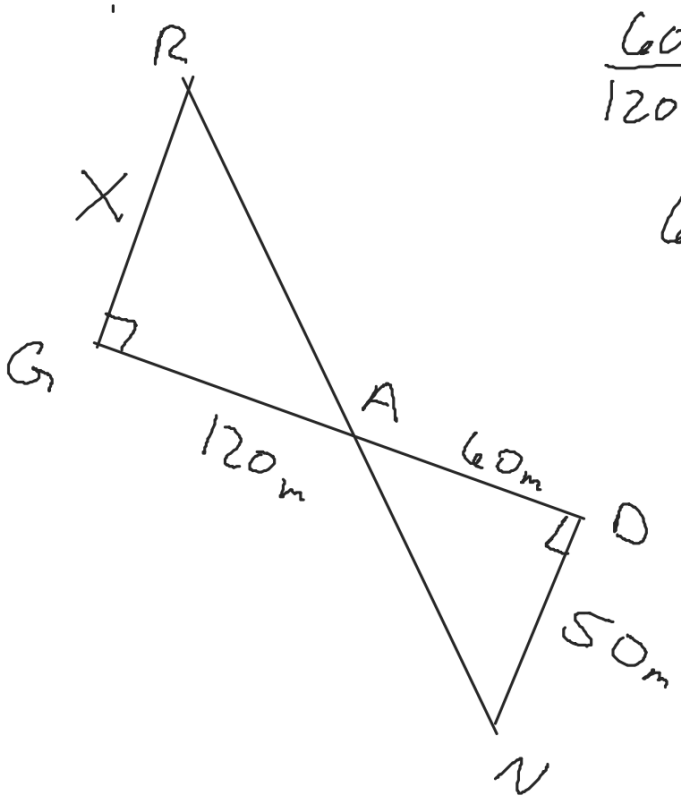
$$90x = 60(x+45)$$

$$90x = 60x + 2700$$

$$30x = 2700$$

$$x = 90$$





$$\frac{60}{120} = \frac{50}{x}$$

$$60x = 6000$$

$$x = 100$$