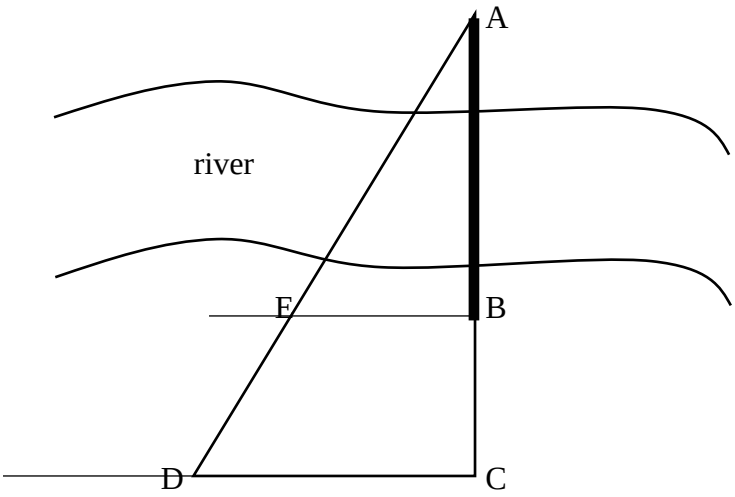
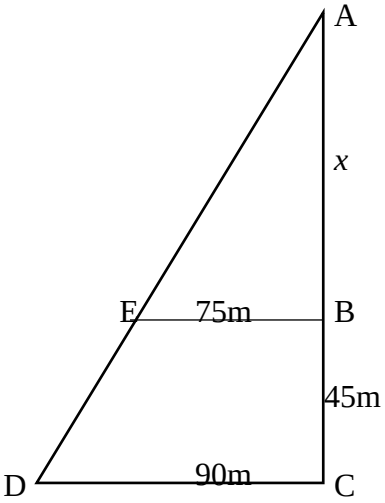
The diagram below shows tape-distance measurement of line AB hindered by a river. Construction and measurement of perpendicular lines EB and DC were made. DEA is a straight line. CD = 90m, EB = 75m, BC = 45m.



Compute the length of AB.



$$\frac{DC}{CA} = \frac{EB}{BA}$$

$$\frac{90}{45 + x} = \frac{75}{x}$$

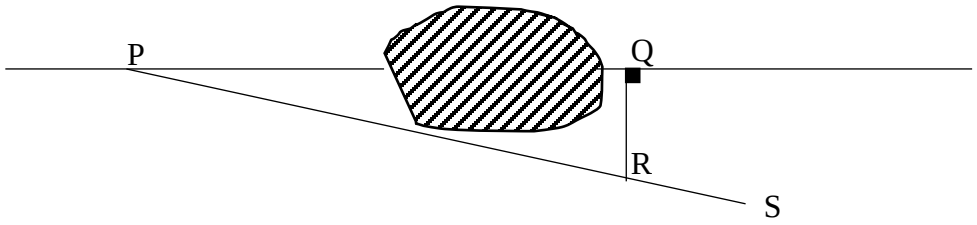
$$90x = 75(45 + x)$$

$$15x = 3375$$

$$x = 225\ m$$

■■■■

A lake made it difficult to measure the distance between points P and Q. To find the length of PQ a perpendicular is erected from Q on PQ to meet a line extended from P to S at point R.

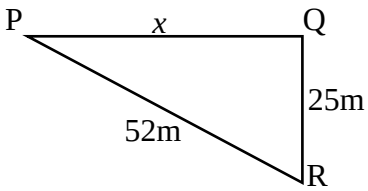


What is the length of PQ (to the nearest cm), if QR and PR were respectively, recorded as 25m and 52m?

$$PR^2 = QR^2 + PQ^2$$

$$52^2 = 25^2 + x^2$$

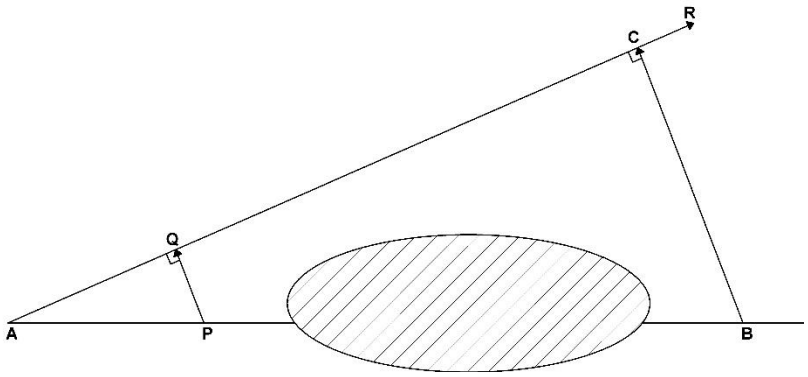
$$x = \sqrt{2704 - 625} = 45.596m$$



➔ PQ = 45m and 60cm

■■■■

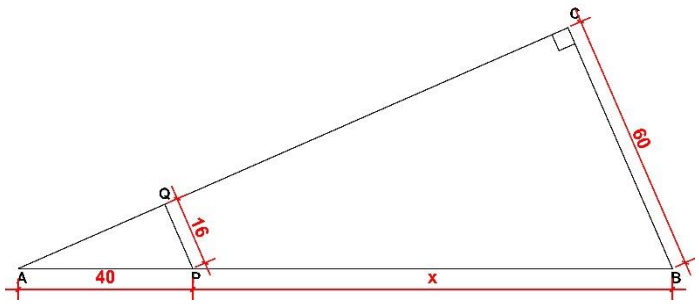
To measure the distance PB around the obstacle shown in figure the following constructions and measurements were carried out:



From A, a point on the extension of BP a line AR is constructed and perpendiculars from P and B are dropped on AR intersecting it at Q and C.

AP, PQ and BC were measured and recorded as: 40m, 16m and 60m respectively.

Compute the distance PB.



$$\frac{BC}{BA} = \frac{PQ}{PA}$$

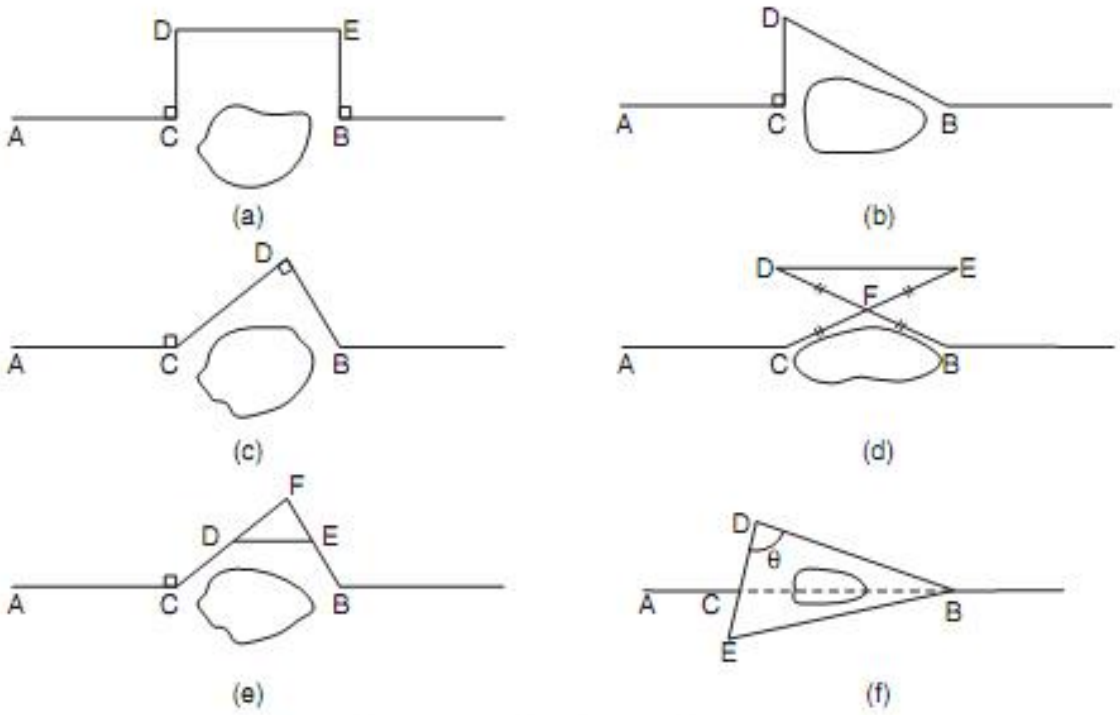
$$\frac{60}{40 + x} = \frac{16}{40}$$

$$2400 = 16(40 + x)$$

$$16x = 1760$$

$$x = 110\ m$$

■■■■


D
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A
C
B
(a)
D
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(b)
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