



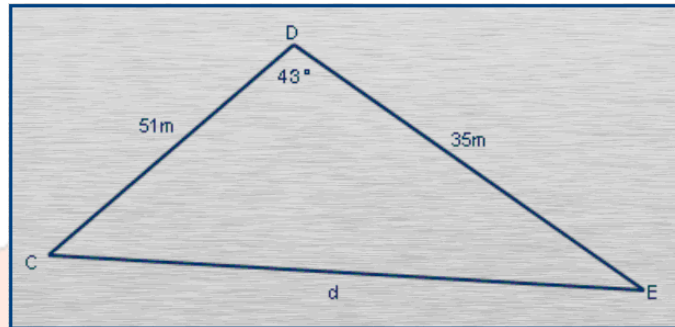
CAMI Mathematics: Grade 11

GRADE 11 Sine, cosine and area rule

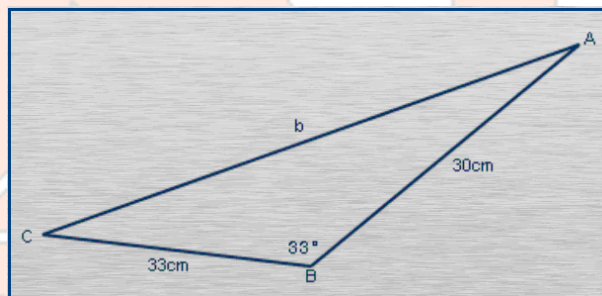
11.7 Cosine rule

1. Cosine Rule

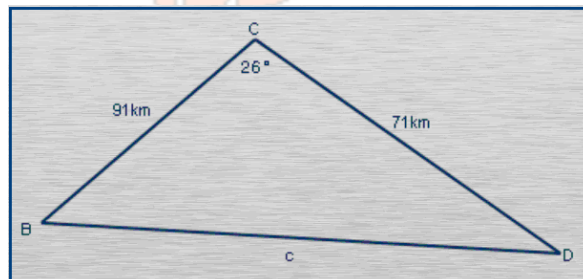
(a) Use the cosine rule to calculate the value of the unknown side.



(b) Use the cosine rule to calculate the value of the unknown side.



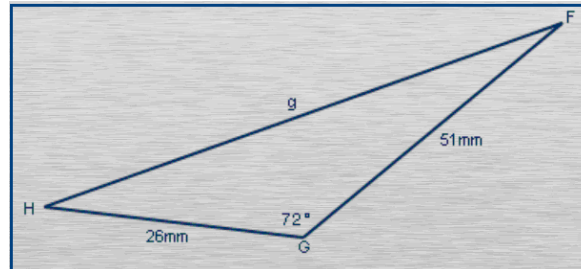
(c) Use the cosine rule to calculate the value of the unknown side.



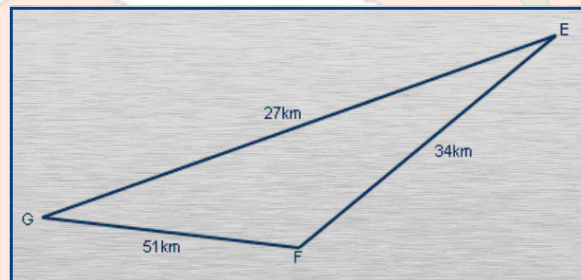


CAMI Mathematics: Grade 11

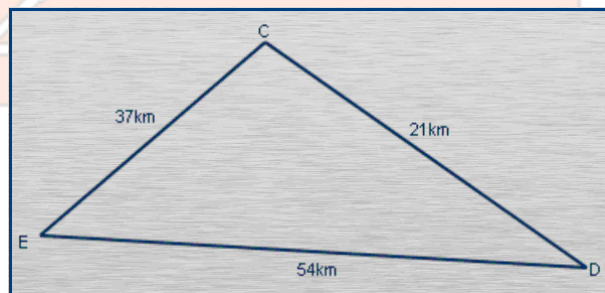
(d) Use the cosine rule to calculate the value of the unknown side.



(e) Use the cosine rule to calculate the value of the unknown angle.



(f) Use the cosine rule to calculate the value of the unknown angle.





MEMO

(Answers correct to two decimal places)

1. Cosine rule [7.7.4.1; 7.7.4.2; 7.7.4.3]

$$\begin{aligned} \text{(a)} \quad d^2 &= c^2 + e^2 - 2ec \cos D \\ &= (35)^2 + (51)^2 - 2(35)(51) \cos 43^\circ \\ &= 1215.067285 \\ d &= 34.86 \text{ m} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad b^2 &= a^2 + c^2 - 2ac \cos B \\ &= (33)^2 + (30)^2 - 2(33)(30) \cos 33^\circ \\ &= 328.4322755 \\ b &= 18.12 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad c^2 &= b^2 + d^2 - 2bd \cos C \\ &= (71)^2 + (91)^2 - 2(71)(91) \cos 26^\circ \\ &= 1707.783334 \\ c &= 41.33 \text{ km} \end{aligned}$$

$$\begin{aligned} \text{(d)} \quad g^2 &= f^2 + h^2 - 2fh \cos G \\ &= (26)^2 + (51)^2 - 2(26)(51) \cos 72^\circ \\ &= 2457.486931 \\ g &= 49.57 \text{ mm} \end{aligned}$$

$$\text{(e)} \quad \cos F = \frac{e^2 + g^2 - f^2}{2eg}$$

$$\cos F = \frac{51^2 + 34^2 - 27^2}{2(51)(34)}$$

$$\cos F = 0.8731257$$

$$\therefore \hat{F} = 29.18^\circ$$

$$\text{(f)} \quad \cos D = \frac{c^2 + e^2 - d^2}{2ce}$$



CAMI Mathematics: Grade 11

$$\cos D = \frac{54^2 + 21^2 - 37^2}{2(54)(21)}$$

$$\cos D = 0.8765432$$

$$\therefore \hat{D} = 28.77^\circ$$

