

Lesson 3 Cosine Law

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Lesson 3 Cosine Law – Determining A Side Length

Cosine Law

$$a^2 = b^2 + c^2 - 2bc \cos A$$

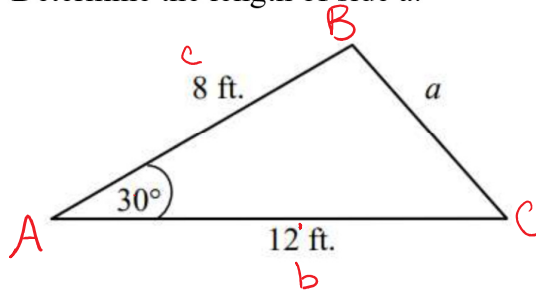
$$b^2 = a^2 + c^2 - 2ac \cos B$$

Cosine Law is used when we aren't given or can't get a matching pair
ie. SSS or SAS triangles



Example 1

Determine the length of side a .



$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$a^2 = 12^2 + 8^2 - 2(12)(8) \cos 30^\circ$$

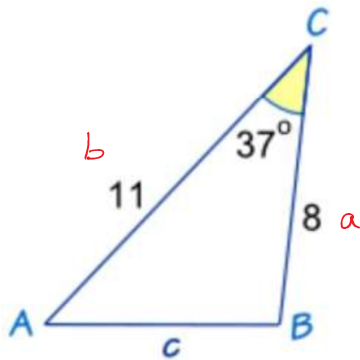
$$a^2 = 41.7231 \dots$$

$$a = \sqrt{\text{ans}}$$

$$a = 6.46 \text{ ft}$$

Example 2

Determine the length of side c .



$$c^2 = a^2 + b^2 - 2ab \cos C$$

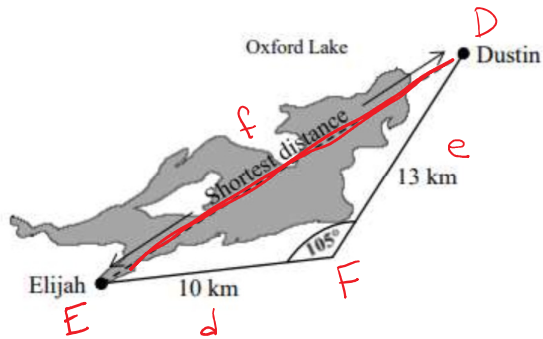
$$c^2 = 8^2 + 11^2 - 2(8)(11) \cos 37^\circ$$

$$c = \sqrt{\text{ans}}$$

$$c = 6.67$$

Example 3

Determine the shortest distance that Dustin must travel by snowmobile to visit Elijah .



$$f^2 = d^2 + e^2 - 2de \cos F$$

$$f^2 = 10^2 + 13^2 - 2(10)(13) \cos 105^\circ$$

$$f = \sqrt{\text{ans}}$$

$$f = 18.34 \text{ km}$$