Lower 6 Chapter 9

Trig Ratios

Chapter Overview

1. Sine/ Cosine Rule
2. Areas of Triangles
3. Trig Graphs
4. Proof of Sine/ Cosine Rule

5 **Trigonometry**	5.1	**Understand and use the definitions of sine, cosine and tangent for all arguments;** **the sine and cosine rules;** **the area of a triangle in the form** $\frac{1}{2}ab\sin C$	**Use of** x **and** y **coordinates of points on the unit circle to give cosine and sine respectively,** **including the ambiguous case of the sine rule.**
	5.3	**Understand and use the sine, cosine and tangent functions; their graphs, symmetries and periodicity.**	**Knowledge of graphs of curves with equations such as** $y = \sin x$, $y = \cos(x + 30°)$, $y = \tan 2x$ **is expected.**

Sine and Cosine Rule

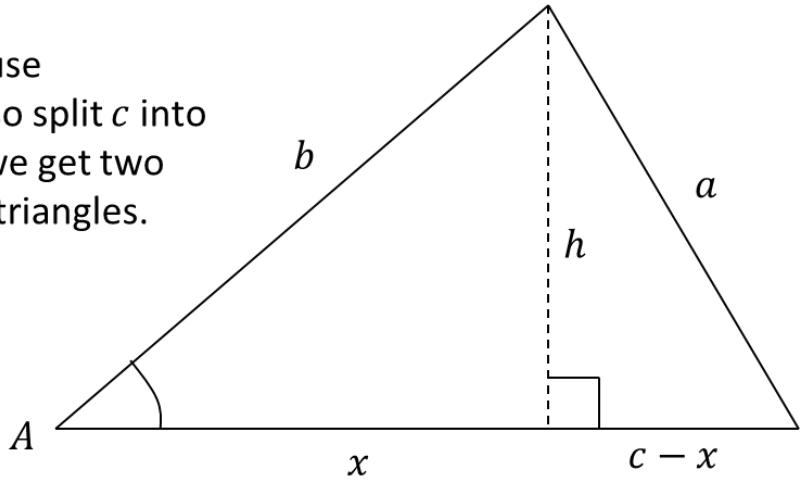
The Cosine Rule

You have	You want	Use
#1: Two angle-side opposite pairs	Missing angle or side in one pair	Sine rule
#2 Two sides known and a missing side opposite a known angle	Remaining side	Cosine rule
#3 All three sides	An angle	Cosine rule
#4 Two sides known and a missing side not opposite known angle	Remaining side	Sine rule twice

Examples:

Proof of Cosine Rule

We want to use Pythagoras, so split c into two so that we get two right-angled triangles.



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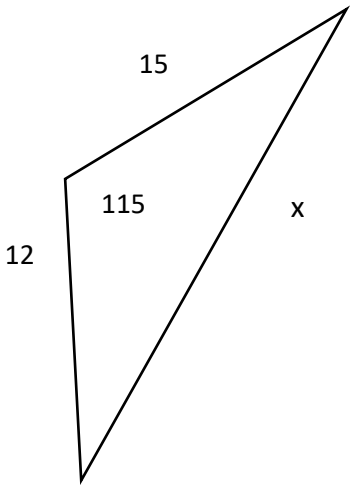

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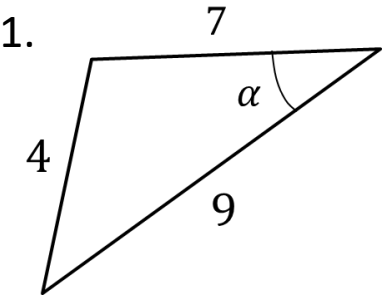

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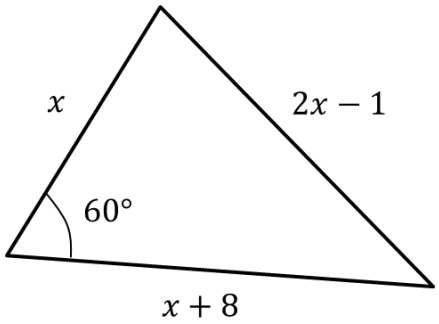
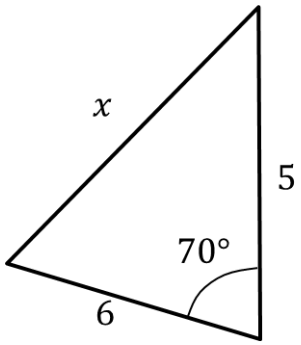


3. Coastguard station B is 8 km, on a bearing of $060°$, from coastguard station A. A ship C is 4.8 km on a bearing of $018°$, away from A. Calculate how far C is from B.

Test Your understanding

1.



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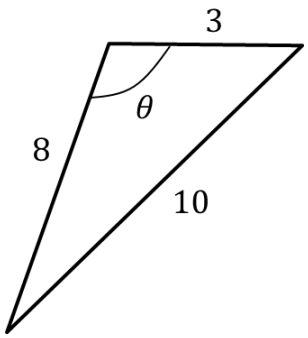

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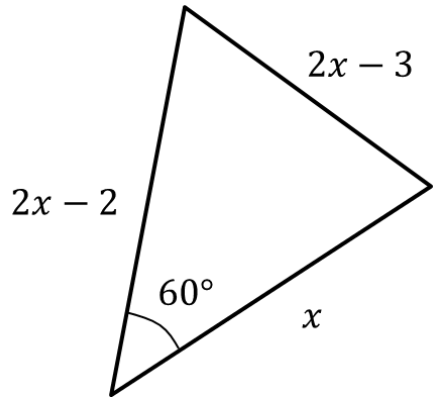

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