



Name: _____ () Class: _____ Date: _____

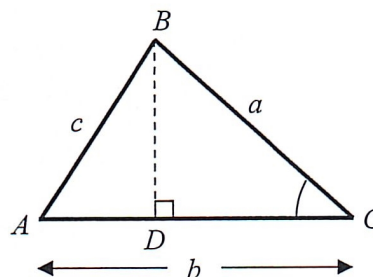
MA304.3.3 – Cosine Rule

At the end of this unit, you should be able to

- use the cosine rule to solve triangles

E1. Given the triangle below,

- (a) find CD in terms of a and (angle) C



- (b) hence express AD in terms of a , b and C

- (c) find also BD in terms of a and C

- (d) using $\triangle ABD$, show by Pythagoras theorem on AD , AB and BD ,

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

In a triangle with sides a , b and c , and with the angles opposite the sides as A , B and C respectively, the cosine rule states that

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

E2. Express $\cos C$ in terms of a , b and c . By interchanging the variables, or otherwise, write down similar expressions for $\cos A$ and $\cos B$.

E3. A triangle ABC is such that $\angle A = 48^\circ$, $b = 8$ cm and $c = 14$ cm. Find the length BC .

P1. Solve the triangle with $a = 7$ cm, $b = 9$ cm and $c = 13$ cm. What do you observe about the relationship between the lengths of each side and the corresponding angle (i.e. a and A) across all three pairs?

P2. In the figure $XP = 8$ cm, $XQ = 7$ cm, $XY = 14$ cm, $XZ = 16$ cm and $YZ = 15$ cm. Find the length of PQ .

