12.3 Law of cosines **HSG.SRT.D.11**

Formulas

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

Sine rule: $\dfrac{a}{\sin A} = \dfrac{b}{\sin B}$

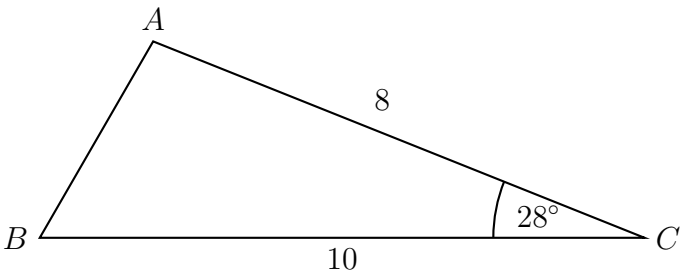
Area of a right triangle: $A = \dfrac{1}{2}(bh)$, where b is the base, h is the height

Area of any triangle: $A = \dfrac{1}{2}ab\sin C$

1. The following diagram shows triangle ABC, with $BC = 10$, $A\hat{C}B = 28°$, and $AC = 8$ cm.

   Find AB.

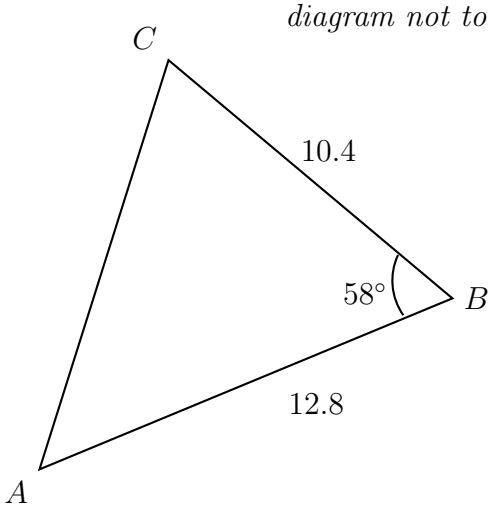
   diagram not to scale



2. Triangle ABC has side lengths $AB = 12.8$ and $BC = 10.4$, while $A\hat{B}C = 58°$.

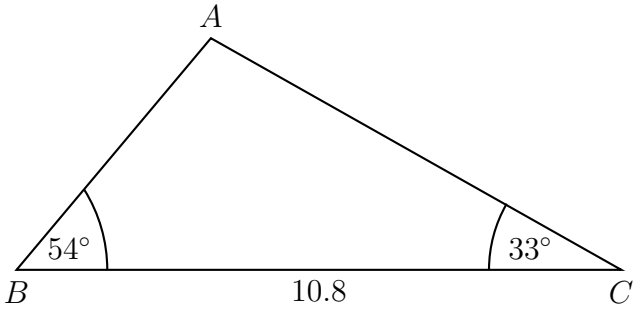
   Find AC.

   diagram not to scale



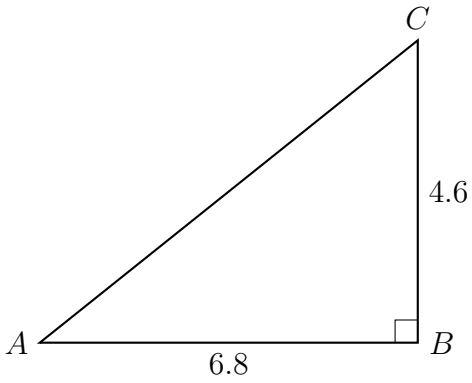
3. The following diagram shows triangle ABC, with $A\hat{B}C = 54°$, $A\hat{C}B = 33°$, and $BC = 10.8$.

   (i) Write down $B\hat{A}C$ (ii) Now find AC. *diagram not to scale*



4. The following right-angled triangle ABC has side lengths $AB = 6.8$ and $BC = 4.6$.

   Find the area of the triangle. *diagram not to scale*



5. The following triangle DEF has side lengths $DE = 7$ and $EF = 9$, with $D\hat{E}F = 72°$.

   Find the area of the triangle. *diagram not to scale*