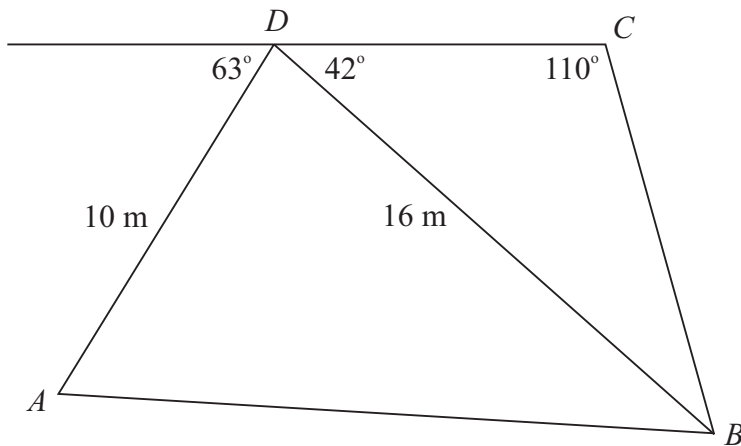


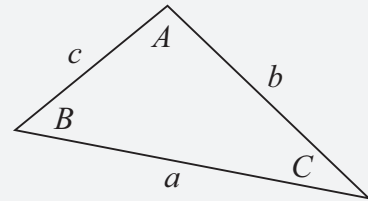
## LC 2015 (SET B): PAPER 2

**QUESTION 5 (25 MARKS)**

**Question 5 (a)**



**FORMULAE AND TABLES BOOK**  
**Trigonometry of the triangle:**  
 [page 16]



Area:  $\frac{1}{2}ab \sin C$

Sine Rule:  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

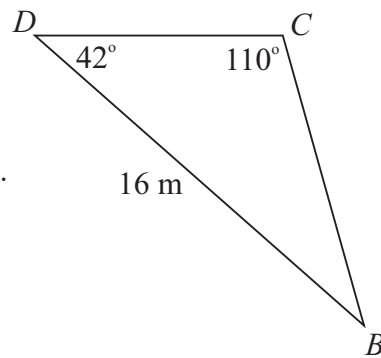
Cosine rule:  $a^2 = b^2 + c^2 - 2bc \cos A$

**Question 5 (a) (i)**

$$\frac{|BC|}{\sin 42^\circ} = \frac{16}{\sin 110^\circ} \leftarrow \text{Apply the sine rule.}$$

$$|BC| = \frac{16 \sin 42^\circ}{\sin 110^\circ} \leftarrow \text{Multiply both sides by } \sin 42^\circ.$$

$$\therefore |BC| = 11.39 \text{ m}$$



**MARKING SCHEME NOTES**

**Question 5 (a) (i) [Scale 15D (0, 4, 7, 11, 15)]**

**4:** • Some correct substitution into a correct relevant formula [ $\sin 42^\circ, |BC| = \frac{16}{\sin 110^\circ}$ ]

• Writes Sine Rule

**7:** • Fully correct substitution without calculation e.g.  $\frac{|BC|}{\sin 42^\circ} = \frac{16}{\sin 110^\circ}$

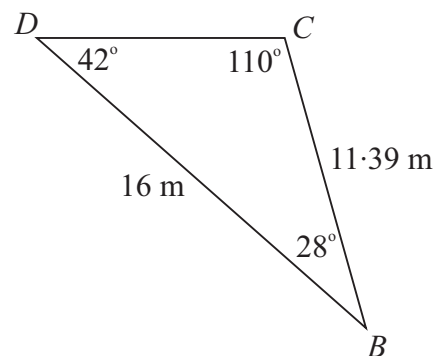
**11:** • Calculates  $|BC|$  with one incorrect substitution.

• Incorrect calculator mode. (Once only). [Radian = 331.452..., Gradian = 9.928...]

• A correct answer without work

**Question 5 (a) (ii)**

$$\text{Area} = \frac{1}{2}(16)(11.39) \sin 28^\circ = 42.78 \text{ m}^2$$



**MARKING SCHEME NOTES****Question 5 (a) (ii) [Scale 5C (0, 3, 4, 5)]**

**Note:** Accept consistent answer from previous work

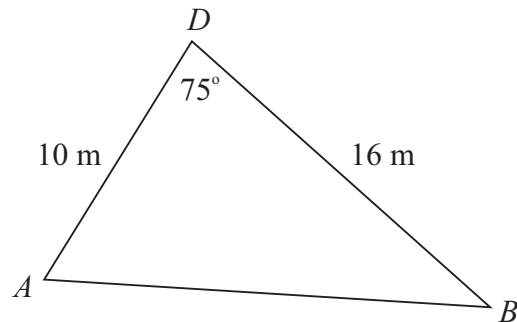
- 3:**
- Writes the correct formula for the area of a triangle
  - Any correct or consistent substitution into formula
  - Any work of merit e.g. Indicates total angle measure in a triangle =  $180^\circ$ ,  $28^\circ$
- 4:**
- Formula substituted correctly without calculation [Area =  $\frac{1}{2}(16)(11.39)\sin 28^\circ$ ]
  - Calculates area of the triangle with one incorrect substitution
  - Incorrect calculator mode (Once only). [Radian =  $24.684\dots$ , Gradian =  $38.797\dots$ ]
  - A correct or consistent answer without work

**Question 5 (b)**

Apply the Cosine rule as you have 2 sides and an included angle.

$$|AB|^2 = 10^2 + 16^2 - 2(10)(16)\cos 75^\circ$$

$$\therefore |AB| = \sqrt{10^2 + 16^2 - 2(10)(16)\cos 75^\circ} = 16.53 \text{ m}$$

**MARKING SCHEME NOTES****Question 5 (b) [Scale 5D (0, 2, 3, 4, 5)]**

- 2:**
- Some correct substitution into a correct relevant formula [ $a = 10$ ,  $b = 16$ ]
  - Any work of merit such as identification of any correct information from the diagram [ $C = 75^\circ$ ]
  - Writes Cosine Rule correctly
- 3:**
- An almost correct formula substitution and stops.  
e.g. [ $|AB|^2 = (10)^2 + (16)^2 - 2(10)(16)\cos\#$ ]
- 4:**
- Formula substituted correctly [ $|AB|^2 = (10)^2 + (16)^2 - 2(10)(16)\cos 75^\circ$ ]
  - Calculates  $|AB|$  with one incorrect substitution
  - Leaves answer as  $|AB|^2$ .
  - Incorrect calculator mode (Once only). [Radian =  $7.81\dots$ , Gradian =  $15.28\dots$ ]
  - A correct or consistent answer without work