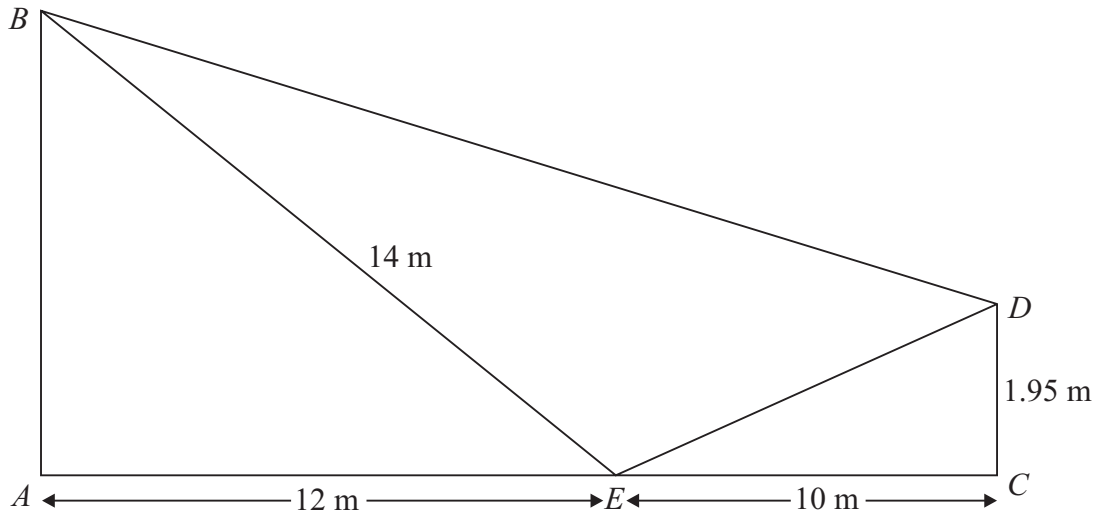
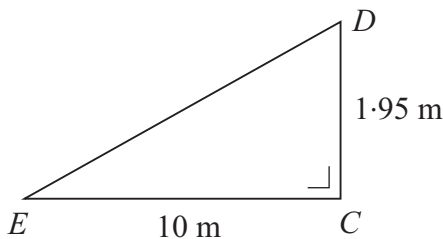


## LC 2014 (SET C): PAPER 2

### QUESTION 9 (30 MARKS)



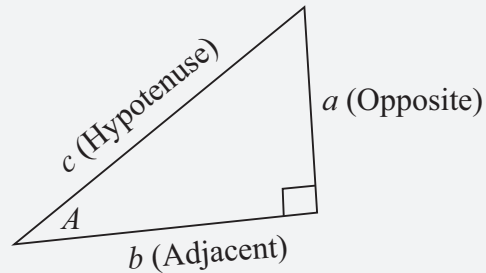
#### Question 9 (a) (i)



$$|ED|^2 = 10^2 + 1.95^2$$

$$\therefore |ED| = \sqrt{10^2 + 1.95^2} \approx 10.2\text{ m}$$

**FORMULAE AND TABLES BOOK**  
**Trigonometry: Right-angled triangle [page 16]**



$$\sin A = \frac{a}{c}, \cos A = \frac{b}{c}, \tan A = \frac{a}{b}$$

$$c^2 = a^2 + b^2$$

#### MARKING SCHEME NOTES

##### Question 9 (a) (i) [Scale 10C (0, 4, 7, 10)]

**4:** • Any relevant work e.g. A correct relevant formula written e.g. Pythagoras, Cosine Rule, Sine Rule or part calculation  $(10)^2 = 100$

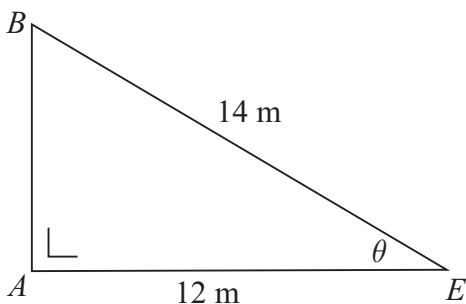
**NOTE:** Accept use of information from (b) (i) in this part i.e.  $|\angle CED| = 11^\circ$ .

**7:** • A fully correct substitution

• Calculates  $|ED|$  with one error in substitution

**10:** • Accept a correct answer without work

#### Question 9 (a) (ii)



Call  $|\angle AEB|$  the angle  $\theta$ .

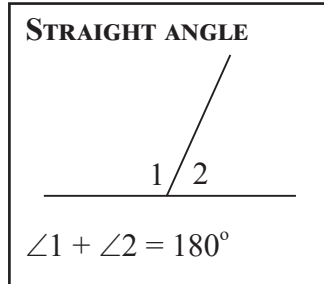
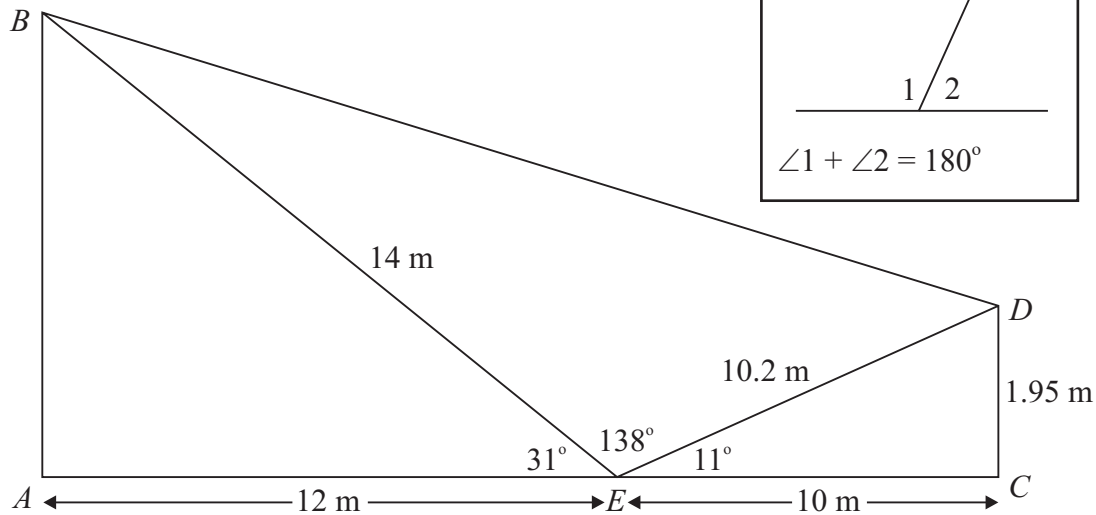
$$\cos \theta = \frac{12}{14} \Rightarrow \theta = \cos^{-1}\left(\frac{12}{14}\right) \approx 31^\circ$$

**Question 9 (a) (ii) [Scale 5C (0, 3, 4, 5)]**

- 3: • Indicates correct relevant information on the diagram  
 • Correct trigonometric ratio set up or similar work of merit
- 4: A fully correct substitution  
 • Calculates  $|\angle AEB|$  with one error in substitution
- 10: • Accept a correct answer without work

**Question 9 (b) (i)**

$|\angle DEB| = 180^\circ - 31^\circ - 11^\circ = 138^\circ$  [Straight angle ( $180^\circ$ )]



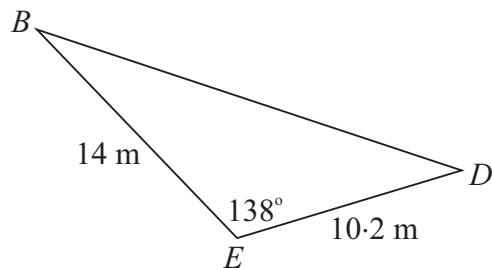
**MARKING SCHEME NOTES**

**Question 9 (b) (i) [Scale 10C (0, 4, 7, 10)]**

- 4: • Indicates correct or consistent relevant information on the diagram  
 • e.g.  $|\angle CED| = 11^\circ$ ,  $|\angle AEB| = 31^\circ$   
 • Any work of merit. e.g. Total angle measure in a straight line =  $180^\circ$
- 7: • A fully correct or consistent substitution. i.e.  $180^\circ - (11^\circ + 31^\circ)$   
 • Calculates  $|\angle DEB|$  with one error in substitution

**NOTE:** Accept an answer consistent with previous work [See (a)(ii)]

**Question 9 (b) (ii)**



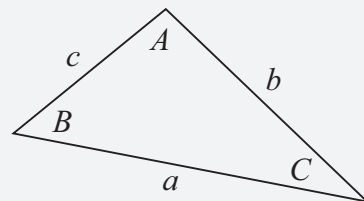
$$|BD|^2 = 14^2 + 10.2^2 - 2(14)(10.2)\cos 138^\circ$$

$$|BD| = \sqrt{14^2 + 10.2^2 - 2(14)(10.2)\cos 138^\circ} = 22.6 \text{ m}$$

**FORMULAE AND TABLES BOOK**

**Trigonometry of the triangle:**

**Cosine rule [page 16]**



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

**MARKING SCHEME NOTES**

**Question 9 (b) (ii) [Scale 5C (0, 3, 4, 5)]**

- 3: • Indicates correct or consistent relevant information on the diagram.  
• Identification or use of relevant trigonometric formula. e.g. Cosine Rule
- 4: • A fully correct or consistent substitution. i.e.  $|DB|^2 = 14^2 + 10 \cdot 2^2 - 2(14)(10 \cdot 2)\cos 138^\circ$   
• Calculates  $BD$  with one error in substitution  
• Incorrect calculator mode. (once only)
- NOTE:** Accept an answer consistent with previous work
-