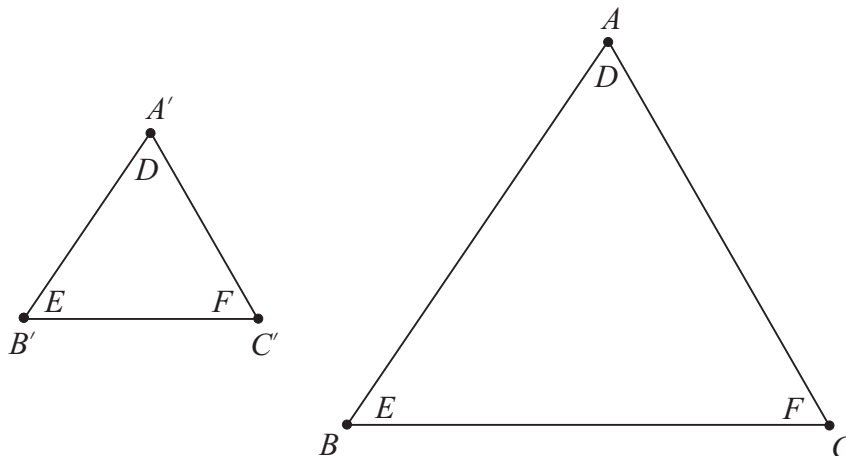


LC 2014: PAPER 2

QUESTION 6A (25 MARKS)

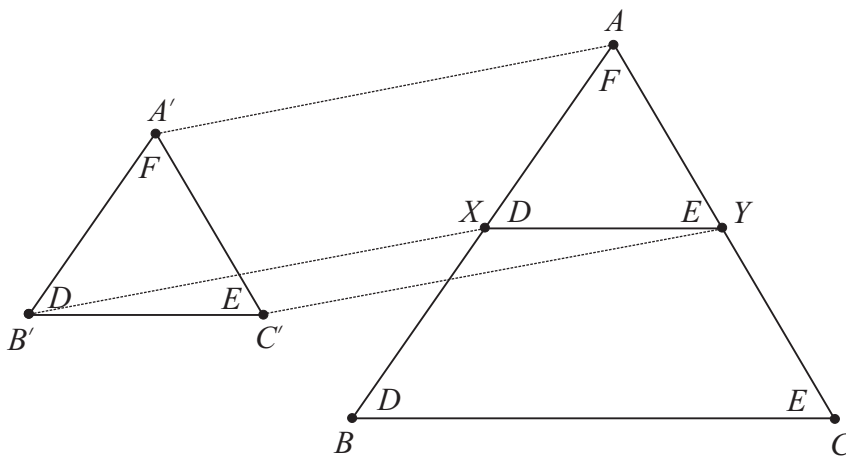
Question 6A (a)

GIVEN: $\triangle ABC$ and $\triangle A'B'C'$ with $|\angle CAB| = |\angle C'A'B'| = D$, $|\angle ABC| = |\angle A'B'C'| = E$ and $|\angle ACB| = |\angle A'C'B'| = F$.



TO PROVE: $\frac{|AB|}{|A'B'|} = \frac{|BC|}{|B'C'|} = \frac{|CA|}{|C'A'|}$.

CONSTRUCTION: Translate $\triangle A'B'C'$ so that $A' \rightarrow A$, $B' \rightarrow X$ and $C' \rightarrow Y$.



PROOF:

$[XY]$ is parallel to $[B'C']$ because $|\angle AXY| = |\angle ABC| = \angle D$
and $|\angle AYX| = |\angle ACB| = \angle E$ [Corresponding angles]

$$\therefore \frac{|AB|}{|AX|} = \frac{|AC|}{|AY|} \Rightarrow \frac{|AB|}{|A'B'|} = \frac{|AC|}{|A'C'|}$$

Similarly $\frac{|AB|}{|A'B'|} = \frac{|BC|}{|B'C'|}$.

MARKING SCHEME NOTES

Question 6A (a)

Diagram [Scale 5B (0, 2, 5)]

2: • Effort at *Diagram* or *Given*

Construction [Scale 5B (0, 2, 5)]

2: • Construction attempted
• Construction not explained or explanation incomplete

Proof [Scale 10C (0, 3, 7, 10)]

3: • More than one critical step omitted but still some substantial work of merit
7: • Proof completed with one critical step omitted

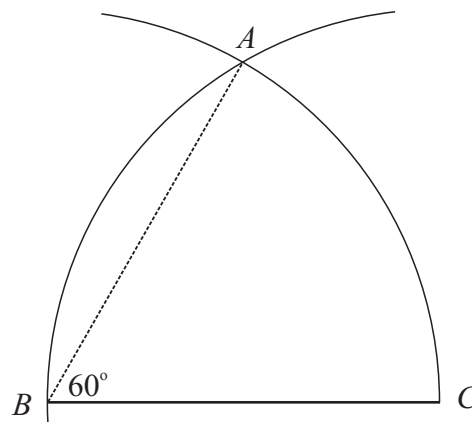
Question 6A (b)

Put point of compass on B and stretch it to C .
Draw an arc as shown.

Now put the point on C and draw the arc as shown.

A is where the two arcs meet. Triangle ABC is an equilateral triangle where each angle is 60° .

Draw the line BA . Angle ABC is a 60° angle.



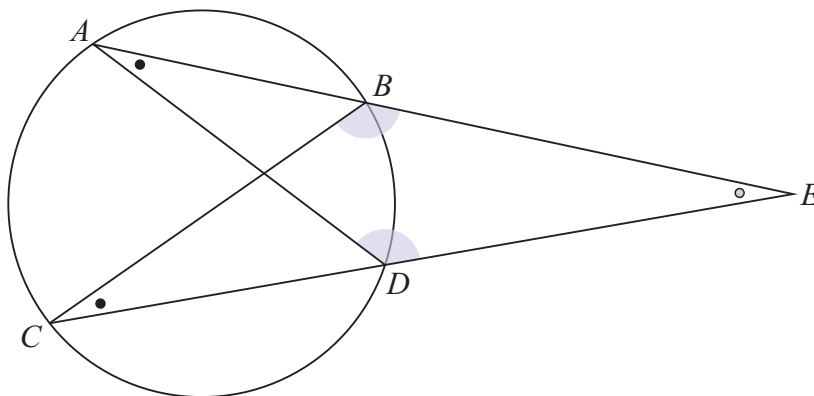
MARKING SCHEME NOTES

Question 6A (b) [Scale 5B (0, 2, 5)]

2: • Arc AC and/or arc AB
• Effort at drawing arc from B

QUESTION 6B (25 MARKS)

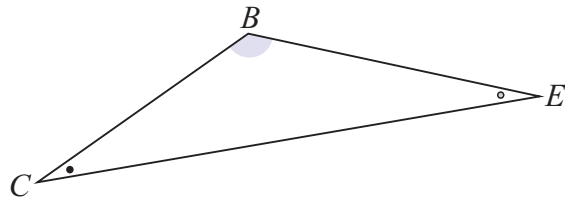
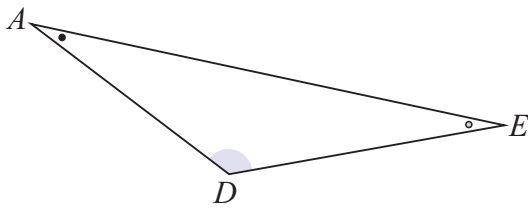
Question 6B (a)



$\triangle ADE$ and $\triangle CEB$ are similar triangles because:

- $|\angle EAD| = |\angle ECB|$ [Angles standing on the same arc are equal]
- $|\angle AED| = |\angle CEB|$ [Common angle]
- $|\angle EDA| = |\angle EBC|$ [3 angles in a triangle add up to 180°]

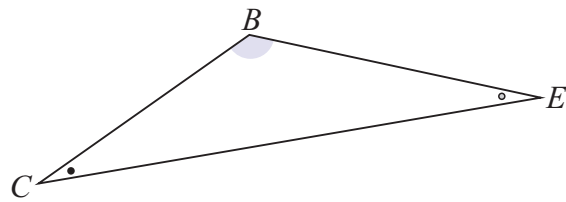
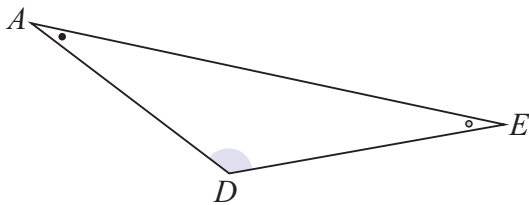
Question 6B (b)



$$\frac{|EA|}{|EC|} = \frac{|ED|}{|EB|} \quad [\text{The sides of similar triangles are proportional}]$$

$$\therefore |EA| \cdot |EB| = |EC| \cdot |ED|$$

Question 6B (c)



$$\frac{|EB|}{|ED|} = \frac{|CB|}{|AD|}$$

$$\therefore |AD| = \frac{|ED| \cdot |CB|}{|EB|} = \frac{5.94 \times 10}{6.25} = 9.504$$

MARKING SCHEME NOTES

Question 6B (a) [Scale 10C (0, 3, 7, 10)]

- 3: • Triangles named
- 7: • Two pairs of angles in relevant triangles identified but justification incomplete
- Two pairs of angles identified with justification but triangles not named

Question 6B (b) [Scale 10C (0, 3, 7, 10)]

- 3: • Relevant triangles identified
- Partly correct ratio
- 7: • Correct ratio established but fails to complete

Question 6B (c) [Scale 5C (0, 2, 3, 5)]

- 2: • Effort at establishing ratio
- 3: • Ratio established and values entered