

**5.5. Units are required in part (b).**

(a)  $AC^2 = 30^2 + 24^2 - 2 \times 30 \times 24 \times \cos 35^\circ$  (M1)(A1)

**Note:** Award (M1) for substituted cosine rule formula, (A1) for correct substitutions.

$AC = 17.2 \text{ cm} \quad (17.2168\dots)$  (A1)(G2) [3 marks]

**Notes:** Use of radians gives 52.7002... Award (M1)(A1)(A0).  
 No marks awarded in this part of the question where candidates assume that angle  $ACB = 90^\circ$ .

(b) Area of triangle  $ABC = \frac{1}{2} \times 24 \times 30 \times \sin 35^\circ$  (M1)(A1)

**Notes:** Award (M1) for substitution into area formula, (A1) for correct substitutions.  
**Special Case:** Where a candidate has assumed that angle  $ACB = 90^\circ$  in part (a), award (M1)(A1) for a correct alternative substituted formula for the area of the triangle  $\left( ie \frac{1}{2} \times \text{base} \times \text{height} \right)$ .

$= 206 \text{ cm}^2 \quad (206.487\dots \text{cm}^2)$  (A1)(G2) [3 marks]

**Notes:** Use of radians gives negative answer,  $-154.145\dots$  Award (M1)(A1)(A0).  
**Special Case:** Award (A1)(ft) where the candidate has arrived at an area which is correct to the standard rounding rules from their lengths (units required).

(c)  $206.487\dots \times 25 \times 2600$  (M1)

**Note:** Award (M1) for multiplication of their answer to part (b) by 25 and 2600.

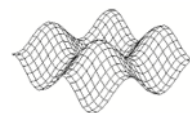
$13421688.61$  (A1)

**Note:** Accept unrounded answer of 13 390 000 for use of 206.

$13400000$  (AG) [2 marks]

**Note:** The final (A1) cannot be awarded unless both the unrounded and rounded answers are seen.

*continued...*



*Question 5.5 continued*

(d)  $1.34 \times 10^7$

(A2) [2 marks]

**Notes:** Award (A2) for the correct answer.  
 Award (A1)(A0) for 1.34 and an incorrect index value.  
 Award (A0)(A0) for any other combination (including answers such as  $13.4 \times 10^6$ ).

(e)  $2 \times 206.487... + 24 \times 25 + 30 \times 25 + 17.2168... \times 25$

(M1)(M1)

**Note:** Award (M1) for multiplication of their answer to part (b) by 2 for area of two triangular ends, (M1) for three correct rectangle areas using 24, 30 and their 17.2.

2193.26...

(A1)

**Note:** Accept 2192 for use of 3 sf answers.

2190

(AG) [3 marks]

**Note:** The final (A1) cannot be awarded unless both the unrounded and rounded answers are seen.

(f)  $\frac{2190 \times 2600}{22 \times 10000}$

(M1)(M1)

**Notes:** Award (M1) for multiplication by 2600 and division by 22, (M1) for division by 10000.  
 The use of 22 may be implied *ie* division by 2200 would be acceptable.

25.9 litres (25.8818...)

(A1)(G2) [3 marks]

**Note:** Accept 26.

**Total: [16 marks]**