

Test item 5: Herons formula

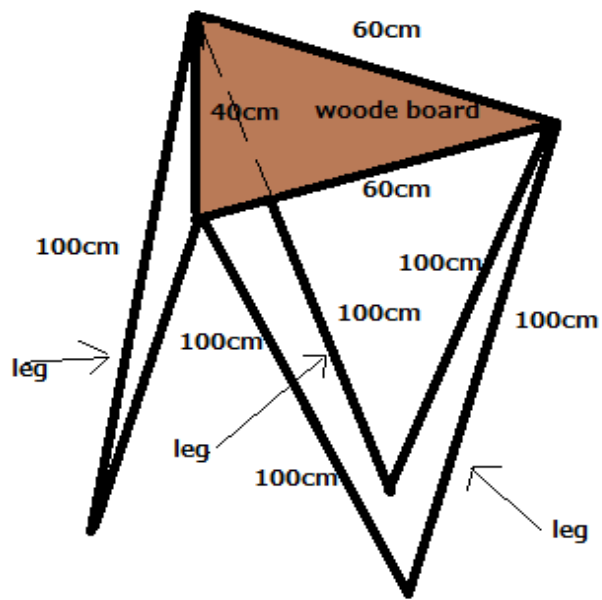
Domain: Mathematical Literacy	Topic/Chapter: Herons formula	Class(es): IX Expected time:15 min Total Credit:10
Description of Item: Text ,table & image	Learning Outcomes: To make students to apply the Herons formula in daily life situations.	

In a SCHOOL, furnitures for seating are required in newly constructed MATHS LAB. Maths teacher suggested to Principal to purchase stools of Mathematical shapes and proposes design of triangular base stool with triangular legs as shown in picture.Principal agreed but allow the budget of Rs. 19500 in this favour and ask the estimate of one such stool from carpenter .The carpenter prepare the estimate as given:

Type of expense	Rate in Rs.
Wood/board of triangular top	400 per sq m
Iron rod for skeletal(frame)	50 per m
Labour charge	200 per piece

The dimensions are shown in the following images:





- (i) The area of triangular top is _____ sq m.
- (ii) The length of iron rod to be used per stool is _____ m.
- (iii) The total cost of assembling one such stool is Rs. _____.
- (iv) Teacher wants to accommodate 30 students at a time in MATHS LAB. Is the budget is sufficient?
- (v) The maximum no. of stool can be assemble in the prescribed budget is
 (a) 31 (b) 30 (c) 35 (d) 33.

Question intent

FRAMEWORK	CHARACTERISTICS
Competency Cluster	<i>Connections</i>
Overarching Idea	<i>Space and shape</i>
Context	<i>Educational</i>
Item format	(i) Closed constructed response items (ii) <i>Short</i> response items (iii) Closed constructed response items (iv) open constructed response items (v) <i>complex MCQ</i>
Cognitive Process	<i>Interpreting, Problem solving</i>
Proficiency Level	(i) 5 (ii) 3 (iii) 5 (iv) 4 (v) 4

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Description of Answer keys and credit:

(i) Full Credit- $8\sqrt{2} / 100$ sq m = 0.113 sq m (using Herons formula & showing calculation) Partial credit – using correct formula but getting incorrect value. No Credit- For other response
(ii) Full Credit- 7.6 m No Credit- For other response
(iii) Full Credit- 625.25 No Credit- For other response
(iv) Full Credit- yes No Credit- No or other response
(v) Full Credit- for(a) No Credit- For other response

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