## Test item 3: Herons formula
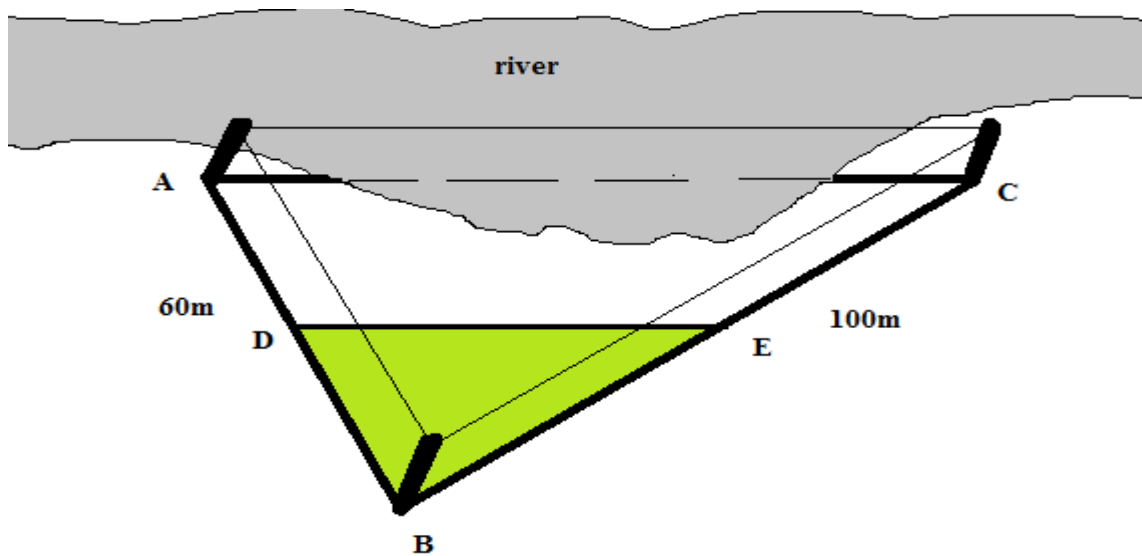
| Domain: Mathematical Literacy | Topic/Chapter: Herons formula | Class(es ): IX<br><br>Expected time:10 min<br>**Total Credit:8** |
|---|---|---|
| Description of Item:<br>Text and image | Learning Outcomes:<br>To make students to apply the Herons formula in daily life situations. | |

A farmer SURYA has a triangular field ABC covered by fencing tied to pillars at A,B,& C. A river is flowing adjacent to side AC . Due to flood in river it destroyed some soil along the side AC while pillars at A & C are still safe as shown in figure. SURYA wants to calculate the area but forgot the measurement of side AC which is difficult to measure now.He remember that two complete roll (each of 150m) of fence  was toatally consumed in wrapping exactly  one round  of ABC.

(i)      The length of side AC is _____

(ii)     The semi perimeter of triangular field is (a) 150m    (b) 300m    (c)60m        (d)100m.

(iii)    The area of triangular field is_____ .Show your calculation.

(iv)     To save the crops from the effect of flood, SURYA wants to do the farming on portion BDE of the field(D & E are midpoint of side BA and side BC respectively),the fraction of total field area he will use is    (a) 1/2    (b) 1/4    (c)1/3     (d)2/3.

## Question intent

| FRAMEWORK | CHARACTERISTICS |
|---|---|
| Competency Cluster | *Connections* |
| Overarching Idea | *Space and shape* |
| Context | *personal* |
| Item format | (i)      *Short* response items<br>(ii)      *Simple  MCQ*<br>(iii)     Closed constructed response items<br>(iv)      *Simple  MCQ* |
| Cognitive Process | *Interpreting, Problem solvlng* |
| Proficiency Level | (i)       3 (ii)   2 (iii) 5   (iv) 3 |

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Description of Answer keys and credit:

(i)Full Credit- 140m
No Credit- For other response
(ii)Full Credit- for(a)
No Credit- For other response
(iii)Full Credit- 1500√3 sq m(using Herons formula & showing calculation)
Partial credit – using correct formula but getting incorrect value.
 No Credit-For other response
 (iv) Full Credit- for(b)
 No Credit- For other response

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