

FORM TP 2012038



TEST CODE **01254032**

MAY/JUNE 2012

CARIBBEAN EXAMINATIONS COUNCIL

SECONDARY EDUCATION CERTIFICATE  
EXAMINATION

ADDITIONAL MATHEMATICS

Paper 032 – General Proficiency

ALTERNATIVE TO SBA

*90 minutes*

12 JUNE 2012 (p.m.)

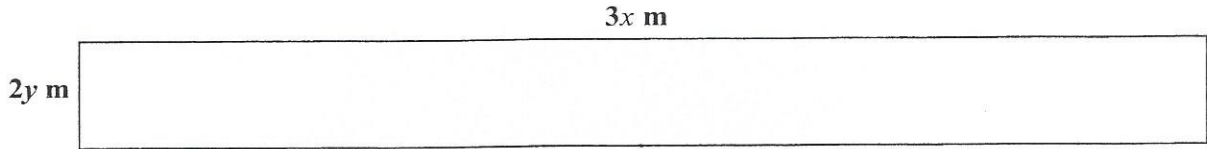
Answer all parts of the given question.

**DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.**

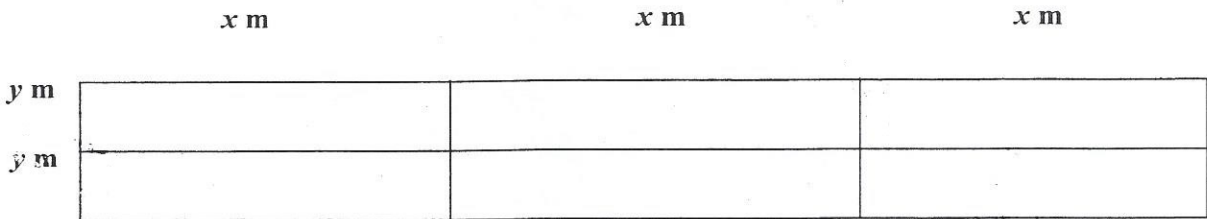


- (a) Two sports clubs,  $P$  and  $Q$ , wish to use 600 m of fencing to enclose a court. They wish to determine which design gives the maximum area.

Sports Club  $P$  uses the 600 m of fencing to make a rectangular court measuring  $3x$  m by  $2y$  m as shown in the diagram below.



Sports Club  $Q$  uses the 600 m of fencing to make six equal-sized rectangular courts that are adjacent to each other as shown in the diagram below. Each court measures  $x$  m by  $y$  m.



For Sports Club  $P$  the mathematical problem is to maximize the area of enclosure to satisfy its perimeter and the following conditions:

Maximize  $A = 6xy$   
 Subject to  $6x + 4y = 600$

- (i) Formulate the **mathematical** problem for Sports Club  $Q$ . **(2 marks)**
  - (ii) Determine the **MAXIMUM** area of the court for Sports Club  $Q$ . **(3 marks)**
  - (iii) Show that Sports Club  $P$  has the maximum area when a square enclosure is used and determine the **MAXIMUM** possible area. **(4 marks)**
  - (iv) Suggest which sports club design should be used. **(1 mark)**
- (b) The numbers  $\log(a^3 b^7)$ ,  $\log(a^5 b^{12})$  and  $\log(a^8 b^{15})$  are the first three terms of an arithmetic series. The 12<sup>th</sup> term of the series is  $\log b^n$ . Calculate the value of  $n$ . **(10 marks)**

**Total 20 marks**

**END OF TEST**

**IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.**