

**456/2**

**Mathematics**

**Paper 2**

**July – August 2013**

**$2\frac{1}{2}$  Hours.**

**BUGIRI DISTRICT SECONDARY SCHOOLS EXAMINATIONS BOARD**

**(BUDSSEB)**

**UGANDA CERTIFICATE OF EDUCATION**

**MOCK EXAMINATIONS 2013**

**MATHEMATICS PAPER TWO**

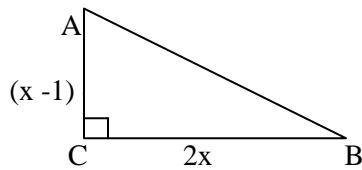
**2 Hours 30 Minutes**

**INSTRUCTIONS TO CANDIDATES:**

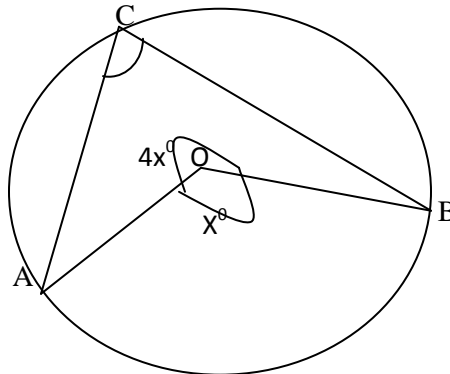
- Answer all questions in section A**
- Answer any five questions from section B.**

SECTION A.

- Solve the inequality  $2y - 5(y - 4) > 17$
- Given that  $f(x) = 4(2x - 1)$ , find
  - $f(12)$
  - the value of  $x$  such that  $f(x) = -20$ .
- Given that  $A = \{ \text{Even numbers less than 8} \}$   
 $B = \{ \text{Prime numbers less than 5} \}$   
 Find: (i)  $A \cap B$  (ii)  $n(A \cap B)$
- In binary:  $x^2 = 11001$ . What is the value of  $x$ ?
- If  $OA = \begin{bmatrix} 12 \\ 16 \end{bmatrix}$   $OB = \begin{bmatrix} 4 \\ 1 \end{bmatrix}$ , evaluate for  $|AB|$
- Without using tables or calculator, evaluate  
 $8.655^2 - 1.345^2$
- Factorize completely
  - $k^2h - h^3$
  - $mn + 2m - 9n - 18$
- In the diagram  $BC = 2x$  cm,  $AC = (x - 1)$  cm and the area of triangle ABC is  $30 \text{ cm}^2$ . Find the value of  $x$ .



- John bought a plot of land at shs.9, 000,000. If each year the plot appreciated by 20%, what was its value after two years?
- In the diagram O, is the centre of the circle. Find the value of  $x$  and  $y$ .



SECTION B

Answer any five questions.

11. (a) Draw a table of values for  $y = 4 - 7x - 2x^2$  given that  $-5 \leq x \leq 2$ .

(b) Draw the graph of  $y = 4 - 7x - 2x^2$  using a scale of 2 cm to represent 1 unit on the horizontal axis and 4 cm to represent 5 units on the vertical axis.

(c) Use your graph to solve for (i)  $4 - 7x - 2x^2$

(ii)  $x^2 + x - 2 = 0$ .

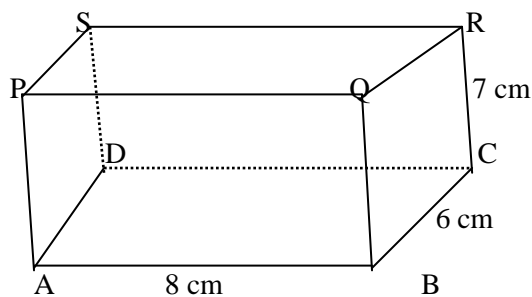
12. (a) P is the point (-3, 2) and Q is the point (5, 4).

Find;

- i) the co-ordinates of midpoint of PQ.
- ii) the length of the vector PQ
- iii) the equation of the perpendicular bisector.

(b) In a class  $\frac{3}{5}$  of the students are girls and  $\frac{5}{7}$  of the boys play football. If 10 boys play football, find the number of girls in the class.

13. Use the figure below to answer the questions that follow.



Find the length of BS

Find the angle between BS and plane ABCD.

Find the area of plane BCSP.

14. (a) Mary wants to invest a sum of money so that its value after 3 years will be shs 304,175.

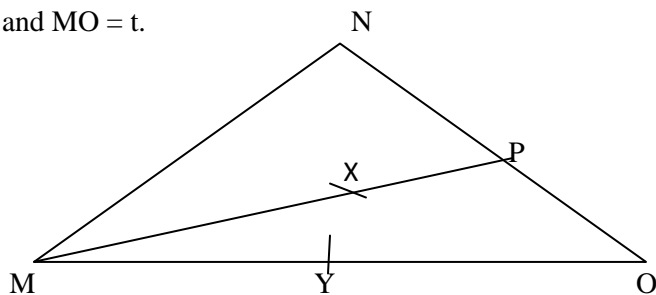
How much should she invest at 15% per annum compound interest?

(b) The income tax rates of a certain country are as follows;

INCOME (shs)	RATE (%)
0 – 300,000	Tax free
300,01 – 600,000	35
600,001 – 900,001	45
900,001 – and above	50

Mr. Bwire paid shs 400,000/= as income tax, find his gross income.

15. (a) In the diagram below, P is the midpoint of ON.  $MY = YO$  and  $MX = 2XP$ . It is given that  $MN = s$  and  $MO = t$ .



Find in terms of  $s$  and  $t$ ;

MP      (ii) NX      (iii) NY.

(b) Show that N, X and Y are collinear.

16. Two towns A and B are 180 km apart. At 1300 hours Mary sets off from A and drives to B at 60 km/hr. At 1330 hours a lorry leaves B and travels to A at 40 km/hr.

If Mary passes the lorry after she has been travelling for  $t$  hours, obtain an equation in  $t$ ,

Hence find;

- i) the time when Mary passes the lorry
- ii) the distance from B to the place where the two vehicles pass each other,

17. A school has a music society with 50 members, 36 members like Chaka Chaka, 28 like Michael Jackson.

With the help of a Venn diagram, find how many like :

- i) both Chaka Chaka and Michael Jackson
- ii) neither of the two.

(b) Factorize  $5x^2 + 9x - 2$  and hence solve the equation  $5x^2 + 9x - 2 = 0$ .

END.

