

KCB DEPARTMENT OF MATHEMATICS

UGANDA CERTIFICATE OF EDUCATION

MOCK 1 EXAMINATIONS, 2019

MATHEMATICS PAPER 1

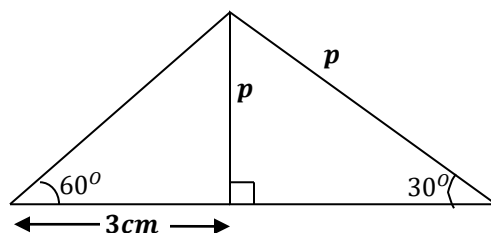
TIME: 2 ½ HOURS

INSTRUCTIONS:

- Attempt **ALL** questions in Section A and not more than **five** from Section B.

SECTION A

- Simplify: $\frac{2}{3}$ of $12 - \left(1\frac{1}{3} + 1\frac{1}{4}\right)$ (04mks)
- Find the HCF and LCM of 84, 126 and 210. (04mks)
- Six men can dig a farm in 12 days. How many more men must be employed if the farm is to be dug in 8 days. (04mks)
- Solve the simultaneous equation:
 $2x - 5y = 11$
 $3x + 2y = -12$ (04mks)
- Express: 1.7575.....as a rational number in its lowest terms. (04mks)
- If $P = \begin{pmatrix} 1 & 3 \\ 4 & 2 \end{pmatrix}$ and $Q = \begin{pmatrix} 5 & 1 \\ -1 & 0 \end{pmatrix}$, find $\det(P + Q)$. (04mks)
- Make K the subject of the formula. $t = a + \frac{2b}{kt}$ (04mks)
- In the figure below:



- Calculate p and q . (04mks)
9. Without using mathematical tables or a calculator, evaluate $\frac{0.064 \times 50}{0.05 \times 4}$ (04mks)
10. If $x = -2$, $y = 3$ and $z = -1$, find the value of $\frac{z^2 y}{3x} - \frac{1}{z}$ (04mks)

SECTION B

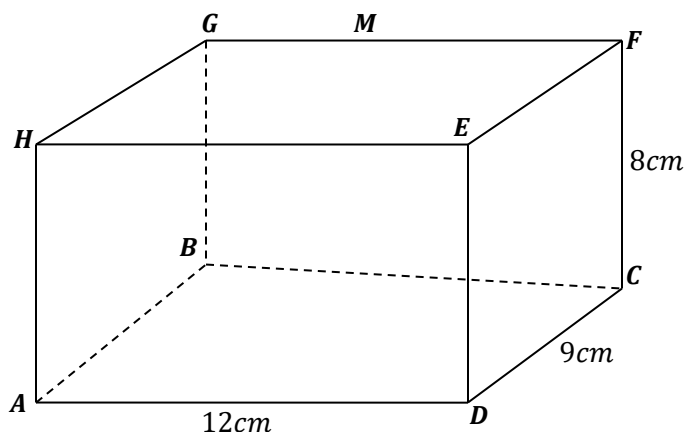
11. In S.4 there are 50 students who play three games, namely chess, tennis, and volley ball. 24 play chess, 26 play tennis and 29 play volley ball, 9 play both chess and volleyball while 13 play both tennis and volleyball, 11 play both chess and tennis. Each of these students play atleast one of the three games.
- (a) Represent the above information on a venn diagram.
- (b) Find:
- (i) how many students play all the three games.
 - (ii) the number of students who play one game.
 - (iii) the probability that a student selected at random plays only tennis. (12mks)
12. Using a ruler, pencil and a pair of compasses only;
- (i) construct a triangle ABC , where $\overline{BC} = 7.2cm$, $\overline{AC} = 8.4cm$ and angle $ABC = 75^\circ$
Measure \overline{AB} and angle ACB .
 - (ii) Draw a circle circumscribing triangle ABC , measure the radius of the circle. (12mks)
13. The following marks were obtained the worst thirty senior four students in Kibuli S.S.

34	23	24	41	23	24
23	30	42	20	23	15
21	23	33	16	30	36
40	43	47	24	39	10
34	43	33	33	33	11

From the frequency table for the data beginning with the class 10 – 14, and use the table to calculate:

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- (a) the average mark of the worst performing 30 students
 (b) the modal mark (12mks)
14. (a) The function $h(x)$ is defined as $h(x) = \frac{4x-2}{x^2-9}$
 Find:
 (i) $h(2)$
 (ii) values of x for which $h(x)$ is meaningless.
- (b) If $f(x) = nx + 7$ and $f(5) = 22$, find:
 (i) The value of n
 (ii) $f(4)$
- (c) Given that $f(x) = 8x^2 + 5$, find the value of x for which $f(x) = 293$ (04mks)
15. (a) (i) Draw a table for values y and x for the curve $y = 10 - x^2$.
 Use values of x from -4 to $+4$.
 (ii) Use your table to draw a graph of $y = 10 - x^2$ (08mks)
- (b) On the same axes, draw a graph of the line $y = 2x + 3$ (02mks)
 (c) Use your graph to solve the equation $x^2 + 2x - 7 = 0$ (02mks)
16. The diagram below $ABCDEFGH$ is a cuboid in which $AB = 9\text{cm}$, $AD = 12\text{cm}$, and $CF = 8\text{cm}$. The point M is on line GF such that $GM:MF = 1:3$



- (a) Calculate the length AF and MD .
 (b) Find the angle between the:
 (i) Line AF and the base $ABCD$.

- (ii) Planes $EFGH$ and $AGFD$
- (c) Find the capacity of the cuboid above.

END