

REPUBLIC OF RWANDA

MINISTRY OF EDUCATION

SOUTHERN PROVINCE

KAMONYI DISTRICT

MATHEMATICS HOLYDAYS WORK /2024-2025 /100MRKS

INSTRUCTIONS:

1. This paper has TWO sections: A and B
 - **SECTION A: Attempt ALL questions / (55 marks)**
 - **SECTION B: Attempt any THREE questions / (45 marks)**
2. You may use instruments of geometry and silent non-programmable calculators where necessary.
3. Use **BLUE or BLACK INK PEN** only to write your answers and a pencil to draw diagrams.
4. Show clearly all the working. Marks will not be awarded for the answer without all working steps.

SECTION A: ATTEMPT ALL THE QUESTIONS /55MARKS

1. Simplify: a) $\frac{8x^2 \times y^3}{2x^3 \times y}$ /2 marks

b) $\frac{2x^2 + 5x^3}{2x^2 + 4x^3}$ /2 marks

2. Given that $135_n = 75_{10}$, find the value of n . (4 marks)

3. Perform the operation $\frac{x+2}{x} - \frac{x}{x-2}$ (3 marks)

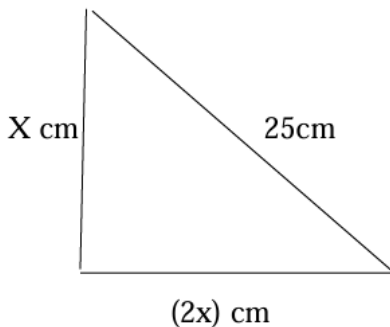
4. Solve in set of real numbers the equation $6x^2 - 2x = 3x - 1$ (3 marks)

5. The cost of 3 pencils and 4 exercise books is 1,350RWF. The cost of 5 pencils and 6 exercise books is 2,050RWF. Find the cost of one pencil and one exercise book. (Pencils and exercise books are all of the same type). (5 marks)

6. Work out $45_6 \times 23_6$ (3 marks)

7. Determine the equation of the line whose gradient is 2 and passes through the point (-2,6) (2 marks)

8. Find the value of x in the figure below



/3marks

9. A farmer has needed 294 kg of food to feed 15 cows for 7 days. What quantity of food does the farmer need to feed 10 cows for 30 days under the same conditions? (5 marks)

10) A trader deposited 63 000 FRW in a fixed deposit account with a local bank which attracted an interest of 8% p.a. compound interest. Find:

(a) the total amount after 4 years; (2 marks)

(b) compound interest (2 marks)

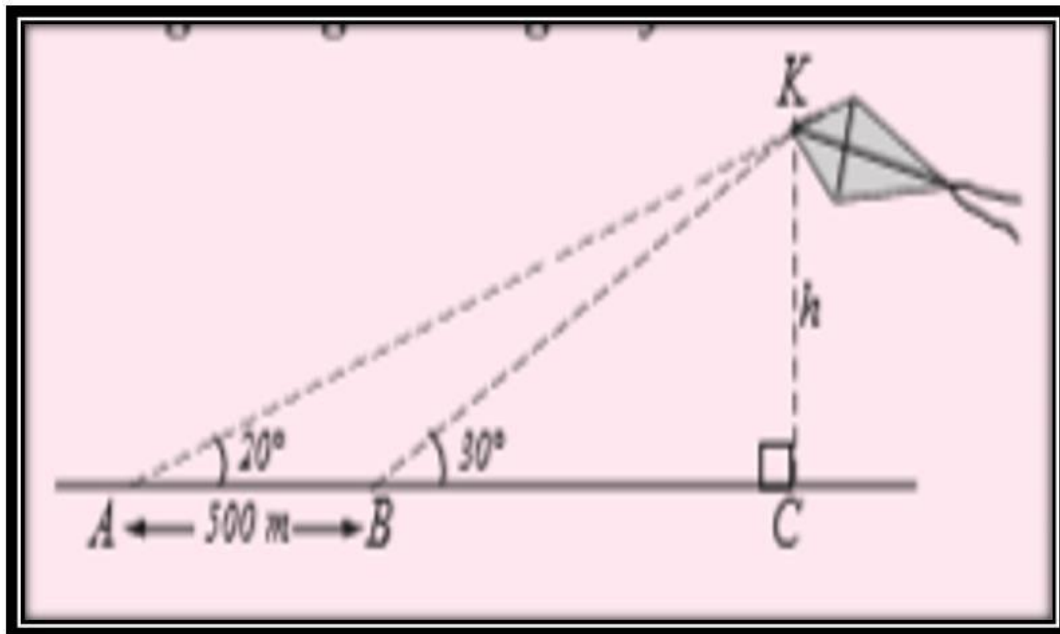
11. Solve in set of real number the equation $\frac{3}{x+2} - \frac{1}{x} = \frac{1}{5x}$ (5 marks)

12. Solve the following simultaneous equations: $\begin{cases} x - 2y = 5 \\ 2x + y = 5 \end{cases}$ /4marks

13. The sum of two numbers is 9. The sum of their squares is 41. Find the numbers.
/4marks

14. The altitude to the hypotenuse of a right-angled triangle is 8cm long. If the hypotenuse is 20cm long, what are the lengths of the two segments of the hypotenuse?
/3 marks

15) Two observers, A and B, 500 m apart, observe a kite in the same vertical plane and from the same side of it. The angles of elevation of the kite are 20° and 30° respectively. Find the height of the kite, disregarding the height of the observers.
/3marks



Section b: attempt any three questions /45marks

16) Consider the function $y = -2x^2 + 4x + 6$

a) Is the curve open up or open down? Explain

(2 marks)

b) Find the vertex and intercepts of the curve.

(5 marks)

c) What is the axis of symmetry of the curve?

(2 marks)

d) Sketch the graph of $y = -2x^2 + 4x + 6$

(6marks)

17.a) Draw the region which satisfies the following inequalities simultaneously/**12marks**

$$x > 0, y > 0, x + 2y \leq 6.$$

b) Find the area of unshaded region. /**3marks**

18.A group of 50 people were asked about the sections they read very keenly in a newspaper among politics, advertisements, and sports the results showed that 25 read politics ,16 read advertisements,14 read sports, 5 read both politics and advertisement,4 read both advertisements and sports ,6 read both politics and sports, 2 read all the three sections

a) Represent the data on the Venn diagram.

b) Find the number of people who read:

i) At least one of the three sections

ii) Only one of the three sections.

iii) Only politics.

19.a) If 12000 FRW is invested at 12% p.a compounded quarterly, find the accumulated amount after one year to the nearest francs.

b) 12 men, working 8 hours a day, can do a piece of work in 15 days. how many hours a day must 20 men work in order to do it in 8 days.

20. (a) The hypotenuse of a right-angled triangle is 5cm long and the longer leg of the triangle is 4cm long. What is the length of the projection of the shorter leg on the hypotenuse? **(5 marks)**

(b) The altitude to the hypotenuse of a right-angled triangle divides the hypotenuse into segments that are 2.5cm and 6.4cm long. Find the length of the altitude. **(5 marks)**

(c) In a right-angled triangle, the median to the hypotenuse has a length of $(3x-7) \text{ cm}$. The hypotenuse is $(5x-4) \text{ cm}$ long. Find the value x , hence find the length of the hypotenuse. **(5 marks)**

Good luck!!!!!!!!!!!!!!!!!!!!!!