



Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2006

MATHEMATICS

Time allowed: 2 hours 15 minutes

Index No:

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Candidate's Name.....

Candidate's signature.....

District Name.....

Read the following instructions carefully

1. This paper has two sections A and B.
2. Section A has 30 short answer questions (30 mark)
3. All the working. For both section A and B must be shown in the spaces provided
4. All working must be done using a blue or black ball Point pen or fountain pen Diagram should be drawn in pencil
5. No calculators are allowed in the examination room.
6. Unnecessary change of work may lead to loss of marks
7. Any hand writing that cannot easily be read may lead to loss of marks
8. Do not fill anything in the boxes indicated:
"For examiners". And those inside the question paper

FOR EXAMINERS USE ONLY		
Qn.No	MARKS	EXR'S NO.
1-10		
11-20		
21-30		
31-32		
33-34		
35-36		
37-38		
39-40		
41-42		
Total		

SECTION A: (30MARKS)

Question 1to 30 carry one mark each.

1. Work out 56

$$\begin{array}{r} -45 \\ 11 \\ \hline \end{array}$$

2. Write in figure: One thousand one

$$\begin{array}{r} 1000 \\ + 1 \\ \hline 1001 \end{array}$$

3. Simplify: $m + 2m + 3m$.
= 5m

4. Work out: $\frac{2}{3} \times \frac{9}{10} = \frac{3}{5}$

5. Round off 23.47 to the nearest whole number.
23 (since 4 is less than 5)

6. Write 29 in roman numerals.

$$\begin{aligned} 29 &= 20 + 9 \\ &= XX + IX \\ &= XXIX \end{aligned}$$

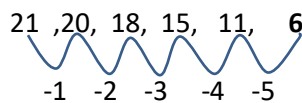
7. Shade $\frac{2}{5}$ of the following diagram:



8. Work out: 10_{two}

$$\begin{array}{r} +11_{\text{two}} \\ 101_{\text{two}} \end{array}$$

9. Find the next in the sequence 21,20, 18,15,11,



10. Work out: $-8 - 3$

$$= -8 + 3$$

$$= -5$$

11. Change $\frac{1}{5}$ kg to grams.

$$1\text{kg} = 1000\text{g}$$

$$\frac{1}{5}\text{kg} = \frac{1000 \times 1}{5}$$

$$= 200\text{g}$$

12. Solve: $2x + 7 = 11$.

Collect like terms

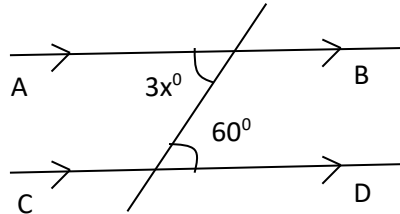
$$2x = 11 - 7$$

$$= 4$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

13. In the figure below, AB is parallel to CD , find the value of x



$$3x = 60^\circ \text{ (alternative angle)}$$

$$\frac{3x}{3} = \frac{60^\circ}{3}$$

$$x = 20^\circ$$

14. A pupil scored the following marks in mathematics tests 46,71, 30, 65,40,50,69. Find the median mark.

Arrange the score in order

30, 40, 46, 50, 65, 69, 79

The median is the middle number = 50

15. The area of a square room is $12\frac{1}{4}\text{m}^2$. Find the length of one of its sides.

Let the side of the square be X

$$X^2 = 12\frac{1}{4} = \frac{49}{4}$$

$$X = \sqrt{\frac{49}{4}} = \frac{7}{2} = 3\frac{1}{2}$$

16. A basket contains 3 rotten eggs and 6 good ones. If the eggs in the basket are mixed; what is the probability of picking a rotten egg from the basket?

Total sample space = $3 + 6 = 9$

Probability of picking a rotten egg = $\frac{3}{9} = \frac{1}{3}$

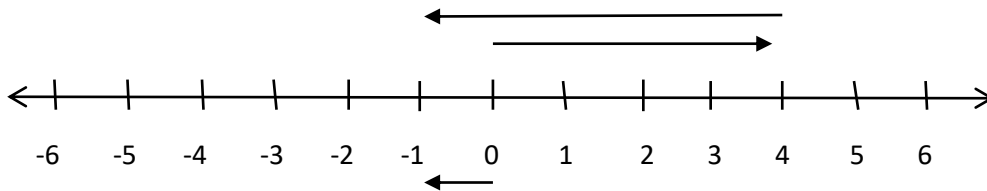
17. A baby slept at 8.35am. If the baby slept for 2 hours and 45 minutes, at what time did the baby wake up?

8.25 am

+ 2.45

11.10 am

18. Use the figure below to write the Mathematics statement shown.

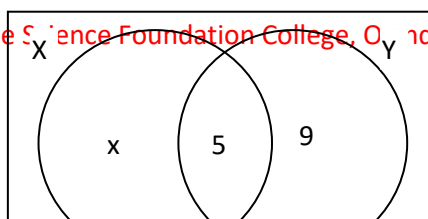


$$4 - 5 = -1$$

19. Use the Venn diagram below to find the value of x

$$\Sigma = 20$$

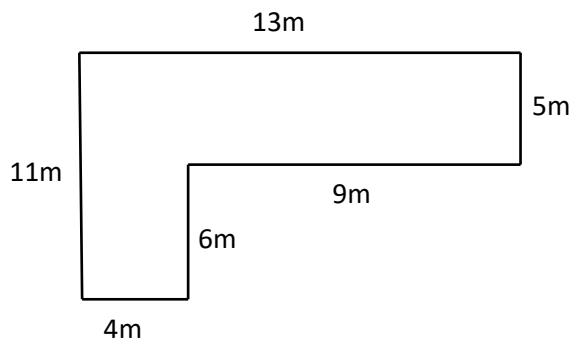
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$$x + 5 + 9 + 2 = 20$$

$$x = 4$$

20. Find the perimeter of the figure below



Perimeter is equal to the sum of the lengths of the sides of the figure

$$= 9 + 6 + 4 + 11 + 13 + 5 = 48 \text{ m}$$

21. Given that set $A = \{0, 1, 2, 3, 5, 7\}$ and set $B = \{0, 4, 6, 7, 9\}$ Find $n(A \cap B)$.

$$A \cap B = \{0, 7\}$$

$$n(A \cap B) = 2$$

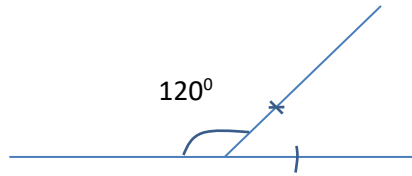
22. Abdu is x years old. He is 5 years younger than Madina. How old is Madina?

$$\text{Madina} = (x + 5)$$

23. Given that $a=6$, $b=3$, $c=2$ and $d=1$. Work out $\frac{ad}{bc}$

$$\text{Substitute for } a, b, c, d: = \frac{6 \times 1}{3 \times 2} = 1$$

24. Using a rule, a pencil and a pair of compasses only, construct an angle of 120° in the provided below.



25. If 4 books costs Shs. 36,000, how much will 6 books of the same types cost?

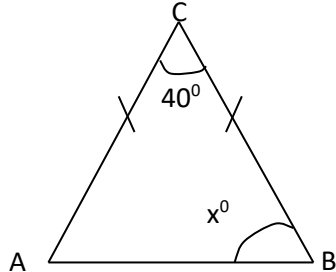
4 book cost 36,000

1 book costs $\frac{36000}{4} = 9000$

6 books cost = $9000 \times 6 = 54000$

\therefore six books cost shs. 54,000

26. The figure below is an isosceles triangle. Find the size of angle x



Angle CAB = angle ABC = x

It implies that: $x + x + 40 = 180^\circ$ (angle sum of a triangle)

$$2x + 40 = 180$$

$$2x = 140$$

$$x = 70^\circ$$

27. Find the difference between the place value of 9 and the place value of 7 in the number 9473.

	Place value of 9 = thousands = 9000	
Sponsor	Place value of 7 = tens	= - 70
	Their difference	<u>830</u>

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28. In a school of 600 pupils, the ration of boys to girls is 1: 2. what is the number of girls in the school?

$$\text{Total ratio} = 1 + 2 = 3$$

$$\text{Number of girls} = \frac{2}{3} \times 600 = 400$$

29. Mary deposited Shs. 80,000 in a bank which gives a simple interest rate of 7% per year. Find her interest after 6 months.

$$I = P \times R \times T = 80000 \times \frac{7}{100} \times \frac{6}{12} = \text{shs. } 2800$$

30 The price of a shirt was increased by 10%. If the new price is Shs. 44,00. Find the old price.

Let the old price be x

$$\frac{(100 + 10)x}{100} = 44000$$

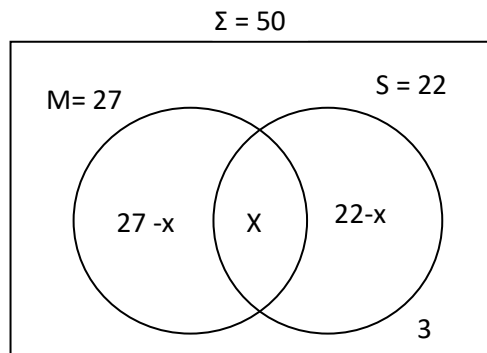
$$x = \frac{44000 \times 100}{110} = \text{shs. } 40,000$$

SECTION B

(Marks for each part of the question are indicated in the brackets)

30. In a primary seven class of 50 pupils ,27 like Mathematics (M), 22 like science(S), x pupils like both mathematics and science and 3 pupils do not like any of the two subjects.

31. (a) Represent this information in the Venn diagram given below.



(b) Find the value of x

(2 marks)

$$27 - x + x + 22 - x + 3 = 50$$

$$52 - x = 50$$

$$x = 2$$

(c) Find the number of pupils who like only one subject.

(2 marks)

$$\begin{aligned} \text{Number of pupils that like one subject only} &= 27 - x + 22 - x \\ &= 27 - 2 + 22 - 2 \\ &= 45 \end{aligned}$$

32. Jane bought the following item from the market.

3kg of sugar at shs1, 400 per kg.

$1\frac{1}{2}$ kg of rice at Shs. 1,200 per kg.

$1\frac{1}{2}$ litres of paraffin at Shs. 900 per litre.

8 oranges at Shs 50 per orange.

If Jane remained with only Shs. 250, find the total amount of money she had at first.

(6 marks)

Item	Quantity	Unit price	cost
Sugar	3 kg	1,400 per kg	4200
rice	$1\frac{1}{2}$ kg	1,200 per kg	1800
Paraffin	$1\frac{1}{2}$ kg	900 per kilo	1350
Orange	8	50 per orange	400
Total			7750

Since he remained with 250

She had $7750 + 250 = 8000$

33. A primary school has population of 1080 pupils. of these $\frac{3}{5}$ are girls and $\frac{1}{4}$ of the boys are in the upper primary classes.

(a) find the number of boys in upper primary classes

(3 marks)

$$\text{The fraction of boys} = 1 - \frac{3}{5} = \frac{5-3}{5} = \frac{2}{5}$$

$$\text{Fraction of boys in upper class} = \frac{2}{5} \times \frac{1}{4} = \frac{1}{10}$$

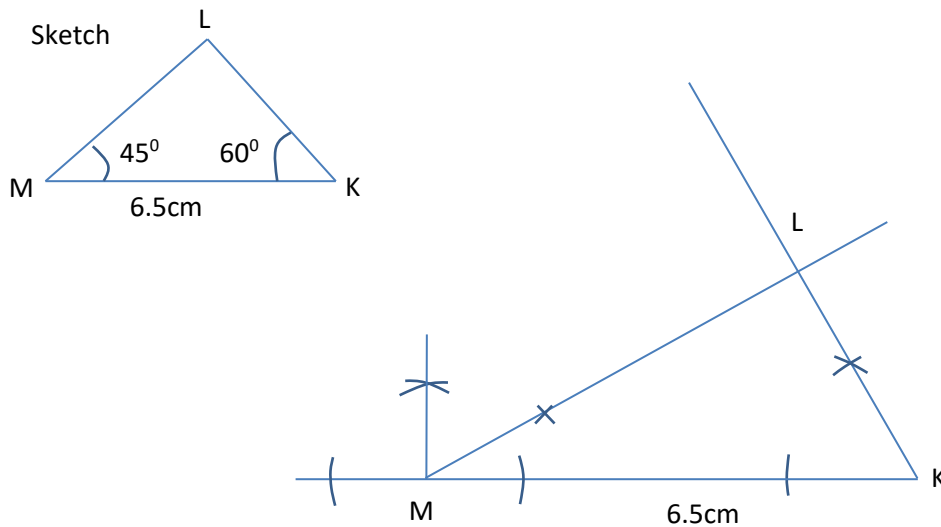
$$\text{Number of boys in upper class} = \frac{1}{10} \times 1080 = 108$$

(b) Express the number of boys in the lower primary classes as a percentage of the whole school population (2 marks)

$$\text{Fraction of boys in lower primary} = \frac{2}{5} \times \frac{3}{4} = \frac{3}{10}$$

$$\text{Percentage of boys in lower primary} = \frac{3}{10} \times 100 = 30\%$$

34. (a) using a ruler, a pencil and a pair of compasses only, construct triangle KLM in which $KM = 6.5\text{cm}$ angle $KML = 45^\circ$ angle $LKM = 60^\circ$ (4 marks)



(b) measure $ML = 5.5\text{cm}$ (1 marks)

35. John and his young daughter travelled from Kampala to Nairobi by bus. John paid K. shs 1,500 and the daughter paid K. shs 750.

The exchange rate was :

1 Kenya shillings (K. shs) = 24 Uganda shillings.

- (a) Work out the bus fare in Uganda shillings which each of them paid. (2 marks)

John paid K.shs. 1500 = Ug Shs 24×1500 = Ug. Shs 36000

Hence John paid Ug. Shs 36,000

Daughter paid K.shs. 750 = Ug Shs 24×750 = Ug. Shs 18,000

Hence daughter paid = Ug. Shs 18,000

- (b) If John had Ug. shs 102,00 at the beginning of the journey, what was his balance in Kenya shillings after paying bus fare for himself and the daughter? (4 marks)

$$\begin{aligned}\text{Total fare in Ug. shs} &= 36000 + 18000 \\ &= 54000\end{aligned}$$

$$\begin{aligned}\text{John's balance in Ug. Shs.} &= 102,000 - 54,000 \\ &= 48000\end{aligned}$$

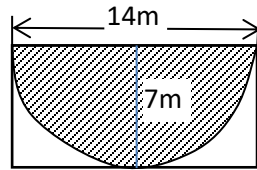
John's balance in K. shs.

Ug. Shs. 24 = K.shs. 1

$$\therefore \text{Ug. Shs. } 48000 = \frac{48000}{24} = \text{K. shs. } 2,000$$

$$\therefore \text{John's balance in Kenya shillings} = 2,000/=$$

36. The figure below shown a semi-circle enclosed in a rectangle .use it to answer the question that follow.



- (a) Find the area of the rectangle (3 marks)

Area of a rectangle = $L \times W$

$$= 14 \times 7$$

$$= 98\text{m}^2$$

- (b) Work out the area of the unshaded part. (3 marks)

$$\text{Area of shaded semicircle} = \frac{1}{2} \pi r^2$$

$$= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7$$

$$= 77\text{m}^2$$

Area of un shaded part = Area of rectangle – Area of shaded semicircle

$$= (98 - 77)\text{m}^2$$

$$= 21\text{m}^2$$

37. The head teacher drove from the school to town P for 3 hours at a steady speed of 60 km per hour. He left town P at 11 am and drove back to the school on the same road at a steady speed of 90 km per town hour.

(a) At what time did the headmaster arrive at the school? (4 marks)



$$\begin{aligned}\text{Distance between the school and the town P} &= \text{speed} \times \text{time} \\ &= 60 \times 3 \\ &= 180\text{km}\end{aligned}$$

$$\text{Time taken to go back} = \frac{\text{Distance}}{\text{speed}} = \frac{180}{90} = 2\text{hours}$$

$$\text{Time of arrival} = 11.00\text{am} + 2\text{hours} = 1.00\text{pm}$$

- (c) Work out the head teachers average speed for the whole journey. (1 marks)

$$\text{Total distance} = 180 \times 2 = 360\text{km}$$

$$\text{Total time} = 3 + 2 = 5\text{hour}$$

$$\text{Speed} = \frac{\text{distance}}{\text{time}} = \frac{360}{5} = 72\text{kmhr}^{-1}$$

38. Three pupils are aged $(2x + 5)$, $(3x - 10)$ and $(x+3)$ years. Their total age is 34 years.

(a) Find the value of x (3 marks)

$$\text{The sum of their years} = 34$$

$$(2x + 5) + (3x - 10) + (x + 3) = 34$$

$$(6x - 2) = 34$$

$$6x = 36$$

$$X = 6$$

(b) How old is the youngest pupils? (2 marks)

By substitution

$$(2x + 5) = 2 \times 6 + 5 = 17 \text{ years}$$

$$(3x - 10) = 3 \times 6 - 10 = 8 \text{ years}$$

$$(x+3) = 6 + 3 = 9 \text{ years}$$

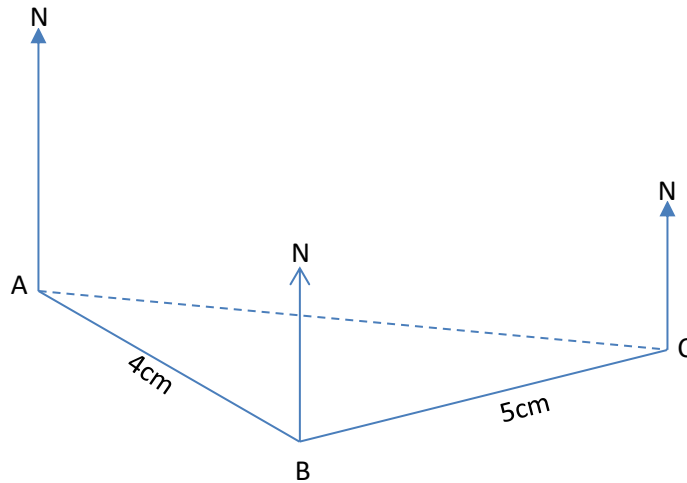
\therefore the youngest is 8 years

39. The bearing of town B from town A is 120° and town B is 4 km from A. The bearing of town C from B is 60° and town C is 5 km from B.

(a) Draw an accurate diagram showing the three towns.

(use scale 1 cm = 1 km)

(5 marks)



(b) Find the shortest distance between town A and C in kilometers

(1 mark)

Shortest distance AC = 7.9 cm

But 1 cm is equivalent 1 km

\therefore the shortest distance AC = 7.9 km

40. A milk seller has 36 litres of milk. He sells milks using a container measuring 6 cm by 10 cm by 6 cm at shs 150 per full container. how much money does he get selling all the milks?

(6 marks)

$$\text{Volume of milk in cm}^3 = 36 \times 1000 \text{ cm}^3$$

$$= 36000 \text{ cm}^3$$

$$\text{Volume of the unit} = L \times W \times H$$

$$= 10 \times 6 \times 6$$

$$= 360 \text{ cm}^3$$

$$\text{Number of units} = \frac{36000}{360} = 100 \text{ units}$$

But 1 unit costs = 150/=

$$\therefore \text{he would earn } 100 \times 150 = 15,000/=$$

41. (a) solve: $\frac{m+2}{2} = \frac{4m-4}{11}$

(2 marks)

Cross multiply 2 and 11

$$11(m + 2) = 2(4m - 4)$$

$$11m + 22 = 8m - 8$$

$$3m = -30$$

$$m = -10$$

(b) Solve: $\frac{2x+4}{5} - 6 = 0$

(3 marks)

Multiply through by 5

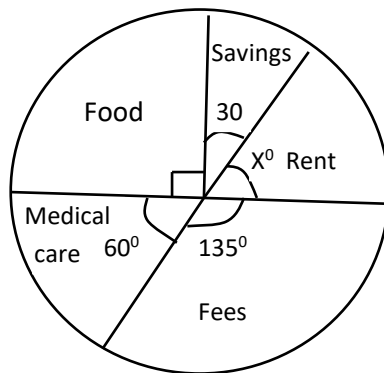
$$2x + 4 - 30 = 0$$

$$2x - 26 = 0$$

$$2x = 26$$

$$x = 13$$

42. The pie-chart below shows how Bbosa spends his monthly salary.



(a) If he spends shs 15,000 on rent, find his salary.

(4 marks)

First find the size of angle X

$$X + 30 + 90 + 60 + 135 = 360$$

$$X + 315 = 360$$

$$X = 45^\circ$$

Let Bbosa's salary be P

$$\frac{45}{360} \times P = 15,000$$

$$P = 15,000 \times \frac{360}{45} = 120,000$$

\therefore Bbosa's salary is 120000 /=

(b) Work out the amount of money he spends on:

(i) Food

(2 marks)

$$\text{Amount of money spent on food} = \frac{90}{360} \times 120000 = 30,000 \text{ /=}$$

(ii) Medical care

(2 marks)

$$\text{Amount of money spent on medical care} = \frac{60}{360} \times 120000 = 20,000 \text{ /=}$$

END