Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

2001 (answers)

MATHEMATICS

Time allowed: 2hours 15 minutes

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Index No:

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 question (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

1. Add: 206 to 45

   206

   + 45

   251

2. Solve; a + 7 = 13

   Collect like terms

   A = 13 – 7 = 6

3. Write the following numerals 34,017 in words.

   34,017 = thirty four thousands seventeen

4. Find the square root of $7\frac{1}{9}$

   $$\sqrt{7\frac{1}{8}} = \sqrt{\frac{64}{9}} = \frac{\sqrt{64}}{\sqrt{9}} = \frac{8}{3} = 2\frac{2}{3}$$

5. Write 96 in Roman numerals.

   96 = 90 + 6

   = XC + VI

   = XCVI

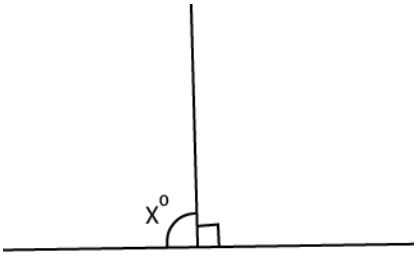
6. Find the next number in the sequence below: 2, 3, 5, 7…….

   2, 3, 5, 7…….

   This is a sequence of prime number

   ∴ the next prime number is 11

7. Find the value of x in the figure below.



$x + 90 = 180^0$ (angle sum on a straight line)

$x = 90^0$

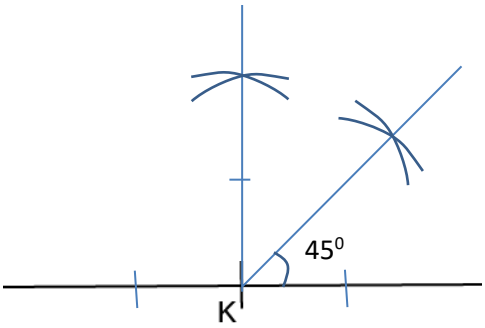
8. Change 110_{two} to base ten.

$110_{two} = (1 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$

$= 4 + 2 + 0$

$= 6$

9. Using a pair of compasses, a pencil and a ruler only, construct an angle of 45° at point K below.



10. How many ¼ -litre bottles can be filled from a 20-litre jerry can of milk?

$$20 \div \frac{1}{4} = 20 \; x \; 4 = 80$$

11. Simplify: (8m + 9) - (3m + 4).

(8m + 9) - (3m + 4).

Remove brackets

8m + 9 – 3m -4

Collect like terms

5m +5 = 5(m+1)

12. A mathematics test lasting $1\frac{1}{2}$ hours ended at 11,00a.m. At what time did the test start?

11:00

- 1:30 The test started at 9:30 am

9:30

13. Workout: $\frac{1}{4} - \frac{1}{8} = \frac{(1\,x2)-(1\,x\,1)}{8} = \frac{1}{8}$

14. The temperature of hailstone was - 5°C and that of water was 25°C. What was the difference in temperature between the hailstone and the water?

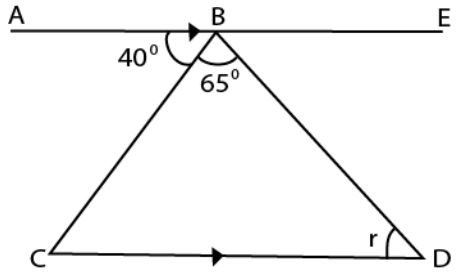
25 - -5 = 25 + 5 = 30^0

15. The mean age of 3 children is 13 years. The total age of two of the children is 25 years. Find the age of the third child.

Total age for children = 13 x 3 = 39 years

Age for third child = 39 – 25 = 14years

16. In the diagram below AE is parallel to CD. Find the size of angle r.



$40^0 + 65^0 +$ <EBD = 180^0 (angle sum of straight line)

angle EBD = $180^0 – (40 + 65)^0$

= 75^0

r = angle EBD = 75^0 (alternative angles)

17. Given that a = 1, and b - 3, find the value of 3a - 3b.

Substitute for a and b

(3 x 1) – (3 x -3) = 3 - -9 = 3 + 9 = 12

18. Is a class of 36 pupils, 12 are girls and the rest are boys: What in the probability that a pupil selected at-random is a boy?

Number of boys = 36 – 12 = 24

Probability of a boy = $\frac{number\ of\ boy}{total\ pupils} = \frac{24}{36} = \frac{2}{3}$

19. A trader bought a bull at Sh 100,000 and sold it at Sh 125,000, What was his percentage profit?

Profit = selling price – cost price

= 125000 – 100000

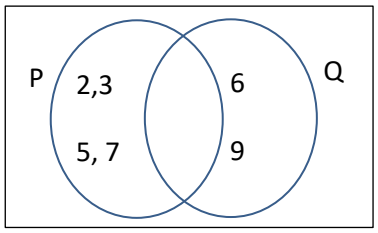
= 25000

Percentage profit = $\frac{profit\ x\ 100\%}{cost\ price}$

= $\frac{25000\ x\ 100\%}{100000}$

= 25%

20. Giver



P∩Q = 0

21. Amooti deposited Shs 15,000 in a bank, which offers interest rate of 2½ % per year for one year. Find the interest.

I = PRT

= 15000 x $\frac{5}{200}\ x\ 1 = shs.375$

22. In class of 80 pupils, the ratio of boys to girls is 2:3. Find the number of girls.

Total ratio = 2 + 3 5= 5

Number of girls = $\frac{3}{5}\ x\ 80 = 48\ girls$

23. Okello had 30km still to cover after travelling $\frac{3}{5}$ of the journey. How long was the journey?

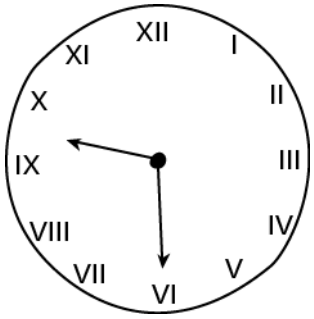
The fraction of uncovered journey = 1- $\frac{3}{5} = \frac{2}{5}$

Let the journey be x

$\frac{2}{5}\ of\ x = 30$

x = 30 x $\frac{5}{2}$ = 75

24.Using the clock face below, write the morning time in Arabic numerals.



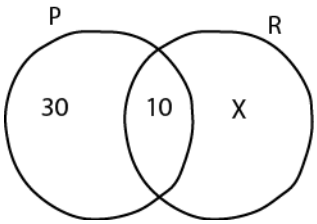
The time is 9:30 am

NB

am - for morning time

pm - for evening time

25. A class of 70 pupils eat posho (P) and Rice (R) as shown in the Venn diagram. Find the Valve of *x*

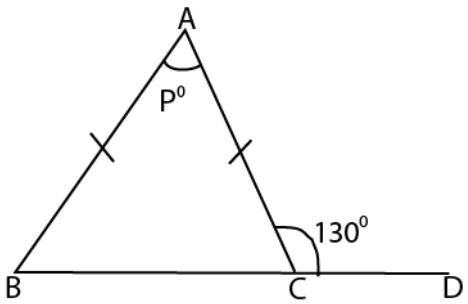


$30 + 10 + x = 70$

$40 + x = 70$

$x = 30$

26. In the diagram below, ABC is an isosceles triangle. Find the value of P. at A



$\angle ACB + 130 = 180$ (angle sum on straight line)

Angle $ACB = 180 - 130 = 50^0$

$\angle ABC = \angle ACB = 50^0$

$P + \angle ABC + \angle ACB = 180^0$

$P + 50 + 50 = 180^0$

$P = 80^0$

27. Solve for x in $2x - 5 = x - 1$.

Collect like terms

$2x - x = 5 - 1$

$x = 4$

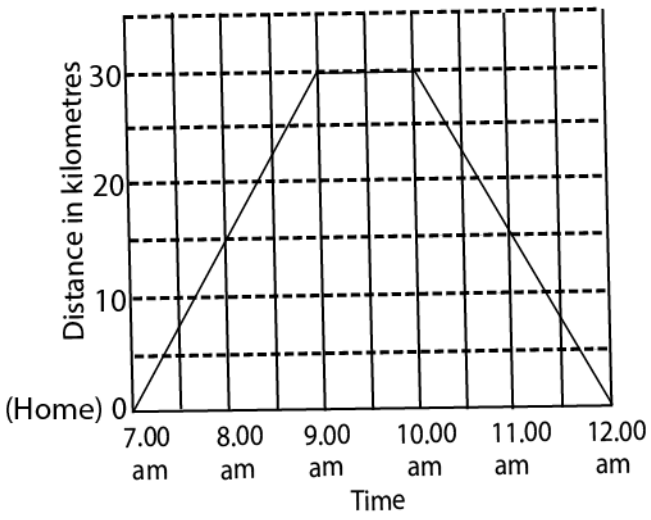
28. A circle has a radius of 7cm. Find its circumference [Take $\pi = \frac{22}{7}$)

Circumference = $2\pi r$

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

$= 44$cm

The graph shows Peter's journey from his home to town and back home Use it to answer questions 29 and 30.



29. How far is the town from Peter's home?

30km

30. How many hours did peter spend out of his home?

12 -7 = 5 hours

SECTION B

31. Samanya scored the following marks in her homework exercises:

2, 5, 7, 3, 10, 4, 7, 11, 8, 3.

a) Find her median mark.

Arrange the numbers in ascending order

2, 3, 3, 4, **5, 7**, 7, 8, 10, 11

The median mark is the middle number or average of two middle number

$$= \frac{5+7}{2} = \frac{12}{2} = 6$$

b) Find the mean mark.

Mean or average = $\frac{sum\ of\ numbers}{number\ of\ items} = \frac{2+3+3+4+5+7+7+8+10+11}{10}$

$$= \frac{60}{10} = 6$$

c) Find the probability that Samanya scored a mark above her mean mark.

Probability = $\frac{sample\ space}{total} = \frac{5}{10} = \frac{1}{2}$

32. A customer bought a fountain pen at Sh 1,500. The original price of the pen was Sh 2,000.

a) Work out the percentage discount.

Discount = 2000 – 1500 = 500

Percentage discount = $\frac{discount\ x\ 100}{original\ price} = \frac{500\ 100}{2000} = 25\% =$

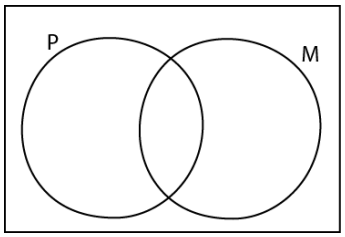
b) If the customer was allowed the same percentage of discount on an article priced at Sh 5,000, how much did he pay for it?

Price paid = $\frac{(100-\%\ discount}{100}\ of\ the\ original\ price$

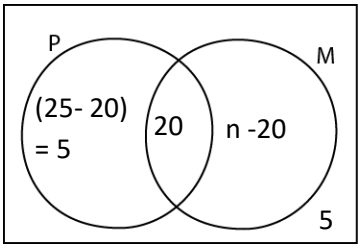
$= \frac{100-25}{100}\ x\ 5000$ = shs. 3750

33. In class of 60 pupils, 25 drink pepsi cola (P), n drink Mirinda (M) only, 20 drink both Pepsi cola and Mirinda. 5 drink none of these.

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



$\varepsilon = 60$



b) Find the value of n.

60 = 5 + 20 + n-20 +5

60 =n + 10

n =50

c) How many pupils drink one type of soda only?

Pupils that drink one soda = 5 + n -20

= 5 + (50 - 20)

= 35

34. a) Solve for b in: $\frac{3}{5}$(2b-3) = 3

2b – 3 = 3 x $\frac{5}{3}$ = 5

2b = 5 + 3 = 8

b = 4

b) Solve and find the solution set; 16 > 4x > 4

Divide by 4 through out

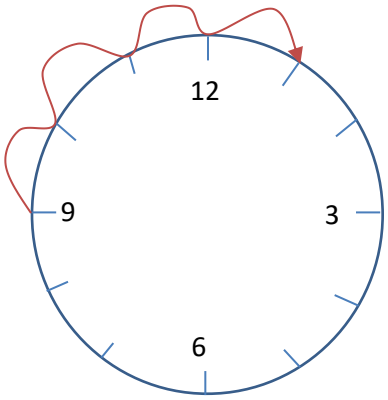
4> x> 1

x = {2, 3}

35. The timetable below is for a bus travelling from Mbale to Kampala. Use it to answer the questions that follow.

Mbale	Departure	9.00am
Tororo	Arrival Departure	9.45am 10.00am
Iganga	Arrival Departure	11.15am 11.20am
Jinja	Arrival Departure	12:00 pm 12.20pm
Kampala	Arrival	1.00pm

(i) How long does the bus take to travel from Mbale to Kampala?



It took 5hours

(ii) Find the total time the bus takes stopping on the way.

Tame taken stopping = (10:00 – 9:45) + (11:20 – 11:15) + (12:20 – 12:00)

= 15 + 5+ 20

= 40 minutes

(iii) If Kampala is about 252Km from Mbale, Find the average speed of the bus.

Speed = $\frac{distance}{time} = \frac{252}{5} = 50.4km/hr$

36. Annet is 20 years younger than Peter. In 15 years, Peter will be twice as old as Annet. How old is Annet now?

Let annet's age be X

Peter's age = (X + 20)

⇨ 2(X + 15) = (X + 20) + 15

Removing blackets

2X + 30 = X + 20 + 15

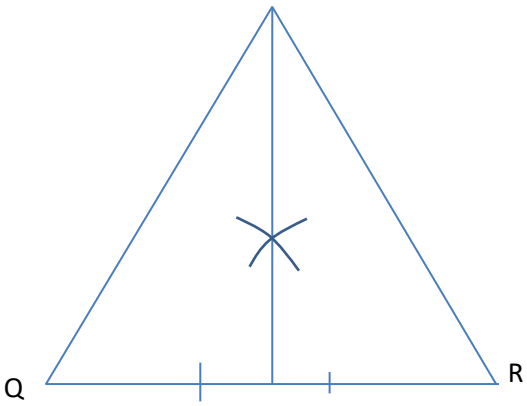
X = 5

∴ Annet's age = 5years

37. (a) Using a pair of Compasses, pencil and a ruler only construct a triangle PQR in which QR = 6cm, and the point P lies on the perpendicular bisector of QR. Point P is 5cm above QR.

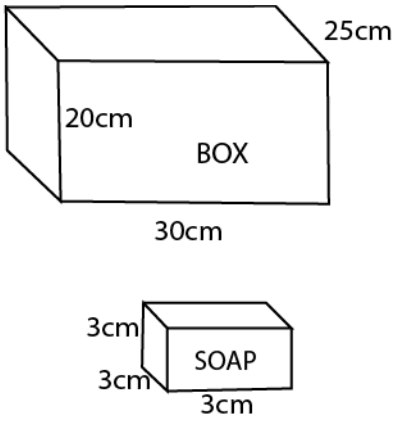
(b) Measure PQ

P



(c) Measure angle PQR = 5.8cm

38. Pieces of soap each measuring 3cm by 3cm by 3cm are to be packed into a box measuring 30cm by 25cm by 20cm. (See the diagram below.)



a) How many pieces of soap can be packed into the box?

Bar

Bar long the length = 30 /3 = 10

Bars across = 25/3 = 8

Bars along the height = 20/3 = 6

Total bars = 10 x 8 x6 = 480

b) Calculate the space left empty after pieces of soap have been packed into the box.

Volume of the box 30 x 20 x 25 = 15000 cm^3

Volume of soap = 480 x (3 x 3 x 3) = 12960 cm^3

Empty space = 15000 – 12960 = 2040cm^3

34. Below are postage charges of various items. Use the information to answer the question that follow.

LETTERS:

For the first 20 grams Shs 50

Each additional 20 grams Shs 30

Each extra grams Shs 10

PRINTED PAPERS:

For the first 50 grams Shs 50

Each additional 50 grams Shs 20

Each extra grams Shs 10

a) How much does it cost to post a letter weighing 120 grams?

120 g = 20g + 20g + 80g

Cost = 50 + 20 + 80 x 10= 70 + 800 = shs 870

b) How much does it cost 2 letters each weighing 120g and 2 printed papers each weighing 300g?

Cost of a letter weighing 300g

300g = 20 g + 20 g + 260g

Cost = 50 + 30 + 260 x 10 = shs 2680

Cost of 2 letter weighing 300g each = 2680 x 2 = shs 5360

Cost of printed paper weighing 300g

300g = 50 g + 50 g + 200g

Cost = 50 + 20 + 200 x 10 = shs 2070

Cost of 2 printed papers weighing 300g each = 2070 x 2 = shs 4140

Total cost = 5360 + 4140 = shs 9500

40. The diameter of a wheel of a motorcycle is 35cm. The motor-cycle covers 33 Km.

a) Find the number of revolutions the wheel makes to cover that journey.

Circumference of the wheel = πd = $\frac{22}{7}$ x 35 = 110cm

Changing 33km to cm

km	Hm	Dm	m	dm	cm	mm
1	0	0	0	0	0	

1km = 100, 000

⇨ 33km = 33 x 100,00 = 3300000cm

Numbers revolution = $\frac{distance}{circumfrence} = \frac{3300000}{110} = 30000\ revolution$

b) If the motor-cycle covers 110 meters per minute, how long will the journey of 33 Km take? (Give your answer in hours).

110m = $\frac{110}{1000} = 0.11km$

1minute = $\frac{1}{60}\ hours$

⇨ 0.11km requires $\frac{1}{60}\ hours$

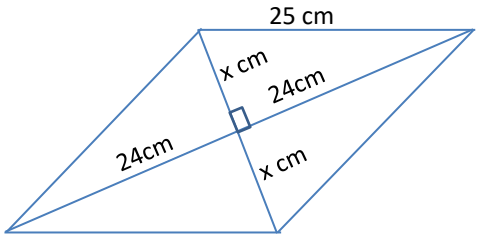
∴ 33km will require $\left(\frac{1}{60}\ hours\ x\ 33\right) \div 0.11$

$= \frac{1}{60}\ x\ 33\ \div \frac{11}{100}$

$= \frac{1}{60}\ x\ 33\ x\ \frac{100}{11}\ hours$

$= 5\ hours$

41. The perimeter of a rhombus is 100cm and one of its diagonal is 48cm. Find its area.



Side of the rhombus = $\frac{100}{4} = 25cm$

Let the 2nd diagonal be 2x

From Pythagoras

$25^2 = 24^2 + x^2$

$625 = 576 + x^2$

$x = \sqrt{49} = 7$

Area of a Rhombus = $4(\frac{1}{2}\ (24\ x\ 7)) = 336cm^2$

42. A piece of land is used as follows:

5 hectares for growing coffee.

10 hectares for growing cassava.

20 hectares for growing matooke

25 hectares for keeping animals.

Represent the above information on a pie-chart. (Use a radius of 5 cm.)

Total areas = (5 + 10 + 20 +25) = 60 hectares

Converting to degrees

Coffee = $\frac{5}{60}\ x\ 360 = 30^0$

Cassava = $\frac{10}{60}\ x\ 360 = 60^0$

matooke = $\frac{20}{60}\ x\ 360 = 120^0$

animals = $\frac{55}{60}\ x\ 360 = 150^0$

The pie chart of piece of land