Dr. Bbosa Science

UGANDA NATIONAL EXAMINATION BOARD

PRIMARY LEAVING EXAMINATION

1997 Guide

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Mathematics

SECTION A

1. Subtract 405-49

405

- 49

356

2. Change 10010_{two} to be base ten.

$10010_{two} = (1 \times 2^4) + (0 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$

$= 16 + 2$

$= 18$

3. Express 44 in Roman Numerals.

44 = XL + IV = XLIV

4. Express Shs. 30 as a percentage of Shs. 120.

Percentage = $\frac{30}{120} \; x \; 100 = 25\%$

5. Solve $2x+2 = 6$

Collecting like terms

$2x = 6-2 = 4$

Dividing by 2 throughout

$X = 2$

6. Kantono went to sleep at 2130 hours. What time on a 12-hour clock did she go to sleep?

To convert time from 24hr clock beyond 1259 we subtract 12 and add pm

21:30 – 12:00 = 9:30pm

7. Igune bought 7 films for his camera at a total cost of Shs. 9,100. How much would 4 films cost?

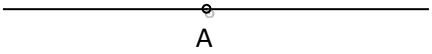
7films cost 9,100

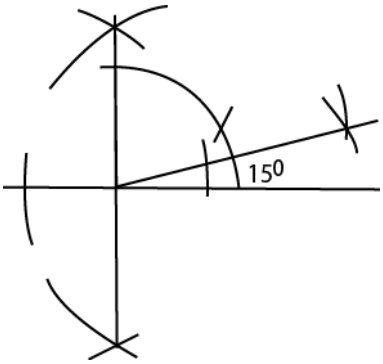
1 film costs = $\frac{9,100}{7} = 1,300$

4 films cost = 1,300 x 4 = shs 5,200

8. Using a pair of compasses and a ruler only, construct an angle of 15° at point A

9.





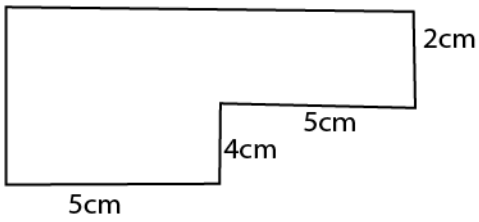
9. A plane took $^1/_4$ of an hour to fly from A to B 30 km, apart. Find the speed of the plane in kilometres per hour.

Speed = $\frac{distance}{time} = 30 \div \frac{1}{4} = 30\ x\ 4 = 120km/hr$

10. Subtract $\frac{1}{2} - \frac{1}{12}$

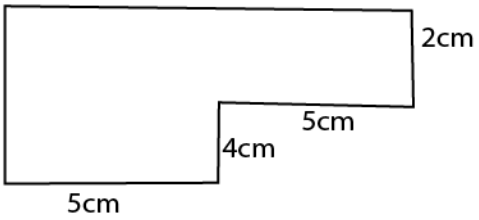
$= \frac{6-1}{12} = \frac{5}{12}$

11. Find the perimeter of the figure below:



2 + 4 =6cm

5 + 5 = 10cm



12. In Baganzi Primary School, the number of pupils increased by 20%. What is the new number if the old number of pupils was 500?

New number $= \left[\frac{100+20}{100}\right] x\ 500$

$= \frac{120}{100} x\ 500 = 600$

13. Kintu's speed is 90 km per hour. Express this in metres per second.

90km/hr

Change km to m and hours to second

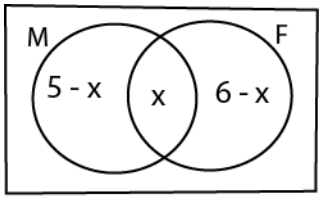
$= \frac{1000\ x\ 90}{1\ x\ 3600} = 25m/s$

14. Water and milk are mixed in the ratio 3:1 to make tea for a party. How many litres of milk are in 20 litres of tea?

Total ratio = 3+1 =4

Liters of milk = $\frac{1}{4} x\ 20 = 5l$

15. In a home of 8 people, 5 like eating meat (M), 6 like eating fish (F) and x people like both. Use the Venn diagram below to find x.

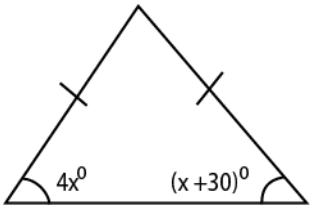


$5-x+x+6-x=8$

$11-x=8$

$x=3$

16. The figure below is an isosceles triangle, find the value of *x.*



$4x = x + 30$

$4x - x = 30$

$3x = 30$

$x = 10^0$

17. Find the next number in the sequence: 81, 27, 9, 3, 1, ... $\div 3$

81, 27, 9, 3, 1, ... $=\frac{1}{3}$

$\div 3$ $\div 3$ $\div 3$ $\div 3$ $\div 3$

18. If a = -3 and b = 4, find the value of $a^2 + b^2$

Substitute for a and b

$= (-3)^2 + 4^2$

$= 9 + 16 = 25$

19. Simplify: $\frac{1}{3}$(6x-3m)

$\frac{1}{3}$(6x-3m) = (2x –m)

20. Find the GCF of 6 and 8

2	6	8
	3	4

The greatest common factor =2

21. Find the median of 6, 3, 7, 0, 1, 4

Arrange the numbers in order from the smallest

0, 1, 3, 4, 6, 7

The median is the middle number =$\frac{3+4}{2}$ = 3.5

22. Add: 4.05 + 11.4 + 2.36

$$\begin{array}{r} 4.05 \\ 11.40 \\ +\ 2.36 \\ \hline 17.81 \end{array}$$

23. The volume of a cylinder is 3080 cm^3. Find the height of the cylinder if the radius is 7cm 22 (Take $\pi = \frac{22}{7}$)

Volume of cylinder = $\pi r^2 h$

3080 = $\frac{22}{7}$ x 7 x 7 x h

h = 20cm

24. Mukasa put Shs. 80,000 in the bank. If the interest rate was 10%, how much interest did he get after 9 months?

Interest, I = PRT = 80000 x $\frac{10}{100}$ x $\frac{9}{12}$ = 6000 /=

25. There are 12 eggs in the basket. If 3 eggs are rotten, what is the probability of picking a good egg at random from the basket?

Good eggs = 12-3 = 9

Probability of good eggs = $\frac{9}{12} = \frac{3}{4}$

26. Find the supplement of an angle of 80°

Supplement angles add up to 180^0

∴ the supplement angle = 180 – 80

= 100^0

27. If $\frac{3}{5} = \frac{6}{x}$, find the value of x.

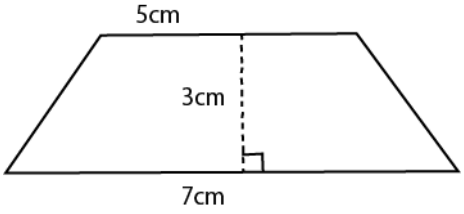
$\frac{3}{5} = \frac{6}{x}$

By cross multiplication

3x = 30

Divide by 3 throughout, x = 10

28. The figure below is a trapezium. Find its area.



Area = $\frac{1}{2}h(a+b)$

= $\frac{1}{2}$ x 3 (5 + 7)

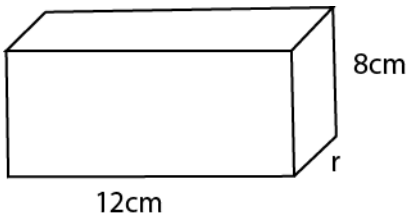
= $18cm^2$

29. Divide $0.36 \div 1.8$

$= \frac{0.36}{1.8} = \frac{36}{180} = \frac{2}{10} = 0.2$

30. Simplify: $^{-}2 - {}^{-}2 = -2 + 2 = 0$

31. The volume of the box below is $480cm^3$



(a) Find the value of r

Volume = l x w x h

480 = 12 x r x 8

480 = 96r

r = 5cm

(b) Calculate its surface area

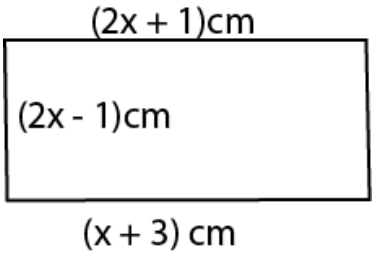
Surface area = 2(12 x 5) + 2(12 x 8) + 2(5 x 8)

=2(60 +96 +40)

= 2 x 196

= 392

32. The figure below is a rectangle. Find its perimeter



First find the value of x

$2x + 1 = x + 3$

Collect like terms

$x = 2$

perimeter = $2(l + w)$

$= 2(2 \times 2 + 1 + 2 \times 2 - 1)$

$= 16cm$

33. In Odokomit Primary School, two bells are rung at different intervals of 30 minutes and 40 minutes. If they are rung together at 10:00 a.m., at what time will they be rung together again?

The time taken before the bells ring again is the LCM

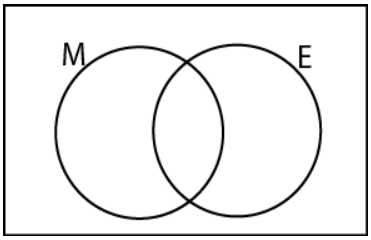
2	40	30
5	20	15
	4	3

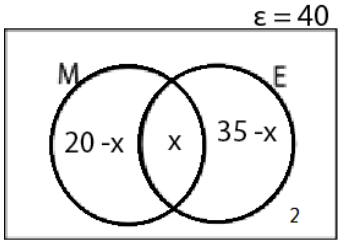
LCM = 2 x 5 x 4 x 3 = 12min = 2hour

The two bells will ring again after 2hrs or 10:00 + 2:00 = 12:00pm

33. In a class of 40 pupils, 20 like Mathematics (M), 35 like English (E) and *2* pupils do not like any of the two subjects.

(a) Complete the Venn diagram belowε





(b) Find the number of pupils who like both subjects

Value of x

$40 = 20 - x + x + 35 - x + 2$

$40 = 57 - x$

$x = 17$

∴ the number of students that like both subjects = x = 17

35. (a) A taxi with its 14 passengers and the driver all weigh 1700kg. If the weight of each person is 70kg, what is the weight of the vehicle?

Mass of 14 passenger + 1 driver = 15 x 70 1050

Mass of the taxi = 1700 – 1050

= 650kg

(b) A bus moving at a speed of 80 km per hour leaves Jinja at 8:00 a.m. for Busia and arrives there at 11:00 a.m. How far is Busia from Jinja?

Time taken = 11:00 - 8:00 = 3hours

Distance = speed x time

= 80 x 3

= 240km

36. Nakalanzi bought the following items from a shop:

3½ kg of beans at Shs. 600 per kilogram,

1½ of salt at Shs. 250 per kilogram,

4 bars of soap at Shs. 700 per bar.

a) If Nakalanzi was given a discount of 20% on her total expenditure, how much was the discount?

Total cost = cost of beans + cost of Salt + cost of soap

= 3 ½ x 600 + 1 ½ x 250 + 4 x 700 —

= $\frac{7}{2}\ x600 + \frac{3}{2}\ x\ 250 + 2800$

= 2100 + 375 + 2800 = 5275

20 % discount = $\frac{20}{100}\ x\ 5275$ = shs 1,055

b) How much did Nakalanzi pay?

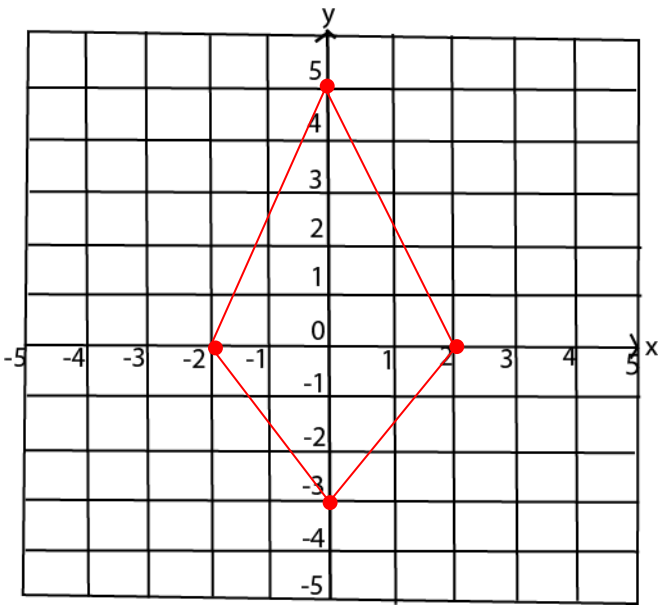
She paid 5275 – 1055 = 4,220

37. On the grid below:

i) Plot the points A (0, 5), B (-2, 0), C (0, -3), D (2, 0)

ii) Join A to B, B to C, A to D. b)

Name the polygon formed.



The shape formed is a kite

38. Bbosa filled a cylindrical tank whose radius is 10cm and height 70cm with passion fruit juice. If he sells it at shs 400 per litre, how much money will he get? Take $\pi = \frac{22}{7}$

Volume = $\pi r^2 h = \frac{22}{7} \; x \; 70 \; x \; 70 \; x \; 10 = 22000 cm^3$

But $1000cm^3$ = 1 litre

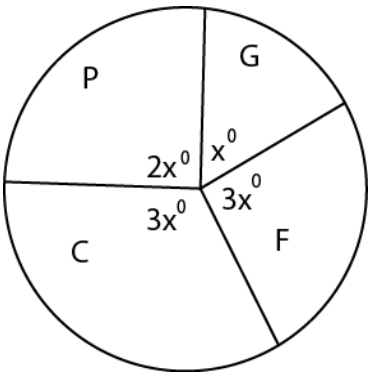
Converting volume to litres = $\frac{22000}{1000}$ = 22 litres

The cost of 1 litre = shs 400

He therefore, earned = 22 x 400 = shs 8800

39. The pie Chart below shows how a farmer has divided his land. C is for cash crops, G is for grazing. F is for food crops and P is for other purposes. The land available is 720 hectares.

a) How many hectares are left for grazing?



Finding the value of x

$2x + x + 3x + 3x = 360$ (angle sum of a circle)

$9x = 360^0$

$x = 40^0$

the number of hectares left for grazing = $\frac{40}{360}\ x\ 720$

= 80 hectares

(b) If he pays rent of Shs. 200 per hectare per year, how much will he pay for land reserved for cash crops?

Degrees for cash crop = 40 x 3 =120

Area for cash crop = $\frac{120}{360}\ x\ 720 = 240\ hectares$

Rent paid

1 hectare cost 200

240 hectares cost 240 x200 = 48000

40. (a) Find the value of x if

$4(3x - 5) - 2(6 + x\} = \bar{}12$

Open brackets

$12x - 20 - 12 - 2x = 12$

Collect like terms

$10x - 32 = 12$

$10x = 44$

$x = 4\frac{2}{5}$

(b) Solve the inequality: $3x - 6 < 10 + x$

Collecting like terms

$3x - x < 10 + 6$

$2x < 16$

$X < 8$

41. Isingoma drives at 120km per hour and okello drives at 100 km per hour. If they leave Town A at the same time to go to Town B 360km away, how far will Okello be from Town B when Isingoma arrives there?

Time taken by Isingoma = $\frac{Distance}{speed} = \frac{360}{120} = 3hours$

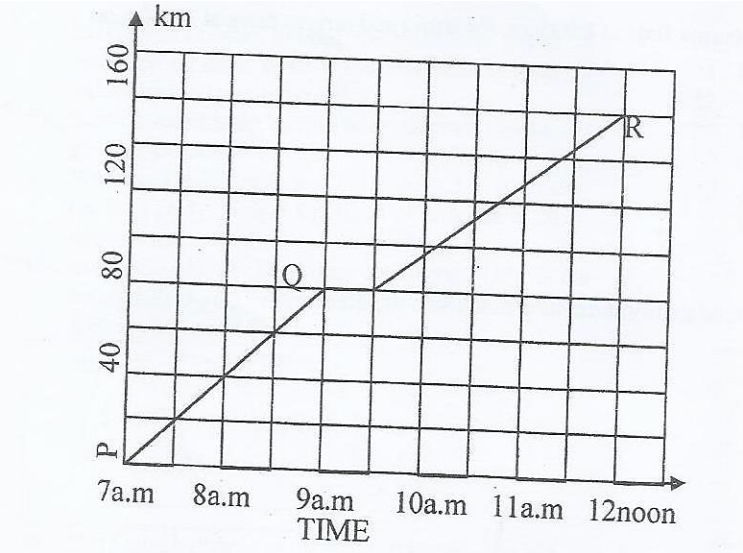
Distance moved by Okell in 3 hours = speed x time

= 100 x 3

= 300km

Remaining distance to reach town B = 360 – 300 = 60km

42. A motorist drove from Town P to Town R via Q. study the graph below carefully and use it to answer the questions that EE follow:



b) How far is Town Q from P?

From the graph is 80km

c) For how long did the motorist stay at Town Q?

He stayed 30 minutes

d) At what time did the motorist reach town R?

He reached R at 12:00noon

e) What was the motorist's average speed on the whole journey?

Total time taken = 12:00 – 7:00 = 5hours

Total distance = 160km

Speed = $\frac{distance}{time} = \frac{160}{5} = 28km/hr$