*456/1*
*Mathematics*
*Paper 1*
*July/August 2024*
*2¼ hours*

# BUGANDA EXAMINATIONS COUNCIL MOCKS

**Uganda Certificate of Education**

**MATHEMATICS**

**PAPER 1**

**2HOURS 15 MINUTES**

***INSTRUCTIONS TO CANDIDATES***

- This paper consists of **two** sections; **A** and **B**. It has six examination items.
- Section **A** has **two** compulsory items
- Section **B** has **two** parts **I** and **II**. Answer **one** item from each part.
- Answer **four** examination items in all
- Any additional item(s) answered will **not** be scored
- All answers **must** be written in the answer booklet(s) provided
- Graph paper is provided
- Silent, non-programmable scientific calculators and mathematical tables with a list of formulae may be used



Turn over

## SECTION A

Answer **all** items in this section

Kasawuli a farmer in Bulamogi Sub County wishes to sale his goats; to get his farm, the buyer walked 5km west from his home to Kaliro town, then 12km South to Kasawuli's home, however, Kasawuli realized there was a direct route from the buyers' home to his home he could have used.

After the sales, Kasawuli wishes to starta hardware in the town that is valued AT UGX 12.5 million. He has received 45% of the required amount from the sale of his goats and wants to top up the balance. He has approached two money lenders Juma and Saidi who lend money according to the following conditions.

| JUMA | SAIDI |
|---|---|
| He lends at a simple interest rate of 8% per annum payable in 24 equal monthly installments | He lends at a compound interest rate of 8% per annum payable in 24 equal monthly installments. |

Mr. Kasawuli wants to decide on which of the two money lenders to opt for.

**Tasks**

(a) How far is Kasawuli's home from the buyers if he travelled directly?
(b) Help Mr. Kasawuli find how much money he intends to borrow
(c) Which of the two money lenders would you recommend Mr. Kasawuli to opt for
(d) Having selected for Mr. Kasawuli the right money lender how much does he pay per installment?

**Item 2**

Mrs. Mukasa is going to bake chocolate cakes and yellow cakes for sale. She wants to bake at least **2** chocolate cakes. She also wants to bake more yellow cakes than chocolate cakes. Due to limited time and facilities she cannot bake more than **10** cakes.

The chocolate cakes are to be sold at **shs. 1500** and the yellow cakes are to be sold at **shs. 1000**. To make a profit, more than **shs. 8000** must be realized from the sales.

**Tasks**

(i) How many cakes of each type should Mrs. Mukasa bake in order to make maximum profit?
(ii) What is the minimum number of cakes she can bake and still make a profit?

## SECTION B

This section has two parts *I* and *II*

Answer ***one*** item from this part

### Part I

**Item 3**

The school principal holds staff briefing which lasts 20 minutes every Friday starting at 7.20 a.m. However, teachers asked the principal to adjust on the time of the briefings since the lessons start at 8.40 a.m after the briefing, he asked for the arrival book at the school gate to make a decision about the start time.

The following data was collected in minutes

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 18 | 33 | 48 | 35 | 47 | 53 | 21 | 51 | 46 | 38 | 30 |
| 30 | 20 | 35 | 29 | 40 | 30 | 35 | 28 | 26 | 59 | 44 | 36 |
| 28 | 22 | 32 | 31 | 42 | 32 | 51 | 31 | 41 | 28 | 58 | 27 |
| 46 | 17 | 36 | 26 | 37 | 31 | 50 | 43 | 34 | 32 | 23 | 57 |
| 52 | 25 | 39 | 27 | 39 | 45 | 56 | 49 | 29 | 33 | 42 | |

**Tasks:**

(a) With reasons, basing on calculations, using the collected data, suggest the suitable time the briefing should start.

(b) The dean of students advised the headteacher to start the briefing at least when 80% of the teachers are present; basing on the advice determine the time the briefing should start

(c) If you the Principal, which of the two suggested briefing time would you consider and why?

**Item 4**

The District Education Officer (DEO) in Yumbe district visited one school in his area to establish reasons as to why the performance of students was not good and in his survey, he sampled 160 students from the school, of which 75 have pencils, 87 have books and 93 have rulers, 25 had both pencils and books, 30 have both pencils and rulers while 47 have both books and rulers. Every student had at least one of the items.

**Tasks:**

(a) (i) As a student of Mathematics, illustrate the information on a diagram.

(ii) Find the number of students who had all the three items.

(b) (i) How many students have only pencils?

(ii) The proportional of students with only one item.

## Part II

*Answer **one** item from this part*

Item 5

There is a quarantine of all cattle and goats in some parts of Western Uganda especially Mbarara District. The area honorable Member of Parliament (MP) wants to throw for his constituents a celebration party for the success of the Parish Development Model (PDM) and he has invited a lot of guests. However, due to the quarantine he cannot buy any animals from Mbarara and he has advised to go to Kayunga where cheap cattle and good yoghurt can be found. He moves west wards **150**km to Kampala. From Kampala he heads to Mukono which is in the direction **S750W** which is **90**km from Kampala. From Kampala he heads to Kayunga which is **148**km and South of Mukono.

When he heads to Kayjgna he bought **400** cows and each costs **UGX 850,000** per cow. The farmer and owner of the cow first gives a **5%** discount on each cow plus an additional **10%** discount for any number of cows bought in excess of **250**.

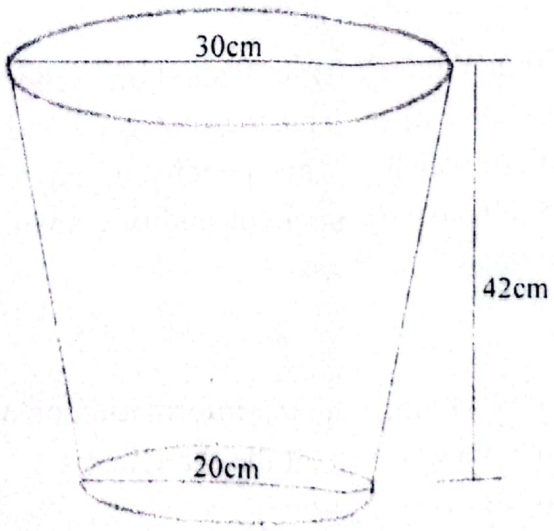
**Tasks**

(a) Direct the honourable MP on the shortest route he should take and the shortest distance between Mbarara and Kayunga.

(b) Find the total cost he incurred in purchasing the cows

**Item 6**

A bucket is in shape of a frustum with an open end of diameter **30**cm and a bottom diameter of 20cm. the bucket which is **42**cm deep is used to fill an empty cylindrical tank of diameter **1.8**m and height **1.2m**.



Three hundred and sixty litres of a homogenous paint is used by mixing three paints A, B and C, the ratio by amount of point A to point B is **3:2** and that of **B** to **C** is **1:2**. Paint **A** costs shs. **1800** per litrepait B costs shs. **2400** per litre and paint Cshs.**1,275** per litre.

**Tasks:**

(a)(i) Determine the capacity of the bucket in litres correct to 3dp.

(ii) The capacity of the tank in litres correct to 2dp.

(iii) The number of bucket that must be drawn to fill the tank

(b)(i) The amount of each paint in the mixture

(ii) The amount of money need to make 1 litre of the mixture

(iii) The percentage profit made by selling the mixture at shs. 2,210 perlitre.

*END*