**Name ADM NO**

**Class Date**

MATHEMATICS

FORM 2

SEPTEMBER 2022

TIME: 2 ½ HOURS

**OPENER EXAMINATION TERM 3, 2022**

**Kenya Certificate of Secondary Education 2022**

**INSTRUCTIONS TO CANDIDATES**

1. *Write your name and admission number in the spaces provided at the top of this page.*
2. *This paper consists of two sections:* **Section I and Section II.**
3. *Answer* ***al****l questions in* **section I** and Section **II.**
4. *Show all the steps in your calculations, giving your answers at each stage in the spaces below each question.*
5. *Marks may be given for correct working even if the answer is wrong.*
6. ***KNEC*** *Mathematical tables may be used.*

**For Examiner’s Use Only**

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| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **Total** |
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| **17** | **18** | **19** | **20** | **21** |
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**Grand**

**Total**

**SECTION I (50 Marks)**

**Answer all the questions in the spaces provided**

1. Find the possible values of x in the equation. (3 marks)
2. Express in the form where **a** and **b** are constants hence find the difference between **a** and **b**. (3 marks)

1. A trader buys 200 items at a total cost of shs 6000 .She sells 150 of them at a profit of 25% and the remainder at a loss of 8% .
2. Calculate the amount of net profit she made (2marks)
3. Express the net profit as a percentage of the initial cost price of all items (2 marks)

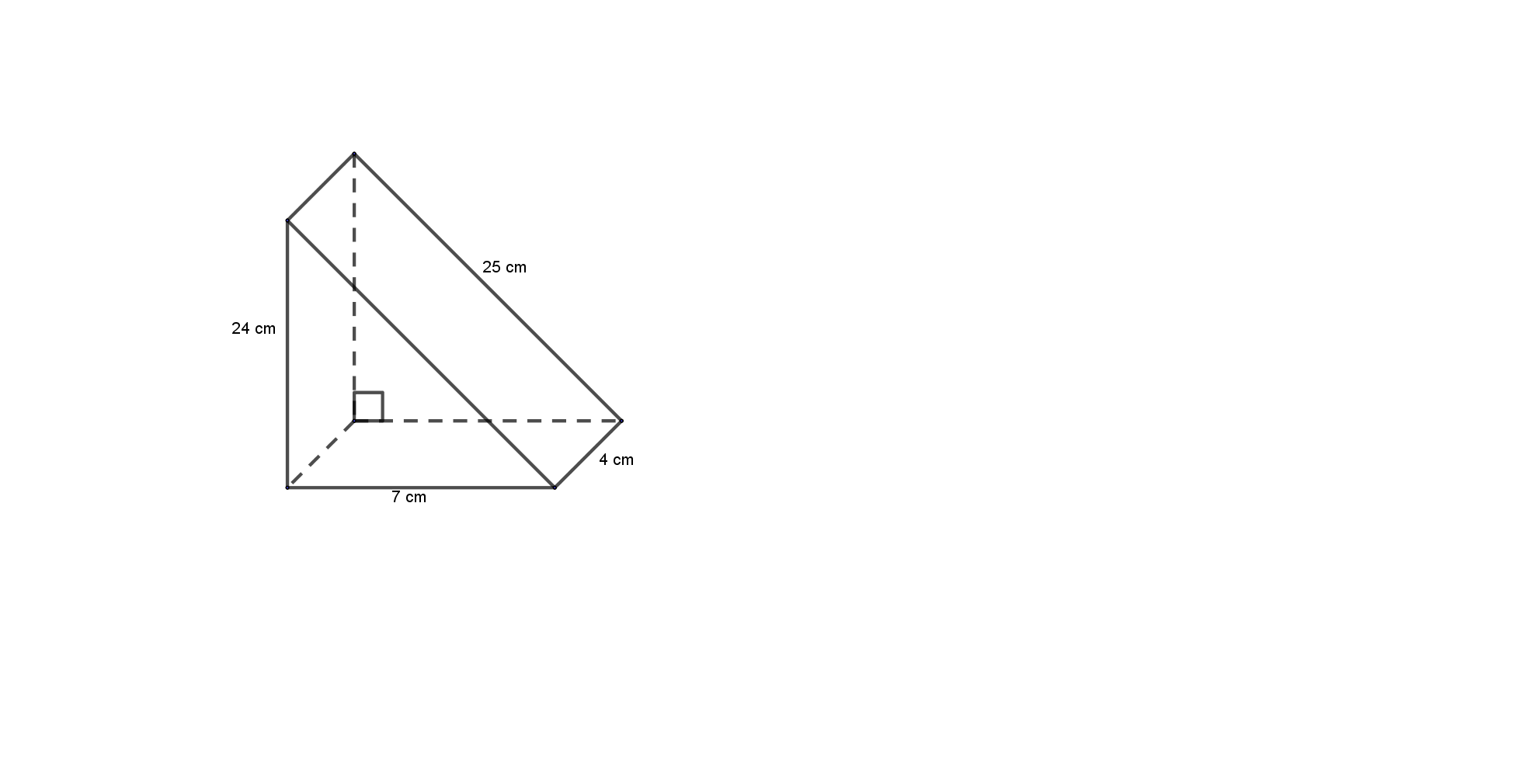
1. The width of a room is 8m less than length. Find the measurement of the room if its Perimeter is 48m. Hence calculate the area of the room. (3 marks)
2. Use tables to evaluate leaving your answer correct to 2 decimal places. (2 marks)
3. Given that where is an acute angle ,find without using mathematical tables or calculator
4. Cos (2marks)
5. (1mark)
6. (1mark)

|  |  |  |
| --- | --- | --- |
| Currency | Buying | Selling |
| 1 Sterling pound | 135.50 | 135.97 |
| 1 US dollar | 72.23 | 72.65 |

1. The currency exchange rates at a given bank in Kenya are as follows.

A tourist arrived in Kenya with 5000 US dollars which he converted to Kenya shillings upon arrival. He spent Ksh.214, 500 and converted the remaining to Sterling pounds. How many pounds did he receive? (3marks)

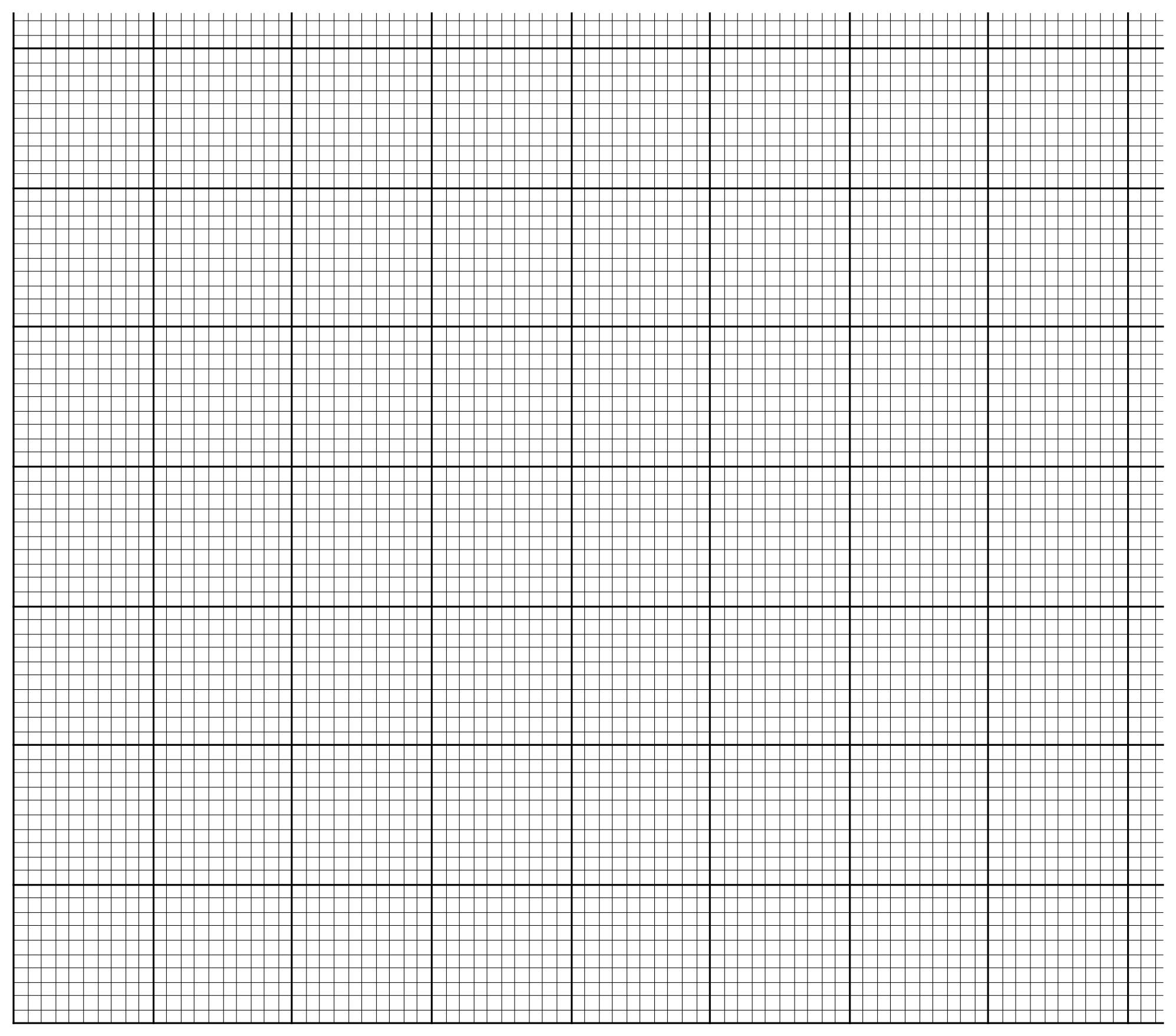
1. Use reciprocal tables and cube tables to evaluate (3 marks)
2. Find the surface area of the solid below (3 marks)



1. Without using a calculator or mathematical tables simplify. (3 marks)
2. An isosceles triangle has congruent sides of 20 cm. the base is 10 cm. determine the area of the triangle. (3 marks)
3. Two similar containers have capacities of 1000 litres and 1728 litres respectively .Given that the smaller container has an area of 750 .Calculate the surface area of the larger container. ( 3marks)
4. The circle whose length is 2.2m subtends an angle of 60o at the centre. Calculate the area of the minor segment of the circle. (Take = 22/7) (3 marks)
5. Find the coordinates of the point of intersection of the lines and . (3 marks)
6. Given that .find (3marks)
7. A piece of land is to be divided into 20 acres or 24 acres or 28 acres for farming and Leave 7acres for grazing. Determine the smallest size of such land. (3 marks)

**SECTION II**

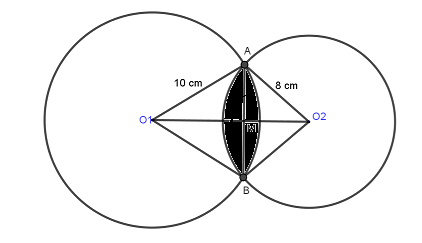
1. A triangle , and undergoes:
2. Reflection in the line . Obtain the coordinates of its image after the above transformation and show both the object and the image on a Cartesian plane. (3 marks)



1. On the same axis, draw , the image of A’B’C’ after a negative quarter turn about the origin and state the coordinates of , and . (2 marks)
2. Describe the transformation that maps triangle onto triangle ABC. (2 marks)
3. Draw the line and draw triangle, the image of triangle under a reflection in the line. State the coordinates of triangle. (3 marks)
4. A line passes through the point and
5. Find the equation of in the form (3marks)
6. Find the equation of which is perpendicular to line at in the form

Where are constants (3marks)

1. Given that another line is parallel to and passes through point
2. Find the equation of in the form (2marks)
3. Find the of line (2marks)
4. The figure below shows two circles of radii and centres and **res**pectively. The common chord If is a perpendicular bisector of **AB** use

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1. Calculate correct to 2 decimal places
2. (1mark)
3. (1 mark)
4. (2marks)
5. Area of triangle (2marks)
6. The area of the shaded part to 4 significant figures (4 marks)
7. (a) The price of an article was raised by 25% and a month later the new price was lowered by 20%. What was the new price if the original price was Ksh. 750? (3 marks)

(b) Water flows from a tap at the rate of into a rectangular container of length 60 cm, breadth 30 cm and height 40 cm. If at 5.00 p.m. the container was half full, what will be the height of water at 5.08 p.m.? (4 marks)

(c) Akinyi sold a mobile phone costing Ksh. 4000 at a profit. She earned a commission of 10% on the profit. Find the amount earned if she made a profit of 40%. (3 marks)

1. A salesman is paid a salary of Sh. 10,000 per month .He is also paid a commission of sales above Sh 100000 .In one month he sold goods worth Sh. 500,000 .If his total earnings that month was shs 46,000
2. Calculate the rate of commission (4marks)
3. If the rate of commission in (a) above was reduced to 7.65 % and his monthly salary increased by sh. 1000 , find his total new earning that month for selling the same amount of goods . (4marks)
4. The marked price of TV set in shop is sh.40000 Mueni bought the TV at 10% discount calculate the amount of money she paid for the TV. (2marks)