



BWAILA CLUSTER

2022/23 JCE END OF TERM ONE EXAMINATIONS

MATHEMATICS

(100 Marks)

Subject number: J131

Wednesday, 7th December 2022

Time Allowed: 2 hours

08:00AM – 10:00AM

Instructions

1. This paper contains **12** printed pages. Please check.
2. This paper contains **two** sections: **A** and **B**.
3. Answer all questions in both sections in the spaces provided.
4. Show all your working clearly.
5. Electronic calculators may be used.
6. At the end of the examination, hand in your paper to the invigilator.
7. Write your name on top of the page.
8. In the table provided on this page, **tick** against the question number you have answered.

Question number	Tick if answered	Do not write in this column
1		
2		
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5. a. Given the following list of numbers: 4,1,4,2,3,7,4,3. Calculate the median. (3 marks)

b. Simplify the following $\frac{x+2}{3} - \frac{x-2}{5}$ (3 marks)

6. A drum can hold 25 litres of water. Calculate the number of bottles which can be used to fill the drum if each bottle can contain 500 ml of water. (3 marks)

7. Given that $P = ab -$. Make b the subject of the formula (3 marks)

8. In figure below, **HEC** and **DEG** are straight lines. **AB** is parallel to **DEG**, angle **CBF**= 92° and **ABE**= 35°

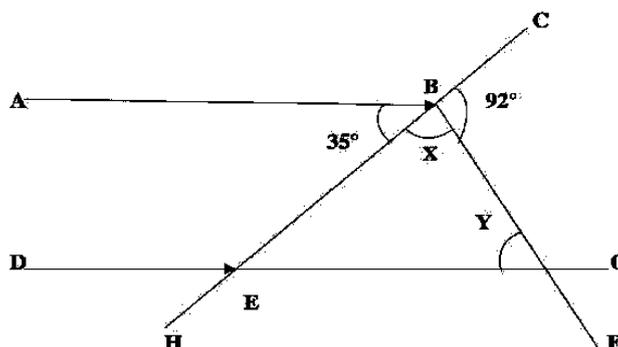


Figure 1

If angle **EBF**= X° and angle **BFE**= Y° . Calculate the values of **X** and **Y** (4 marks)

9. Given set **A** = {3, 4, 5},

a. list any three subsets of the set. (3 marks)

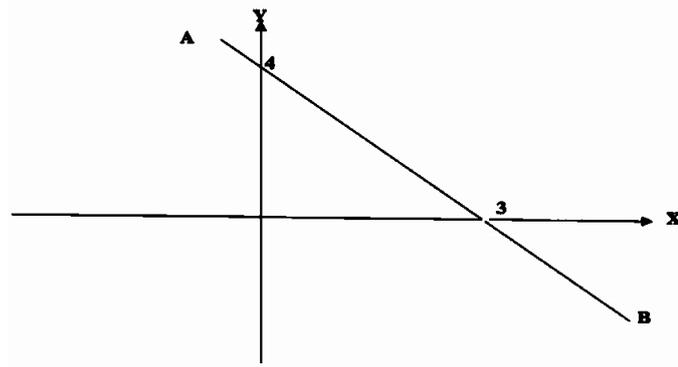
b. Calculate the number of subsets of the set (2marks)

10. Given that $a = -5$ and $b = 4$, find the value of the expression $5a + 3b^2 - 2$. (2marks)

11. a. On a certain day in August 2014 a visiting American exchanged **500 US dollars** for Malawian Kwacha. If the exchange rate was **K 462** to a **US dollar**, find how much in Kwacha he received and how much in Kwacha the same **US dollar 500** would buy today given **US 1 = K 1,350**, find the percentage change. **(4 marks)**

b. Calculate the rate at which the Kwacha was devalued by the Malawi Reserve Bank in May 2021, when it changed from K168 per US \$ to K250 per US \$. **(4 marks)**

12.



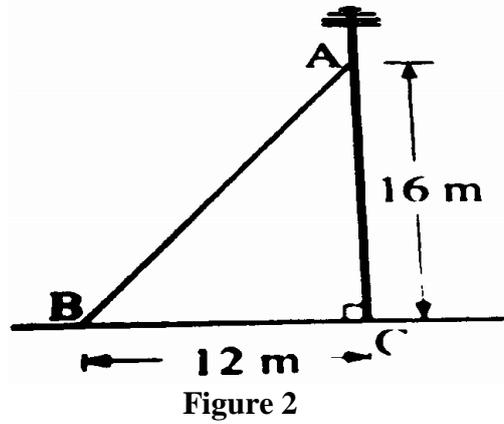
Calculate

a. gradient of line AB (3 marks)

b. Equation of the line AB (5 marks)

13. The sum of the interior angles of a regular convex polygon is 1620° . Calculate the number of sides of the polygon. (4marks)

14. a. Figure below shows a television antenna. Find the length of the wire AB holding the antenna (4 marks)



- b. Triangles ABC and DEF below are such that $AB = DE$, $AC = DF$ and $\angle BAC = \angle EDF$. Prove that the triangles are congruent

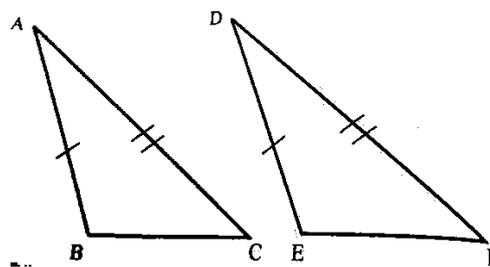


Figure 3

(5 marks)

Section B

Answer all question in this in the spaces provided.

15. a. figure below shows a triangle ABC in which AD is perpendicular to BC . $AB = 13\text{cm}$, $BD = 5\text{cm}$ and $AC = 15\text{cm}$. Find the length of BC (4 marks)

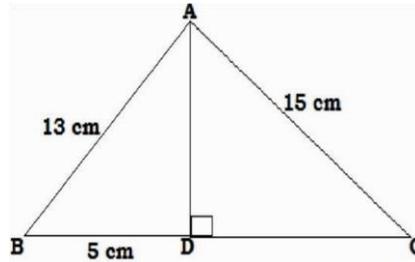


Figure 4

- b. Factorise $27x^2 - 3$ (3marks)

16. Given that x and y are complementary angles and y is twice as big as x , find the values of x and y (4marks)

17. a. The angles of a triangle are x , $3x$ and $5x$. Calculate the values of x and hence find the angles (3marks)

- b. A family of 6 people uses 30kg of flour in a month. If two visitors joined them for a month, how many kilograms of flour would be required for that month? (3marks)

18. In Figure 6, LK is parallel to MS and $LM=MS$

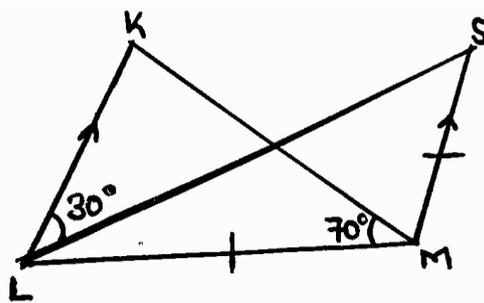


Figure 6

If KL and LS are straight lines, angle KLS=30 and angle KML=70,

- a. Calculate the values of the angle KMS. (4 marks)

b. What type of triangle is KLM? (2 marks)

19. At a car park, there were 20 cars in the categories of Toyota, Mazda and Nissan. Their numbers are as shown in table below

Type of Vehicle	Toyota	Mazda	Nissan
Number of Vehicles	12	5	3

Draw a pie chart to represent the information in the table above (4 marks)

20. In a class of 40 students, 32 students study Physics, 15 students study Geography and some study both subjects. 8 students do not study either of the subjects

a. Draw a Venn diagram to represent this information (3 marks)

b. Use the Venn diagram in (a) above to calculate the number of students that study both Physics and Geography (4 marks)

END OF QUESTION PAPER

NB: This paper contains 10 printed pages