

03003/2&1 BECE
June 2026
MATHEMATICS 2&1
Essay & Objective
2 hours

2&1

Name:

Index Number:.....

THE WEST AFRICAN EXAMINATIONS COUNCIL
GHANA

Basic Education Certificate Examination

June 2026

MATHEMATICS 2&1
ESSAY AND OBJECTIVE

2 hours

Do not open this booklet until you are told to do so. While you are waiting, read and observe the following instructions carefully. Write your name and index number in ink in the spaces provided above.

This booklet consists of two papers. Answer Paper 2, which comes first, in your answer booklet and Paper 1 on your Objective Test answer sheet. Paper 2 will last 1 hour after which the answer booklet will be collected. Do not start Paper 1 until you are told to do so. Paper 1 will last for 1 hour.

The use of calculators is not allowed.

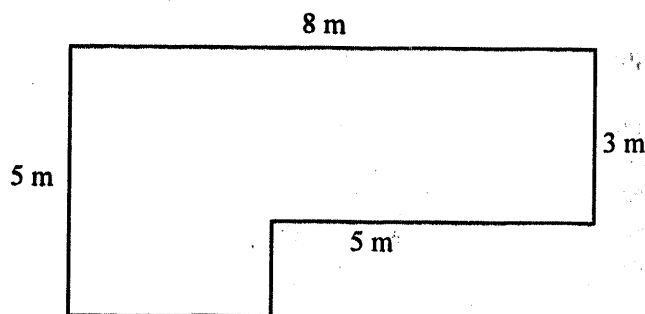
Answer four questions only.

All questions carry equal marks.

All working must be clearly shown. Marks will not be awarded for correct answers without corresponding working.

1. (a) Given that $K = \{1, 2, 3, \dots, 11\}$:
- list the prime numbers in K ;
 - find the probability that a number selected at random from the set K is not a prime number.
- (b) Factorize completely: $(x + y)(2m - n) - m(x + y)$.
- (c) A typist charges GH¢ 68.00 for the first 8 sheets typed, and GH¢ 11.00 for each additional sheet. Calculate the amount earned if the typist typed a total of 35 sheets.
2. (a) The image of $P(2, 5)$ when translated by the vector r is $(-3, 8)$. Find:
- r ;
 - the image Q' of $Q(-4, -6)$ when translated by r .
- (b) Joyce and Richard contributed GH¢ 10,000.00 and GH¢ 5,000.00 respectively to start a business. They agreed that Richard will be paid one-third of the profit as a manager and the rest of the profit will be shared in the ratio of their contributions. If the profit of GH¢ 9,000.00 was made, how much did:
- Joyce receive;
 - Richard receive in total?
3. (a) Asana was engaged to collect cashew-fruits on a farm and was paid a wage of GH¢ 25.00 a day. If the daily wage increased by 10% and she worked for 30 days, how much will she be paid?

(b)



NOT DRAWN TO SCALE

The diagram shows the floor of a room with its dimensions. Find the:

- perimeter;
- area;
- cost of carpeting the floor if a carpet cost GH¢ 20.00 per square metre.

4. (a) In a school, the monthly income of three workers Aku, Brako and Dagadu are GH¢ 5,000.00, GH¢ 6,500.00 and GH¢ 4,200.00 respectively.
- Calculate the yearly income of **each** worker.
 - Find the yearly income difference **between** Aku and Dagadu.
 - Find the total yearly income of **all** the three workers.

- (b) A painter places a ladder against a building at the window. The angle the foot of the ladder makes with the horizontal ground is 60° . If the distance from the foot of the ladder to the base of the building is 5 m:

- illustrate the information in a diagram;
 - find, correct to **one** decimal place, the:
 - length of the ladder;
 - distance between the window and the foot of the building.
- [Take $\tan 60^\circ = 1.732$, and $\cos 60^\circ = \frac{1}{2}$]

5. (a) Simplify $\frac{\sqrt{72}}{\sqrt{18} - \sqrt{12}}$, leave the answer in the form $a + b\sqrt{c}$, where a , b and c are integers.

- (b) Solve: $\frac{1}{2}(2x + 1) \geq \frac{1}{3}x + 1\frac{9}{10}$.

- (c) An athlete runs **four** times round a circular track of radius 70 m. Find, in metres, the total distance covered by the athlete. [Take $\pi = \frac{22}{7}$]

6. The data shows the shoe sizes of learners in a school.

6	4	7	5	5	6
4	5	5	4	6	7
5	6	4	6	7	5
6	4	7	5	4	6
5	5	4	6	7	5

- (a) Construct a frequency distribution table for the data.

- (b) If the school supplies shoes to the learners:
- which size should be purchased in large quantities?
 - give reason for the answer in (b)(i);
 - which size will be purchased in less quantities?
 - give reason for the answer in (b)(iii).

- (c) Find, correct to the nearest whole number, the mean shoe size.

END OF ESSAY TEST

Answer all the questions.

Each question is followed by four options lettered A to D. Find the correct option for each question and shade in pencil on your answer sheet, the space which bears the same letter as the option you have chosen. Give only one answer to each question. An example is given below.

If $3n + 2 = 8$, find the value of n .

- A. 10
- B. 6
- C. 3
- D. 2

The correct answer is 2, which is lettered D and therefore answer space D would be shaded.

A B C D E

Think carefully before you shade the answer spaces, erase your first answer completely and shade the appropriate space for the new answer.

Do all rough work in this paper.

Now answer the following questions.

1. Solve: $7 - 2x > 15 - 4x$.
 - A. $x > 4$
 - B. $x > -4$
 - C. $x < 4$
 - D. $x < -4$

2. Evaluate: $p^2(q - 1)$ when $p = 2$ and $q = \frac{3}{4}$.
 - A. 2
 - B. -1
 - C. 1
 - D. -2

3. Antwi has 20 mangoes and 20% are rotten. How many of them are not rotten?
 - A. 16
 - B. 8
 - C. 12
 - D. 4

4. Which of the following is not a composite number?
 - A. 65
 - B. 39
 - C. 41
 - D. 24

5. Mary receives a commission of 15% on articles sold in a week. If her commission was GH¢ 60.00, how much sales did she make?
 - A. GH¢ 40.00
 - B. GH¢ 400.00
 - C. GH¢ 90.00
 - D. GH¢ 900.00

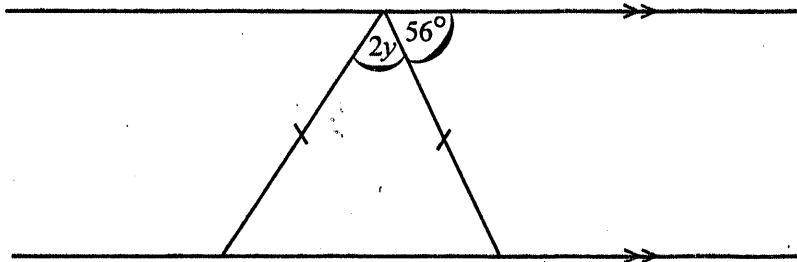
6. Write 0.000437 in standard form.

- A. 4.37×10^3
- B. 4.37×10^4
- C. 4.37×10^{-3}
- D. 4.37×10^{-4}

7. Simplify: $x - 5(3 - 2x) - 12x + 7$.

- A. $-x - 8$
- B. $-21x - 8$
- C. $-21x + 8$
- D. $x + 8$

8.



NOT DRAWN TO SCALE

Find the value of y in the diagram.

- A. 28°
- B. 34°
- C. 30°
- D. 60°

9. The product of three numbers is 90. If two of the numbers are 6 and 3, find the **third** number.

- A. 5
- B. 15
- C. 9
- D. 18

10. Given the sequence $-9, -5, m, 3, 7, 11$, find the value of m .

- A. 1
- B. -2
- C. -1
- D. -3

11. If $2^{2m} = 8$, find the value of m .

- A. 0.5
- B. 1.5
- C. 1.0
- D. 2.0

12. If $a = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$ and $b = \begin{pmatrix} -2 \\ 1 \end{pmatrix}$, evaluate $6b + 2a$.
- A. $\begin{pmatrix} 6 \\ 8 \end{pmatrix}$
- B. $\begin{pmatrix} 1 \\ 3 \end{pmatrix}$
- C. $\begin{pmatrix} -6 \\ 8 \end{pmatrix}$
- D. $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$
13. The marks obtained by 11 learners in a test are: 2, 5, 5, 6, 7, 7, 8, 8, 8, 9, 10. What is the modal mark?
- A. 9
- B. 7
- C. 8
- D. 2
14. A trader sold an article for GH¢ 126.00 marking a profit of 20%. Find the cost price of the item.
- A. GH¢ 151.20
- B. GH¢ 100.80
- C. GH¢ 105.00
- D. GH¢ 100.50
15. Change 25% to a fraction in its lowest form.
- A. $\frac{5}{6}$
- B. $\frac{1}{4}$
- C. $\frac{1}{8}$
- D. $\frac{1}{2}$
16. Arrange the following: $\frac{3}{4}$, 0.8, $\frac{5}{8}$, 0.65 in descending order.
- A. $\frac{3}{4}$, $\frac{5}{8}$, 0.8, 0.65
- B. 0.65, $\frac{5}{8}$, $\frac{3}{4}$, 0.8
- C. $\frac{5}{8}$, 0.8, $\frac{3}{4}$, 0.65
- D. 0.8, $\frac{3}{4}$, 0.65, $\frac{5}{8}$

17. A cyclist travelling at 20 km/h covered a distance in 35 minutes. What time will it take to cover the same distance travelling at 28 km/h?
- A. 49 minutes
 B. 25 minutes
 C. 48 minutes
 D. 16 minutes
18. Given that $\mu = \{1, 2, 3, \dots, 10\}$ and $M = \{2, 3, 5, 7\}$, where M is a subset of μ . List the members in μ that are not in M .
- A. $\{1, 4, 6, 8, 9, 10\}$
 B. $\{2, 4, 6, 8\}$
 C. $\{2, 4, 6, 8, 10\}$
 D. $\{1, 4, 6\}$
19. If $\frac{3}{4}x = 2 + \frac{1}{4}$, find the value of x .
- A. 5
 B. 3
 C. 4
 D. 1

20.

x	1	2	3	4	5
\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow
y	3	6	9	12	15

What is the rule for the mapping?

- A. $x \rightarrow 2x + 1$
 B. $x \rightarrow x + 2$
 C. $x \rightarrow 4 - x$
 D. $x \rightarrow 3x$

<i>Mark</i>	0	1	2	3	4	5
<i>Frequency</i>	1	2	7	5	4	3

The table shows marks scored by a group of learners in a test.

Use this information to answer questions 21 and 22.

21. Find the median mark.
- A. 4
 B. 2
 C. 3
 D. 1

22. Find the probability that a learner selected at random scored 2.
- A. $\frac{4}{22}$
 - B. $\frac{7}{22}$
 - C. $\frac{2}{22}$
 - D. $\frac{1}{22}$
23. Kofi had 150 birds. He sold 26 of them and kept the rest equally in 4 cages. How many birds were kept in each cage?
- A. 36
 - B. 31
 - C. 35
 - D. 30
24. In a test, $\frac{2}{3}$ of the learners passed. If the number of learners who failed was 69, how many passed?
- A. 207
 - B. 46
 - C. 138
 - D. 23
25. Ivy and Abbey share an amount of GH¢ 30.00 in the ratio 3 : 2 respectively. Find Abbey's share.
- A. GH¢ 18.00
 - B. GH¢ 12.00
 - C. GH¢ 15.00
 - D. GH¢ 10.00
26. Theresa was asked to select at random a letter from the word **HAPPY**. What is the probability that she select the letter P?
- A. $\frac{3}{5}$
 - B. $\frac{2}{5}$
 - C. $\frac{1}{2}$
 - D. $\frac{1}{5}$
27. Kofi paid an interest of GH¢ 30.00 on a loan he took for 4 years. If the rate was 3% per annum simple interest, find the amount borrowed.
- A. GH¢ 90.00
 - B. GH¢ 280.00
 - C. GH¢ 250.00
 - D. GH¢ 360.00

28. A class of 42 learners shared some oranges and each received 11. If 22 learners shared the same number of oranges **equally**, how many will each get?
- A. 22
B. 20
C. 21
D. 15
29. Two sets which have the same number of members are . . . sets
- A. union
B. equivalent
C. intersecting
D. equal
30. A square of area 144 cm^2 has the same perimeter as an equilateral triangle. Find the length of a side of the triangle.
- A. 18 cm
B. 14 cm
C. 16 cm
D. 10 cm
31. A boy spends $\frac{1}{4}$ of his pocket money on books and $\frac{1}{3}$ on pens. What fraction remains?
- A. $\frac{1}{6}$
B. $\frac{7}{12}$
C. $\frac{5}{12}$
D. $\frac{5}{6}$
32. If $(x + 2) : (x - 2) = 1 : 2$, find the value of x .
- A. -35
B. -3
C. -6
D. -2
33. Make y the subject of the relation $p = \frac{r - 4y}{3}$.
- A. $y = \frac{1}{4}(r + p)$
B. $y = \frac{1}{4}(r + 3p)$
C. $y = \frac{1}{4}(r - 3p)$
D. $y = \frac{1}{4}(3p - r)$

34. Factorize: $3a^2b - 9ab^2$.
- A. $ab(3b - a)$
 - B. $3ab(b - 3a)$
 - C. $ab(3a - b)$
 - D. $3ab(a - 3b)$
35. Mr Mensah left his house at 9:45 am and reached his village at 4:15 pm. Find the time spent.
- A. 7 hours
 - B. 6 hours 30 minutes
 - C. 8 hours
 - D. 5 hours 30 minutes
36. Find the circumference of a circle whose area is $100\pi \text{ cm}^2$.
- A. $20\pi \text{ cm}$
 - B. $10\pi \text{ cm}$
 - C. $15\pi \text{ cm}$
 - D. $5\pi \text{ cm}$
37. Simplify: $\sqrt{75} - \sqrt{18} - \sqrt{3} + \sqrt{2}$.
- A. $3\sqrt{3} + 2\sqrt{2}$
 - B. $4\sqrt{3} + 2\sqrt{2}$
 - C. $3\sqrt{3} - 2\sqrt{2}$
 - D. $4\sqrt{3} - 2\sqrt{2}$
38. A number is chosen at random from the set $P = \{1, 2, 3, 4, 5, \dots, 10\}$. What is the probability that the number is greater than 3?
- A. $\frac{1}{5}$
 - B. $\frac{7}{10}$
 - C. $\frac{3}{10}$
 - D. $\frac{4}{5}$
39. Find the image of the point $(2, -3)$ under the transformation $\begin{pmatrix} x \\ y \end{pmatrix} \rightarrow \begin{pmatrix} x \\ y - 2 \end{pmatrix}$.
- A. $(2, 5)$
 - B. $(2, -5)$
 - C. $(2, -1)$
 - D. $(2, 1)$
40. Find the volume of a cube with side 5 m.
- A. 125 m^3
 - B. 25 m^3
 - C. 75 m^3
 - D. 10 m^3

END OF PAPER