



# ALPHA EXAMINATIONS

**SUPER MOCK EXAMINATION**  
**JUNE, 2024**  
**MATHEMATICS 2 &1**  
**BASIC: 9**  
**ESSAY**  
**2 hours**

NAME:.....

INDEX NUMBER:.....

SCHOOL:.....

## SUPER MOCK EXAMINATION

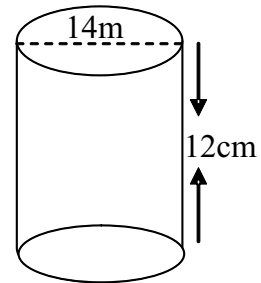
### MATHEMATICS 2 & 1

*Do not open this booklet until you are told to do so. While you are waiting, read and observe the following instructions. 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 **45** minutes.*

*The use of calculators is **not** allowed.*

- D.  $(2x + y)(3x - a)$
31. Find the volume of the cylinder below.  
[Take  $\pi = \frac{22}{7}$ ]



- A.  $26\text{cm}^3$       B.  $154\text{cm}^3$   
C.  $1848\text{cm}^3$       D.  $1078\text{cm}^3$
32. How many of GH¢50 will make GH¢38200?  
A. 764      B. 7064  
C. 674      D. 7640
33. Write five million, one hundred and forty-two thousand, seven hundred in figures.  
A. 5142700      B. 51402700  
C. 50142700      D. 51402700
34. Find 15% of 80.  
A. 12      B. 15  
C. 20      D. 16
35. Calculate the sum of interior angles of a regular heptagon.  
A.  $720^\circ$       B.  $900^\circ$   
C.  $540^\circ$       D.  $1080^\circ$

36. Make 'b' the subject of the relation

$$\frac{1}{a} = \frac{1}{b} + \frac{1}{c}$$

- A.  $b = \frac{1}{c-a}$       B.  $b = \frac{a+c}{c-a}$   
C.  $b = \frac{ac}{c-a}$       D.  $b = \frac{ac}{c+a}$

37. Solve  $8m - 3(2m + 4) > 4$

- A.  $m > -8$       B.  $m < 8$   
C.  $m > 8$       D.  $m < -8$

38. The point x(-6, -15) is reduced from the

origin by a scale factor  $\frac{1}{3}$  find the image x.

- A. (-2, -5)      B. (2, -5)  
C. (2, 5)      D. (-2, 5)

39. Which of the following is nominal data?

- A. Good      B. Colour  
C. Mail      D. Survey

40. The bearing of Amina from Ali is  $200^\circ$ . Find the bearing of Ali from Amina.

- A.  $050^\circ$       B.  $380^\circ$   
C.  $045^\circ$       D.  $020^\circ$

**ALPHA EXAMINATIONS**  
**SUPER MOCK EXAMINATION**  
**SUBJECT: MATHEMATICS**

**BASIC: 9**

Paper 2  
 ESSAY

1 hour

[60 marks]

Answer only four questions from this section.

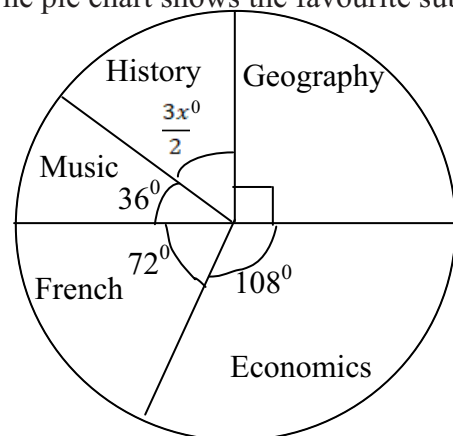
Answer our questions only. All questions carry equal marks.

1. In an experiment, a sample of items with given numbers was selected for testing as follows:  
 $P = \{\text{Item numbers divisibly by 4 between 205 and 235}\}$   
 $Q = \{\text{Item numbers which are multiples of 6 between 205 and 235}\}.$

- (a) List the members of sets P and Q.  
 (b) Find  
 (i)  $P \cup Q$   
 (ii)  $P \cap Q$   
 (iii) Which item numbers selected are divisible by 4 and 6?  
 (c) Duke invested GH¢300,000.00 at 5.4% per annum simple interest. How long will it take this amount to yield an interest of GH¢81,000.00?

2. (a) Solve  $1 - 2q = 2 + \frac{q}{3}$ .  
 (b) Find the Highest Common Factor of the following numbers: 20, 28 and 36.  
 (c) The base of an isosceles triangle is 9cm and one of the other sides is xcm.  
 (i) Illustrate the information in a diagram.  
 (ii) If the perimeter of the triangle is 21cm, find the product of the other two sides.

3. (a) The pie chart shows the favourite subjects of 200 students in a school.



NOT DRAWN TO SCALE

15. Solve  $\frac{4}{2a+3} = 4$

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

16. The least number in a set is 37 and the greatest number is 59. Which of the following is correct?

- A.  $37 \leq x \leq 59$   
 B.  $37 < x \leq 59$   
 C.  $36 \leq x \leq 58$   
 D.  $36 < x \leq 58$

17. The length of a field is 1.5km long, is represented on a map by a line 50mm long. What is the scale of the map?

- A. 1:100                  B. 1:1000  
 C. 1:3000                D. 1:30000

18. Simplify  $\begin{pmatrix} 5 \\ -7 \end{pmatrix} - \begin{pmatrix} -2 \\ 4 \end{pmatrix}$

- A.  $\begin{pmatrix} 7 \\ 11 \end{pmatrix}$                   B.  $\begin{pmatrix} 7 \\ -11 \end{pmatrix}$   
 C.  $\begin{pmatrix} -7 \\ -11 \end{pmatrix}$                 D.  $\begin{pmatrix} 3 \\ 11 \end{pmatrix}$

19. What is the value of x in  $5^x = 125$ ?

- A. 3                      B. 2  
 C. 4                      D. 5

20. Evaluate  $\sqrt{784}$  leaving your answer as a product of prime factors.

- A.  $2 \times 7$                 B.  $2^2 \times 7$   
 C.  $2 \times 7^2$               D.  $2^2 \times 7^2$

21. Calculate the simple interest on GH¢500.00 for 2 years at 10% per annum.

- A. GH¢90.00  
 B. GH¢900.00  
 C. GH¢200.00  
 D. GH¢20.00

22. Joseph is 10 years older than John. If John is 25 years old, find the ratio of John to that of Joseph.

- A. 2:5                    B. 5:7  
 C. 5:2                    D. 7:5

23. Find the average speed of a car that travelled 700km in 5 hours.  
 A. 170km/h              B. 14km/h  
 C. 140km/h              D. 70km/h

24. If x is an obtuse angle, which of the following is true?

- A.  $0^\circ < x < 90^\circ$   
 B.  $0^\circ < x < 180^\circ$   
 C.  $90^\circ < x < 180^\circ$   
 D.  $180^\circ < x < 360^\circ$

25. Simplify  $\sqrt{75}$

- A.  $5\sqrt{3}$                       B.  $3\sqrt{5}$   
 C.  $5\sqrt{5}$                       D.  $15\sqrt{3}$

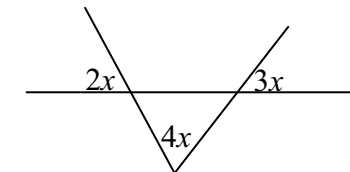
26. Three girls shared an amount of GH¢5040.00 in the ratio 3:2:4. Who received the highest share?

- A. GH¢1120.00  
 B. GH¢1680.00  
 C. GH¢2240.00  
 D. GH¢2420.00

27. The mean of 19, 37, 17, x, 29 and 15 is 24. Find x.

- A. 5                      B. 27  
 C. 120                    D. 117

28. Calculate the value of x.



- A.  $20^\circ$                     B.  $10^\circ$   
 C.  $40^\circ$                     D.  $30^\circ$

29. Evaluate  $7.5 \times 10^4 + 1.6 \times 10^4$ .

- A.  $9.1 \times 10^4$             B.  $0.91 \times 10^4$   
 C.  $9.1 \times 10^4$             D.  $9.1 \times 10^4$

30. Factorize completely  $6x^2 + 3xy - 2ax - ay$

- A.  $(2x + y)(3x + a)$   
 B.  $(2x - y)(3x + a)$   
 C.  $(2x - y)(3x - a)$

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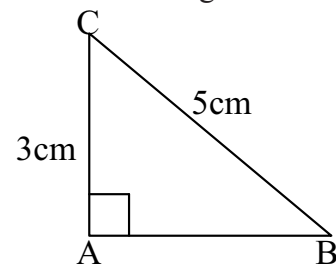
**OBJECTIVES**

1 hour

Answer all questions from this section.

1. Given that  $U = \{a, b, e\}$ , how many subsets has  $U$ ?  
 A. 4                      B. 10  
 C. 8                        D. 16
2. Simplify  $a^2 \div a^4 \times a^2$   
 A.  $a^8$                     B.  $a^4$   
 C.  $a$                         D. 1
3. Which of the following statements is true?  
 A.  $8 + 4 < 10$         B.  $7 + 4 < 10$   
 C.  $6 + 4 < 10$         D.  $5 + 4 < 10$
4. Express  $\frac{4}{100}$  as a decimal fraction.  
 A. 0.4                      B. 0.04  
 C. 0.004                  D. 0.0004
5. Expand  $(2x + y)(2x - y)$   
 A.  $4x^2 + y^2$   
 B.  $4x^2 - y^2$   
 C.  $4x^2 + xy - y^2$   
 D.  $4x^2 - xy - y^2$
6. What is the Highest Common Factor of  $2^3$  and  $2^2 \times 3$ ?  
 A. 2                        B. 3  
 C. 4                        D.  $\frac{1}{50}$
7. Express in a standard form 97865km.  
 A.  $9.7865 \times 10^3$ km  
 B.  $9.7856 \times 10^4$ km  
 C.  $9.786510^4$ km  
 D.  $97.856 \times 10^3$ km

8. Find the area of the figure below.



- A.  $6\text{cm}^2$                 B.  $8\text{cm}^2$   
 C.  $12\text{cm}^2$             D.  $15\text{cm}^2$
9. Simplify  $\frac{5a}{4} - \frac{a-b}{3}$   
 A.  $\frac{11a+4b}{12}$             B.  $\frac{19a+4b}{12}$   
 C.  $\frac{11a-4b}{12}$             D.  $\frac{19a-4b}{12}$
10. Solve for  $y$  if  $y:7 = 8:14$ .  
 A. 7                        B. 22  
 C. 4                        D. 6
11. A book which cost GH¢2500.00 was sold for GH¢2000.00. Find the loss percent.  
 A. 20%                    B. 220%  
 C. 50%                    D. 500%
12. In a class test, 90% of the students passed. The number of students who passed was 360. How many students failed the test?  
 A. 40                      B. 10  
 C. 90                      D. 30
13. The area of a square is  $81\text{cm}^2$ , find the perimeter of the square.  
 A. 9cm                    B. 36cm  
 C. 42cm                  D. 81cm
14. If 3 is added to five times a number and the result is multiplied by 4, the final result is 72. What is the number?  
 A. 3                        B. 5  
 C. 4                        D. 8

- (i) Find the value of  $x$
- (ii) Calculate the percentage of students whose favourite subject is economics.
- (iii) If a student is chosen at random, find the probability that his subject is French.

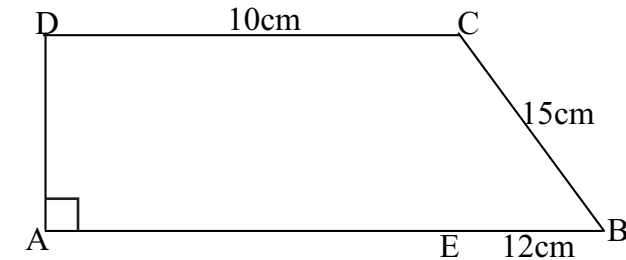
- (b) The interior angles of a regular polygon is twice its exterior angles. How many sides has the polygon?

4. (a) Mr. Yeboah shared some money among his three children. The first received  $\frac{1}{2}$ , the second  $\frac{1}{4}$  and the third  $\frac{1}{6}$  of it.

- (i) What fraction of the money was left?
- (ii) If the remaining money was GH¢2400.00, how much money was shared?
- (iii) How much did the second child receive?

- (b) Simplify  $\sqrt{50} - \sqrt{8}$

5. (a) The figure shows a trapezium ABCD. Calculate the area of the figure.



- (b) An equation of a straight line is in the form  $12x + 3y - 6 = 0$ .  
 (i) Determine its slope.  
 (ii) Find the y-intercept.

6. (a) (i) Draw two perpendicular axes OX and OY on a graph sheet.  
 (ii) Use a scale of 2cm to units on the x-axis and 2cm to 1 unit on the y-axis. Label the x-axis from -5 to 5 and the y-axis from -6 to 6.  
 (iii) Plot A(1, 3), B(2,5) and C(3, 3). Join the points A, B and C to form a triangle using a straight edge.  
 (iv) Draw the image of a triangle  $A'B'C'$  of triangle ABC under a translation

vector  $\begin{pmatrix} -5 \\ -1 \end{pmatrix}$ , where  $A \rightarrow A'$ ,  $B \rightarrow B'$  and  $C \rightarrow C'$ .

- (v) Draw the image of triangle  $A''B''C''$  of triangle  $A'B'C'$  under a reflection in the x-axis, where  $A'' \rightarrow A''$ ,  $B'' \rightarrow B''$  and  $C'' \rightarrow C''$ .

- (b) Skip count backwards in 20,000 up to the fifth number starting from 242,000.

# DO NOT TURN OVER THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

**YOU WILL BE PENALIZED SEVERELY IF YOU ARE  
FOUND LOOKING AT THE NEXT PAGE BEFORE  
YOU ARE TOLD TO DO SO**

PAPER 1  
OBJECTIVES TEST

1 HOUR

Answer all the questions on your Objective Test answer sheet

1. Use 2B pencil throughout
2. On the pre-printed answer sheet, check that the following details are correctly printed:  
Your surname followed by your other name, the Subject Name, Your index number, Centre Number and the Paper Code.
3. In the boxes marked Candidate Number, Centre Number and Paper code, re-shade each of the shaded spaces.
4. An example is given below. This is for a candidate whose name is SEPENU KOFI EMMANUEL. His index number is 772384155 and he is writing the examination at Centre Number 77234. He is offering Mathematics and the Paper Code is 0301.

<b>CANDIDATE NAME:</b> <b>SEPENU KOFI EMMANUEL</b>	<b>SUBJECT NAME:</b> <b>MATHEMATICS 1</b>
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- |   |  |
|---|--|
| 1. Use 2B pencil Press firmly   | your first mark completely.  |
| 2. Answer each question by choosing one letter and then shade through the letter chosen like this [A] <input checked="" type="checkbox"/> [C] [E] | 4. If only four alternatives are given for each question, ignore the letter E. |
| 3. If you want to change an answer erase  | 5. Our question paper may have fewer than 60 questions.                        |

CANDIDATE NUMBER										CENTRE NUMBER					PAPER CODE				For Supervisors Only. If Candidate is absent shade this space <input style="width: 20px; height: 15px;" type="text"/>
7	7	2	3	8	4	1	8	8		7	7	2	3	4	0	7	0	1	
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