

Answer **all** 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 answer 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

Think carefully before you shade the answer spaces. Erase completely any answers you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

1. If $M = \{2, 4, 6, 8, 10\}$ and $N = \{4, 5, 6, 7, 8, 9\}$, find $M \cap N$.
 - A. $\{4, 6, 8\}$
 - B. $\{4, 8\}$
 - C. $\{2, 4, 5, 6, 7, 8, 9, 10\}$
 - D. $\{4, 6\}$

2. If $0.000689 = 6.89 \times 10^n$, find the value of n .
 - A. -4
 - B. -3
 - C. 3
 - D. 4

3. Evaluate: $\frac{1}{2}[(7-3)-(4-10)]$.
 - A. -5
 - B. -1
 - C. 1
 - D. 5

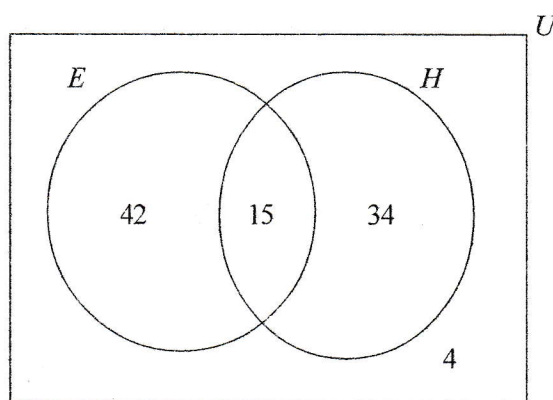
4. If $-1(x-1) = -2$, find the value of x .
 - A. 3
 - B. 2
 - C. -2
 - D. -3

5. Expand $(t-1)(t+1) - 1$.
 - A. $t^2 + 1$
 - B. $t^2 - 1$
 - C. $t^2 + 2$

6. Ibrahim and Ama share GH¢1,500.00 between them in the ratio 2 : 3. Find Ama's share.
- GH¢ 300.00
 - GH¢ 500.00
 - GH¢ 600.00
 - GH¢ 900.00

7. If $\frac{1}{t} = \frac{1}{3}$, find the value of t .

- $\frac{1}{3}$
- 1
- $1\frac{1}{3}$
- 3



The Venn diagram represents the number of people who speak English or Hausa or neither of the two languages in a Village. *Use the information to answer questions 8 and 9.*

8. How many people speak English **or** only Hausa?
- 42
 - 57
 - 76
 - 91
9. Find the number of people in the Village.
- 53
 - 80
 - 91
 - 95
10. What is the total cost of p books at GH¢ 7.00 each and q books at GH¢ 1.20 each?
- $7p + 1.20q$
 - $7q + 1.20p$
 - $7(p + 1.20q)$
 - $1.2(7p + q)$

11. Write $\frac{1}{2}\%$ as a decimal numeral.

- A. 0.5
- B. 0.05
- C. 0.005
- D. 0.0005

12. Solve: $(3m - 1) + 2 \leq 14 + 4m$.

- A. $m \geq -14$
- B. $m \leq -14$
- C. $m \geq -13$
- D. $m \leq -13$

13. What is the image of 3 under the mapping $x \rightarrow 3x + 7$?

- A. 10
- B. 13
- C. 16
- D. 24

14. Simplify: $4^4 \times 2^6$.

- A. 2^{10}
- B. 2^{14}
- C. 2^{15}
- D. 2^{16}

15. Find the slope of the line $x - 2y = 11$.

- A. -3
- B. $-\frac{1}{2}$
- C. $\frac{1}{2}$
- D. 3

16. Mr Ntim travelled a distance of 3 km in 60 minutes. What distance can he cover in 50 minutes, travelling at the same time?

- A. 2.2 km
- B. 2.5 km
- C. 2.8 km
- D. 3.2 km

The data shows the marks obtained by students in a class test:

21, 32, 16, 27, 22, 19, 10. Use the information to answer questions 17 and 18.

17. Find the median mark.

A. 16
B. 19
C. 21
D. 22

18. Calculate the mean.

A. 16
B. 19
C. 21
D. 22

19. There are 6 men and 4 women in an escalator. What is the probability that the **first** person that comes out is a woman?

A. $\frac{7}{10}$

B. $\frac{1}{4}$

C. $\frac{2}{5}$

D. $\frac{3}{5}$

20. What is the area of a square whose diagonal is 14 cm?

A. 7 cm^2
B. 28 cm^2
C. 49 cm^2
D. 98 cm^2

21. Factorize $2x^2 + 4x + 3xy + 6y$ completely.

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

22. Find the simple interest on GH¢ 2,448.00 invested for 2 years at a rate of $2\frac{1}{2}\%$ per annum.

A. GH¢ 57.92
B. GH¢ 97.92
C. GH¢ 122.04
D. GH¢ 122.40

23. Find the image of the point $(-1, 4)$ under the transformation $\begin{pmatrix} x \\ y \end{pmatrix} \rightarrow \begin{pmatrix} 2x \\ -1+y \end{pmatrix}$.
- A. $(2, -3)$
 B. $(-3, 2)$
 C. $(-2, 3)$
 D. $(3, -2)$

24. Factorize: $\frac{1}{2}ty^2 + \frac{1}{4}ty$.

- A. $\frac{1}{4}ty(y+1)$
 B. $\frac{1}{4}ty(2y+1)$
 C. $\frac{1}{2}ty(\frac{1}{2}y+1)$
 D. $\frac{1}{2}ty(y+1)$

25. If the price of a motor-cycle is increased by 40 % to GH¢ 14,000.00, find the price of the motor-cycle before the increase?

- A. GH¢ 7,200.00
 B. GH¢ 8,400.00
 C. GH¢ 9,260.00
 D. GH¢ 10,000.00

26. Write down the rule for the mapping

x	1	2	3	4
\downarrow	\downarrow	\downarrow	\downarrow	\downarrow
y	1	5	9	13

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

27. $A(3, 6)$ and $B(2, -3)$ are points in the cartesian plane. Find the vector \vec{AB} .

- A. $\begin{pmatrix} 1 \\ 9 \end{pmatrix}$
 B. $\begin{pmatrix} -1 \\ 9 \end{pmatrix}$
 C. $\begin{pmatrix} 1 \\ -9 \end{pmatrix}$
 D. $\begin{pmatrix} -1 \\ -9 \end{pmatrix}$

28. Kofi paid GH¢ 460.00 including 15 % VAT for goods he bought from a shop. Find the VAT he paid.
- GH¢ 50.00
 - GH¢ 59.00
 - GH¢ 60.00
 - GH¢ 69.00

29. Find the y -intercept of the equation $5x - 2y = 28$.
- 14

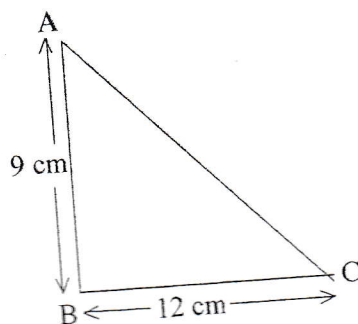
B. $-\frac{5}{2}$

C. $\frac{5}{2}$

D. 14

30. A car travels 480 km using 15 gallons of petrol. How many kilometers per gallon does it travel?
- 28 km/gallon
 - 30 km/gallon
 - 32 km/gallon
 - 35 km/gallon

31.



NOT DRAWN TO SCALE

In the diagram, ABC is a right-angle triangle with $AB = 9$ cm and $BC = 12$ cm. Find the length AC .

A. 8.0 cm

B. 10.0 cm

C. 15.0 cm

D. 21.0 cm

32. If the image of P under the translation vector $\begin{pmatrix} 3 \\ 7 \end{pmatrix}$ is $P^1(6, 8)$, find the coordinates of P .
- (9, 15)
 - (3, 1)
 - (-3, -1)
 - (-9, -15)

33. Given that $2^n = 32$, find the value of n .
- A. 2
 - B. 3
 - C. 4
 - D. 5
34. A point $Q(-4, 6)$ is rotated anticlockwise through 180° . Find the image Q_1 .
- A. $Q_1(-6, 4)$
 - B. $Q_1(6, -4)$
 - C. $Q_1(-4, -6)$
 - D. $Q_1(4, -6)$
35. A school has 400 pupils of whom 160 are girls. What is the ratio of boys to girls?
- A. 2 : 5
 - B. 3 : 2
 - C. 5 : 2
 - D. 8 : 5
36. If $x + 6 = -6$, find the value of $\frac{x}{4}$.
- A. 3
 - B. -3
 - C. $\frac{3}{2}$
 - D. $-\frac{3}{2}$
37. Find the product of p^2qr and pq^4 .
- A. p^3q^4r
 - B. p^3q^5r
 - C. p^2q^4r
 - D. p^2q^4
38. What is the value of 6 in 95.683?
- A. 6 ones
 - B. 6 tens
 - C. 6 tenths
 - D. 6 thousandths
39. If two parallel lines are cut by a transversal, the interior angles on the same side of the transversal are
- A. congruent.
 - B. vertical.
 - C. complementary.
 - D. supplementary.

40. Which of the following is arranged in descending order?

- A. $-63, -24, 5, 18$
- B. $-24, -63, 5, 18$
- C. $18, 5, -24, -63$
- D. $-63, -24, 18, 5$

END OF PAPER