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MATHEMATICS
1 HOUR, 45 MINUTES

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FEB 2026 MATHEMATICS 2 HOURS

This booklet consists of two papers; **I** and **II**. Answer Paper **2** which comes first in your answer booklet and Paper **1** on your Objective Test answer sheet. Paper **2** will last for ***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 ***1 hour***

PAPER 2 – ESSAY [60MARKS]

Answer **four** questions **only**

All questions carry **equal** marks

1. a) A and B are subsets of the universal set U such that U = {natural numbers less than 12}, A = { x:2<x≤6} and B{x:x>4}

i) List all the elements of A, B and U.

ii) Represent A, B and U in a venn diagram

iii) List all the subsets of (A∩B)

(b) There are 5 more girls than boys in a class. If 2 boys join the class, the ratio of girls to boys will be 5:4. Find the;

(i) number of girls in the class

(ii) total number of learners in the class

(iii) the probability of selecting a boy as the class prefect.

c) Find the value of q if $3q + 16^2 = 13^2$

2. a) The ratio of the sides |AB|, |AC| and |BC| of a triangle is 2:1:2. If perimeter of the triangle is 40cm.

i) Calculate the length of each side

ii) Show that, the triangle is an isosceles

b) Given the vectors u = $\begin{pmatrix} x+3 \\ 2 \end{pmatrix}$, v = $\begin{pmatrix} y \\ x+y \end{pmatrix}$ and w = $\begin{pmatrix} 2 \\ -1 \end{pmatrix}$. If w = u – v, find the values of x and y.

c) A ladder is kept at a distance of 15cm from the wall such that the top of the ladder is at the height of 8cm from the bottom of the wall. Find the length of the ladder.

3. a) Using a ruler and a pair of compasses only, construct:

(i) triangle XYZ with |XY| = 9 cm, |YZ| = 12 cm and |XZ| = 8cm;

(ii) the perpendicular bisector of line XY;

(iii) the perpendicular bisector of line XZ.

b) (i) Label the point of intersection of the two bisectors as T;

(ii) With point T as centre, draw a circle of radius 6 cm.

c) Measure:

i. |TX|

ii. angle XYZ

4. a) A circular flower bed 5 yards in diameter is created in the middle of a rectangular lawn area measuring 12 yards by 8 yards. What is the area of the lawn that is left?

b) Evaluate $-5 - (7 - 3) - (9 - 2^4)$

c) Cleaner of a small office spent Ghc 120.00 of his salary on food, Ghc80.00 on rent, Ghc 40.00 on clothing, Ghc 110.00 on transport and saved Ghc 50.00. Draw a pie chart to represent the data.

5. a) When 5 is subtracted from two times a certain number and the result is multiplied by two, the answer is at least sixteen. Find the possible range of values of the number.

b) b) Find the equation of a line passing through the point (-1, -3) and has a slope of $\frac{2}{5}$

c) Three friends contributed GH¢6,500.00 each towards the purchase of a computer. If they bought the computer for GH¢15,000.00 and paid 15% VAT on the cost of the computer, find the amount which should be refunded to each of them.

6. a) A fair dice is thrown two **times.**

i. Construct a table of the outcomes.

ii. Calculate the probability that the;

α) sum of the outcomes is 8;

β) product of outcomes is **less than** 10

γ) outcomes contains **at least** a 3

b) Evaluate $\frac{0.0048\times0.81}{0.0027\times0.004}$, leaving your answer in standard form

PAPER 1 - OBJECTIVE TEST - [40marks]

*Each question is followed by four options lettered **A** to **D**. Find out 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*

1. Simplify $4p+6p^2-2p+2p^2$
   A. $2p-8p^2$
   B. $2p+8p^2$
   C. $2p-8p^3$
   D. $6p+8p^2$
2. Find the image of the point (-2,3) under a reflection in the y-axis.
   A. (2,-3)
   B. (-3,2)
   C. (2,3)
   D. (3,2)
3. Q = {1,2,3}. How many subsets has Q?
   A. 6
   B. 8
   C. 5
   D. 2
4. Find 49.9728km, correct to three significant figures.
   A. 50.0km
   B. 40.0km
   C. 49.9km
   D. 49.0km
5. Simplify $\frac{2m-n}{3} + \frac{3n}{2}$
   A. $\frac{4m-7n}{6}$
   B. $\frac{9n-4m}{6}$
   C. $\frac{2m+9n}{6}$
   D. $\frac{4m+7n}{6}$
6. Which of the following polygons has no line of symmetry?
   A. Kite
   B. Isosceles triangle
   C. Trapezium
   D. Rhombus
7. Simplify $\sqrt{9\times9-17}$
   A. -5
   B. 6
   C. 9
   D. 8
8. In a real number system, N denotes?
   A. whole number
   B. rational numbers
   C. integers
   D. counting numbers
9. Find the square root of 225
   A. 14
   B. 15

C. 16
D. 17

10. Which of the following shapes has four right angles?
A. Square
B. Rectangle
C. Triangle
D. Circle

11. Which of the following is a prime number?
A. 12
B. 15
C. 17
D. 20

12. Evaluate $\frac{2}{3}$ (27 – 12) -6
A. 16
B. 14
C. 6
D. 4

13. Express 126 as a product of prime factors.
A. 2 x 3 x 7
B. 2^2 x 3 x 7
C. 2 x 3^2 x 7
D. 2^2 x 3^2 x 7

14. Substract 75 from 36.
A. -49
B. -39
C. 39
D. 49

15. Solve the inequality 3(x-1) $\leq$ 6.
A. x $\leq$ -5
B. x$\leq$ -3
C. x$\leq$ 3
D. x$\leq$ 5

16. Find the least number of that must be added to 308 to make it divisible by 19.
A. 4
B. 7
C. 15
D. 18

17. A thank contains 400 litres of water. If 100 litres of water is used, what percentage is left?
A. 25%
B. 30%
C. 40%
D. 75%

18. Expand -x(3-2x)
A. -3x-$2x^2$
B. 3x+$2x^2$
C. -3x+$2x^2$
D. 3x+$2x^2$

19. Write 1.02616, correct to 3 significant figures.
A. 1.03
B. 1.02
C. 1.026
D. 1.0262

20. Factorize $12x^2$-$3y^2$ completely.
A. 3(2x-y)
B. (4x-y)(x+3y)
C. 3(4x-y)(x+y)
D. 3(2x-y)(2x+y)

21. Evaluate 88.23^2 - 11.77^2
A. 152.9
B. 200.00
C. 7646.00
D. 7923.1

22. Simplify 3x-(p-x)-(r-p)
A. 2x-r
B. 2x+r
C. 4x-r
D. 2x-2p-r

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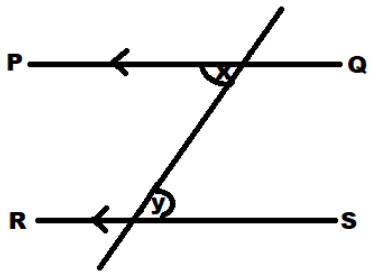
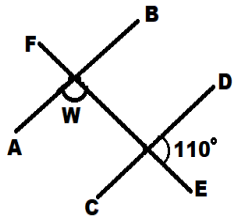


In the diagram PQ//RS. Angles x and y are called?
A. co-interior angles
B. corresponding angles
C. vertically opposite angle
D. alternate angles

24.



In the diagram AB and CD are parallel lines. What is the value of W?
A. 30°
B. 50°
C. 150°
D. 180°

25. Convert $3^1/_5$ to a decimal fraction
A. 3.7
B. 3.6
C. 3.3
D. 3.2

26. Find the difference between 200 and 19.7
A. 181.3
B. 180.3
C. 191.3
D. 182.3

27. Solve the equation $\frac{3}{8}(y-2) = \frac{1}{4}(2y-3)$
A. y=0
B. y=1
C. y=2
D. y=3

28. Offei is x old now. Five years ago he was half as old as he is now. How old is he?
    A. 10 years
    B. 5 years
    C. $3^1/_3$ years
    D. $2^2/_3$ years

29. if $(3n-1)^{\frac{1}{3}} = 2$, find n
    A. 4
    B. 3
    C. 2
    D. 1

30.What is the mean of the following data:2,4,6,8,10?
    A. 4
    B. 5
    C. 6
    D. 8

31. What is the range of the following data: 1,2,3,4,5,?
    A. 2
    B. 3
    C. 4
    D. 5

32. What is the mood of the following data? 1,2,2,3,3,3?
    A. 1
    B. 2
    C. 3
    D. 4

33. What is the ratio of 4:8?
    A. 1:2
    B. 2:1
    C. 1:1
    D. 4:1

34. If the 2 machines can produce 12 units in 4 hours, how many units can 4 machines produce in 2 hours?
    A. 4
    B. 6
    C. 8
    D. 12

35. A bookshelf has 5 shelves, and each shelf can hold 8 books. How many books can the bookshelf hold in total?
    A. 20
    B. 30
    C. 40
    D. 50

36. A bakery sells 250 loaves of bread at GHC 2 each. How much money does the bakery make in total?
    A. GHC 400
    B. GHC 500
    C. GHC 600
    D. GHC 700

37. A car travels 120 milles in 3 hours. How many miles does it travel per hour?
    A. 20
    B. 30
    C. 40
    D. 60

38. A rectangular garden measures 10 meters by 5meters. If a path that is 1-meter-wide is built around the garden, what is the area of the path?
    A. 10 square meters
    B. 15 square meters
    C. 20 meters
    D. 25 square meters

39. What is the name of the shape with three side and three vertices?
    A. Triangle
    B. Quadrilateral
    C. Pentagon
    D. Hexagon

40. What is the name of the shape with no sides or vertices?
    A. Circle
    B. Ellipse
    C. Triangle
    D. Rectangle