

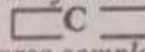
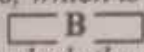
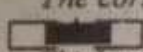
Answer all questions

Each question is followed by four options 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. An example is given below.

What is the smallest number which is divisible by 16 and 20?

- A. 80
B. 40
C. 120
D. 160

The correct answer is 80, which is lettered A and therefore answer space A would be shaded.



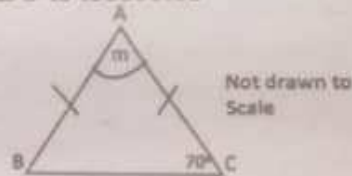
Think carefully before you shade the answer spaces. Erase completely an answer you wish to change. Do all rough work on this question paper. Now answer the following questions.

1. The length of a rectangle is 3 times its width. If the width is 5m, what is its area?

- A. 15m^2
B. 75m^2
C. 30m^2
D. 45m^2

2. Find the value of angle m in the triangle below if $\triangle ABC$ is isosceles

- A. 110°
B. 70°
C. 40°
D. 55°



3. What solid can be made from the net below?

- A. Triangular pyramid
B. Rectangular pyramid
C. Triangular prism
D. Rectangular prism

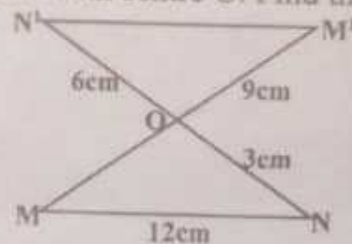


4. A train is travelling at 100km per hour. How far does the train travel in $5\frac{1}{2}$ hours?

- A. 500km
B. 550km
C. 50km
D. 436km

5. In the figure below, $M'ON'$ is an enlargement of MON with centre O . Find the scale factor.

- A. 9
B. 3
C. 2
D. -2



6. Find OM from the figure above.

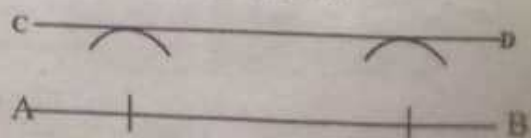
- A. 9cm
B. 6cm
C. 4.5cm
D. 3cm

7. A square of side 5cm is enlarged by scale factor of 2. Find the ratio of its area to its perimeter.

- A. 5 : 4
B. 5 : 2
C. 10 : 100
D. 4 : 7


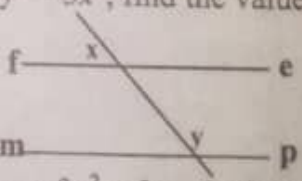
8. Which of the following statements best describes the construction below?

- A. Construction of a horizontal line CD
B. Construction of a line parallel to AB
C. Construction of the bisector of AB
D. Construction of a top line



9. If \$1.00 = €340.00, how much is \$6.50?
 A. €6, 630.00
 B. €2, 380.00
 C. €2, 210.00
 D. €346.50
10. Find the median of 1, -1, -5, 3 and -4.
 A. -1
 B. -4
 C. 5
 D. 1
11. The volume of a box of length 12cm and width 10cm is 960cm^3 . Find the height.
 A. 8cm
 B. 22cm
 C. 43cm
 D. 80cm
12. The prime factorization $2^2 \times 3^2 \times 5$ is for
 A. 60
 B. 90
 C. 150
 D. 180
13. If b is an integer between -1 and 1, find the value of $(b + 1)^2$.
 A. -1
 B. 0
 C. 1
 D. 2
14. Solve the equation $\frac{8}{6-y} = -2$.
 A. 10
 B. 2
 C. -2
 D. -6
15. If $b^2 + 2 = 51$, find b .
 A. 49
 B. 7
 C. 17
 D. -17
16. Simplify: $0.0864 \div 0.004$.
 A. 2160
 B. 216
 C. 21.6
 D. 2.16
17. Find the total length of the edges of a cube if the volume is 64cm^3 .
 A. 4cm
 B. 16cm
 C. 24cm
 D. 48cm
18. If $a = \left(\frac{1}{5}\right)$ and $b = \left(-\frac{3}{4}\right)$ find $a+b$
 A. $\left(\frac{1}{5}\right)$
 B. $\left(-\frac{3}{4}\right)$
 C. $\left(\frac{4}{9}\right)$
 D. $\left(\frac{4}{1}\right)$
19. Given that $x = -3, y = -5$ and $z = 6$, evaluate $7x - 2yz$.
 A. -39
 B. 39
 C. -9
 D. 9
20. A die and a 50p coin are tossed together. What is the total possible outcomes?
 A. 120
 B. 6
 C. 2
 D. 12
21. Yaa's age 11 years from now will be 3 times her age 7 years ago. Her age now is
 A. 15
 B. 16
 C. 17
 D. 18
22. Solve $3\frac{1}{2} - 4\frac{1}{8}(x+1) = 3 - 2x$
 A. $-1\frac{9}{14}$
 B. $1\frac{9}{14}$
 C. $\frac{14}{23}$
 D. $\frac{-14}{23}$
23. At what rate per annum will an amount of GHC 6,000.00 earn GHC 2,400.00 simple interest in 2 years?
 A. 0.05%
 B. 0.02%
 C. 5%
 D. 20%
24. Find the truth set of $\frac{1}{4}(x+3) \leq 2x-1$
 A. $\{x : x \leq -1\}$
 B. $\{x : x \leq 1\}$
 C. $\{x : x \geq -1\}$
 D. $\{x : x \geq 1\}$

Turn over

25. Given that $U = 4$, $t = 5$, $a = 10$ and $r = at + \frac{1}{2} ut^2$ find the value of r .
- A. 50
B. 60
C. 65
D. 100
26. Divide 0.0014 by 0.2
- A. 7
B. 0.7
C. 0.07
D. 0.007
27. Solve $3 - 2(3x - 4) \leq 5 + x$
- A. $x \leq -1\frac{1}{6}$
B. $x \leq \frac{-6}{7}$
C. $x \leq 1\frac{1}{6}$
D. $x \geq \frac{6}{7}$
28. Evaluate $\frac{1}{3}\{(5 - 1) - (2 - 7)\}$
- A. -3
B. -1
C. 1
D. 3
29. 30% of the length of a rope is 150m. What is the full length of the rope?
- A. 45m
B. 105m
C. 450m
D. 500m
30. Simplify $(m - n - r) - (3m - 2n - r)$
- A. $2m + n$
B. $-(2m + n)$
C. $n - 2m$
D. $2m - n$
31. Express $\frac{1}{12}$ as a percentage.
- A. 8%
B. 8.4%
C. 8.33%
D. 83.3%
32. Given that $a = \left(\frac{12}{x^2 - 1}\right)$ and $b = \left(\frac{12}{3}\right)$, find x if $a = b$
- A. 1
B. 2
C. 3
D. 4
33. What is the value of 8 in the numeral 682, 111?
- A. 800
B. 8000
C. 80,000
D. 800,000
34. What is the smallest value of x that satisfies the equation $x(x + 4) = -3$?
- A. 3
B. 1
C. -1
D. -3
35. Which of the following is a factor of the expression $ac - 2bc + ad - 2bd$?
- A. $c - d$
B. $a - 2b$
C. $a + b$
D. $a + 2b$
36. If $\frac{1}{3}$ of a number plus $\frac{1}{5}$ of the same number equals 8, what is the number?
- A. 3
B. 5
C. 15
D. 30
37. What geometrical figure can be found in the diagram below?
- A. Cuboid
B. Cone
C. Pyramid
D. Sphere
- 
38. A point (2, 1) is reflected in the y-axis. Find its image.
- A. (-1, 2)
B. (1, -2)
C. (-2, 1)
D. (2, -1)
39. In the figure below, fe and line mp are parallel. If $y^\circ = 3x^\circ$, find the value of x .
- A. 30°
B. 45°
C. 60°
D. 75°
- 
40. Find the value of $a^2 + 3a - 6$ when $a = -4$
- A. -2
B. 2
C. -10
D. 13

END OF PAPER

PAPER 2

Essay

1 hour

Answer four questions only.

All questions carry equal mark.

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

1. (a) P and Q are subsets of the universal set $U = \{1 \leq x \leq 12\}$.
 If $P = \{x : x \text{ is a factor of } 12\}$ and $Q = \{x : x \text{ is a multiple of } 3\}$,
 (i) Find $P \cap Q$ and $(P \cup Q)^c$.
 (ii) Draw a Venn Diagram for the information.

(b) If $p = \begin{pmatrix} 2 \\ -2 \end{pmatrix}$ and $q = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$, find r such that $\frac{1}{2}p - q + r = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$.

- (c) The table below shows the preferred profession among 45 people interviewed.

Profession	Engineering	Tailoring	Medicine	Law	Journalism
Frequency	9	12	15	3	6

Draw a pie chart to represent the information above.

- (d) Given that $s = \begin{pmatrix} 2x-4 \\ 3y+1 \end{pmatrix}$ and $t = \begin{pmatrix} -6+x \\ -2 \end{pmatrix}$, if $s = t$, find x and y.

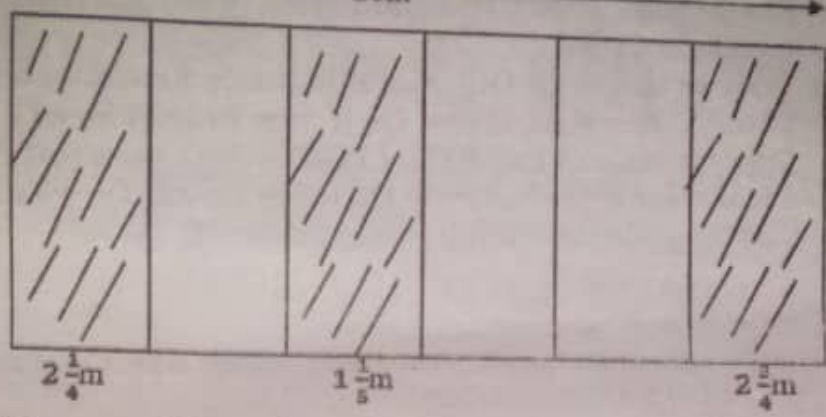
2. (a) The following are the masses of 25 girls in a class in kilograms.

68	42	63	57	66
54	72	58	57	73
61	54	63	45	38
40	57	58	56	48
63	63	63	68	39

- (i) Arrange the marks on a stem-and-leaf plot in ascending order;
 (ii) Find the mode and median.
- (b) (i) Find the truth set of the inequality $\frac{2x-2}{4} - \frac{2x-1}{3} \leq 1$ and illustrate your answer on a number line.

- (ii) Simplify $\frac{0.810 \times 0.00048}{0.000400 \times 0.0270}$ and leave your answer in standard form.

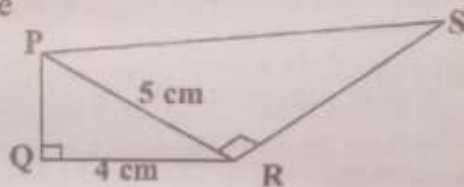
(c) From the figure below, calculate the length that is not shaded.



(d) The mean of the numbers 22, 18, $(2y + 1)$, 10 and 20 is 15. Find the value of y .

3. (a) The area of the figure below is 36cm^2 . $\angle PQR = \angle PRS = 90^\circ$, $|PR| = 5\text{cm}$ and $|QR| = 4\text{cm}$. Calculate

- (i) $|SR|$
- (ii) $|PS|$



(b) A woman bought 458 oranges for GHC 150.00. She kept 62 oranges for her family and sold the rest at 50 Gp each. Calculate, correct to one decimal place, her percentage profit.

(c) The interior angles of a regular polygon is thrice its exterior angle. Find the number of sides of the polygon.

(d) The frequency distribution below shows the marks scored by students in a test

Mark(x)	Frequency(f)	f(x)
1	2	2
2	2	t
3	3	9
4	y	12
5	x	20
6	2	z
7	2	14
8	0	0
9	w	9w
10	1	10
$\Sigma f = (19+w)$		$\Sigma f(x) = (83+9w)$

Find from the table, the value of

- (i) $t, y, x,$ and z ;
- (ii) w , if the mean mark is 4.6

Turn over

4. (a) (i) Using a scale of 2cm to 1 unit on both axes, mark the x-axis from -5 to 5 and the y-axis from -5 to 7.
- (ii) Plot the points $P(0,0)$, $T(3,0)$, $R(3,2)$ and $Q(0,3)$. Join them to form a quadrilateral $PQRT$.
- (iii) Draw the image of $P_1Q_1R_1T_1$ of $PQRT$ under a reflection in the line $y=0$, where $P \rightarrow P_1$, $Q \rightarrow Q_1$, $R \rightarrow R_1$ and $T \rightarrow T_1$
- (iv) Draw the image of $P_2Q_2R_2T_2$ of $PQRT$ under a rotation of 180° about the origin where $P \rightarrow P_2$, $Q \rightarrow Q_2$, $R \rightarrow R_2$ and $T \rightarrow T_2$
- (v) Find the gradient of the line joining the Point Q and R_2
- (b) Simplify $4\frac{1}{4} - 4\frac{1}{2} + 1\frac{1}{6}$
- (c) Three numbers are in the ratio 2:3:4 and their average is 36. Calculate
- (i) the sum of the three numbers.
- (ii) the greatest number
- (d) Nisi used $6\frac{1}{2}$ pieces of wood to make a fence. Each piece was $2\frac{1}{5}$ m wide. How long was the fence?
5. (a) (i) Using a ruler and a pair of compass only, Construct a triangle ABC with $|AB| = 8\text{cm}$, and $\angle ABC = 135^\circ$ and $|BC| = 7\text{cm}$.
- (ii) Find the point M on $|CA|$ which is equidistant from A and B
- (iii) Measure $|MB|$
- (b) Find the greatest common factor of 42, 120 and 96.
- (c) A rectangular room measures 12cm by 9cm. What is the length of the diagonal?
- (d) Multiply $(4 + x)$ by $(2 - x)$
6. (a) The following are the ages of some people in a certain village:
14, 10, 18, 16, 8, 12, 22, 20, 6.
- (i) Find the sum of their ages.
- (ii) What is the median age?
- (iii) Arrange their ages in a (3×3) square table, so that the sum along each row, column and diagonal are equal to form a magic square.
- (iv) Find the sum of each row, column and diagonal
- (b) (i) If $A = \{p, q, r\}$, find the number of subsets in A .
- (ii) Find the slope between the points $R(-\frac{3}{2}, -\frac{7}{2})$ and $T(0, 0)$
- (c) Make x the subject of the relation $n = pq + (x + 3)r$
- (d) A certain number was divided by 3, the result was then added to 3 to give 8 as the final answer. Find the number.

END OF ESSAY TEST