3. Express 4382.93 in standard form.

A. 438293×10^4

B. 43.8293×10^2

C. 4.38293×10^4

D. 4.38293×10^3

4. Which property of arithmetic is used in $a(x + y) = ax + ay$.

A. Associative

B. Commutative

C. Distributive

D. Initiative

5. Subtract $(7x - 3)$ from $(5 - 3x)$.

A. $10x - 8$

B. $4x - 8$

C. $8 - 10x$

D. $2 - 10x$

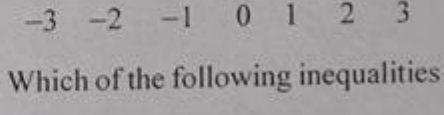
6. The cost of 12 note books is GH¢ 54.84. Find the cost of one note book.

A. GH¢ 5.57

B. GH¢ 4.67

C. GH¢ 4.57

D. GH¢ 3.57

7. 

Which of the following inequalities is represented on the number line?

A. $-2 > y > 2$

B. $-2 \leq y < 2$

C. $-2 \geq y > 2$

D. $-2 < y \leq 2$

8. Simplify: $(2ab^2)^2 \times 3a^3b$.

A. $6a^4b^5$

B. $12a^3b^4$

C. $12a^6b^4$

D. $12a^5b^5$

Turn o

4. (*a*) Solve: $\frac{2x+3}{3} + 2x = 10$.

(*b*) Multiply 0.03858 by 0.02, leaving the answer in standard form.

(*c*) A cylindrical container of height 28 cm and diameter 18 cm is filled with water. The water is then poured into another container with a rectangular base of length 27 cm and width 11 cm. Calculate the depth of the water in the container. [Take $\pi = \frac{22}{7}$]

5. (*a*) If $11y = (18)^2 - (15)^2$, find the value of y.

(*b*) Find the perimeter of a circle with radius 35 cm. [Take $\pi = \frac{22}{7}$]

(*c*) Given that $m = \frac{r-s}{2nr}$,

(i) make r the subject of the relation.

(ii) find the value of r when $s = 117$, $m = 2$ and $n = -3$.

6. (*a*) Copy and complete the table for the relation $y = 12x - 9$.

x	−2	−1	0	1	2	3	4	5
y			−9				39	

(i) Using a scale of 2 cm to 1 unit on the x - axis and 2 cm to 10 units on the y-axis, draw on a graph sheet two perpendicular axes ox and oy.

(ii) Using the table, plot all the points of the relation $y = 12x - 9$ on the graph.

(iii) Draw a straight line through the points.

(iv) Use the graph to find:

(α) y when $x = 2.5$;

(β) x when $y = 10$.

(*b*) List the integers within the interval $7 < x \leq 14$.

END OF ESSAY TEST

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END OF ESSAY TEST

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⊐ ⊏E⊐

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. Simplify: $\frac{3}{4} - \frac{1}{3} + \frac{1}{12}$.

A. $\frac{1}{3}$

B. $\frac{1}{2}$

C. $\frac{1}{6}$

D. $\frac{2}{3}$

2. Given that $N = \{x: x \text{ is a factor of } 18\}$ and $M = \{x: x \text{ is a multiple of } 12\}$, find $N \cap M$.

A. $\{1, 2, 3, 6\}$

B. $\{1, 2, 3, 6, 12\}$

C. $\{2, 3, 6, 12, 18\}$

D. $\{\}$

25. If 480 pupils in a school are boys representing 80 % of the school's enrolment, find the total number of pupils in the school.

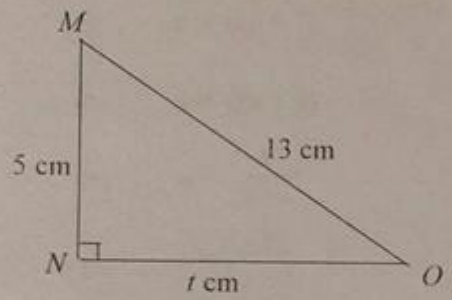
A. 384
B. 540
C. 600
D. 864

26.

x	1	2	3	4
↓	↓	↓	↓	↓
y	2	5	10	17

What is the rule for the mapping?

A. $x \rightarrow 3x^2 - 1$
B. $x \rightarrow 5x - 3$
C. $x \rightarrow x^2 + 1$
D. $x \rightarrow 4x - 2$



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27. Find the value of t in the diagram.

A. 12
B. 8
C. 4
D. 3

28. Add the following numbers: 2.4, 0.042, 1.12 and 0.342.

A. 2.184
B. 3.904
C. 4.282
D. 6.200

29. Solve: $4^x = 32$.

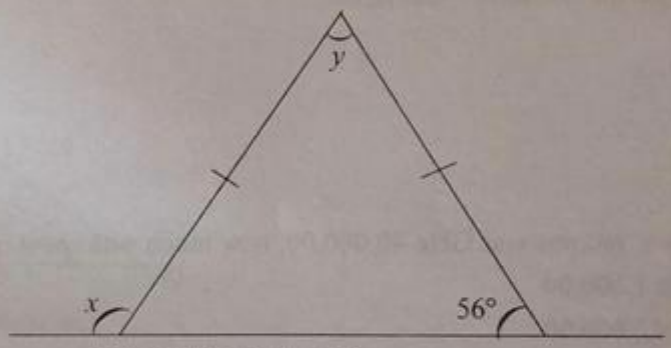
A. $2\frac{1}{2}$
B. $3\frac{1}{2}$
C. 5
D. 7

15. What is the median of the following numbers: 4, 16, 13, 18, 3, 20, 6, 7, 15, 2, 10, 12?

A. 7
B. 10
C. 11
D. 12

16. If $\frac{w}{3} = 3(w-1) - 1$, find the value of w.

A. $\frac{3}{2}$
B. $\frac{5}{4}$
C. $\frac{3}{5}$
D. $\frac{1}{2}$



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Use the diagram to answer questions **17** *and* **18**.

17. Find the value of x.

A. 68°
B. 75°
C. 112°
D. 124°

18. Find the value of y.

A. 68°
B. 75°
C. 112°
D. 124°

19. A car used 8 hours to travel from town **A** to town **B** at a speed of 18 km/h. Find the distance travelled.

A. 22.5 km
B. 135 km
C. 140 km
D. 144 km

30. Find the equation of the straight line passing through the points $(-3, 5)$ and $(6, 8)$.

A. $y = \frac{1}{3}x$

B. $y = \frac{1}{3}x + 6$

C. $y = 3x - 10$

D. $y = 3x + 14$

31. There are 15 females in a debating club. If the ratio of females to males is 3 : 2, how many members are in the club?

A. 6
B. 10
C. 22
D. 25

32. If $P'(4, -5)$ is the image of $P(x, y)$ translated by $r = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$, find the values of x and y.

A. $(-6, 8)$
B. $(-6, -8)$
C. $(6, -8)$
D. $(6, 8)$

33. If $2y = 1 - 3x^2 + 4x$, find y when $x = -1$.

A. -3

B. $-\frac{1}{2}$

C. $\frac{1}{2}$

D. 3

34. Given that $P = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$, what is the probability of selecting a prime number from the set?

A. $\frac{2}{3}$

B. $\frac{7}{12}$

C. $\frac{1}{2}$

D. $\frac{5}{12}$

9. Which of the following polygons does **not** have a line of symmetry?
   A. Kite
   B. Isosceles triangle
   C. Trapezium
   D. Rhombus

10. A trader sold a radio set for GH¢ 72.00 making a profit of 8 % . Find, correct to the **nearest** Ghana cedi, the cost price of the radio set.
   A. GH¢ 66.00
   B. GH¢ 67.00
   C. GH¢ 77.00
   D. GH¢ 78.00

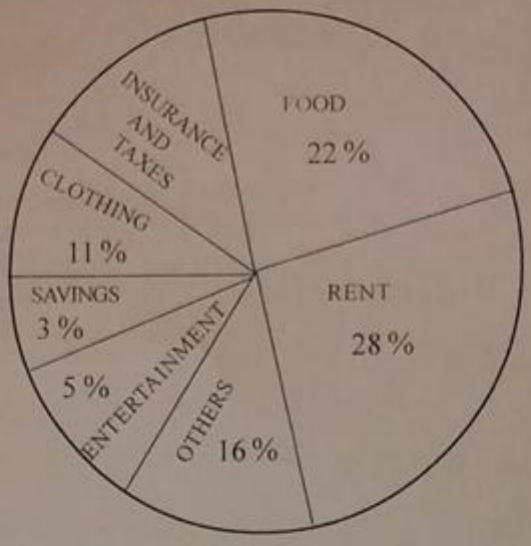
11. Vera is 11 years old and her brother is 9 years old. They shared 60 oranges in the ratio of their ages. How many more oranges does Vera get?
   A. 6
   B. 27
   C. 34
   D. 39

12. If $(x-3)^2 = 16$, find the positive value of x.
   A. 1
   B. 3
   C. 4
   D. 7

13. 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. $(3, 2)$

14. What fraction of 3 weeks is 18 days?
   A. $\frac{1}{6}$
   B. $\frac{6}{7}$
   C. $\frac{1}{7}$
   D. $\frac{9}{11}$

The pie chart shows the household budget of a family.



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Use the information to answer questions **20** *and* **21**.

20. Find the angle for INSURANCE and TAXES.

A. 45°
B. 54°
C. 60°
D. 72°

21. If the family's income was GH¢ 40,000.00, how much was spent on clothing?

A. GH¢ 1,600.00
B. GH¢ 2,000.00
C. GH¢ 3,200.00
D. GH¢ 4,400.00

22. Two sides of a parallelogram are 5.8 m and 8.2 m long. Find its perimeter.

A. 11.0 m
B. 36.6 m
C. 28.0 m
D. 47.6 m

23. A man earned an interest of GH¢ 240.00 in 4 years at 20 % per annum simple interest. Calculate the principal.

A. GH¢ 300.00
B. GH¢ 450.00
C. GH¢ 480.00
D GH¢ 1,200.00

24. A labourer worked for $20\frac{1}{2}$ hours. If he was paid GH¢ 2.50 per hour, what was his total wage?

A GH¢ 51.00
B GH¢ 51.25
C GH¢ 512.00
D GH¢ 512.25

35. Solve: $3-(3x+4) \leq -4$.

A. $x \leq 1$

B. $x \geq 1$

C. $x \geq 1\frac{2}{3}$

D. $x < 1\frac{1}{2}$

36. Two sides of a rectangle are 10 cm and 6 cm. Calculate the area of a square with the same perimeter as that of the rectangle.

A. $16\ \text{cm}^2$

B. $30\ \text{cm}^2$

C. $60\ \text{cm}^2$

D. $64\ \text{cm}^2$

37. Make n the subject of the relation $y = \frac{n-x}{x}$.

A. $n = x(y+1)$

B. $n = y(x+1)$

C. $n = \frac{x}{y-1}$

D. $n = \frac{x}{y+1}$

38. Expand and simplify: $(a-2)(2a+3)$.

A. $a^2 - a + 6$

B. $2a^2 + 7a - 6$

C. $2a^2 - a - 6$

D. $2a^2 - 12a + 6$

39. Simplify: $2^2 \times 2^7 \div 2^4$.

A. 2^{-1}

B. 2^5

C. 2^{11}

D. 2^{13}

40. If $P = \{7, 11, 13\}$ and $Q = \{9, 11, 13\}$, find $P \cup Q$.

A. $\{7, 9, 11, 13\}$

B. $\{7, 9\}$

C. $\{11, 13\}$

D. $\{9, 13\}$

END OF PAPER

PAPER 2

Essay

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

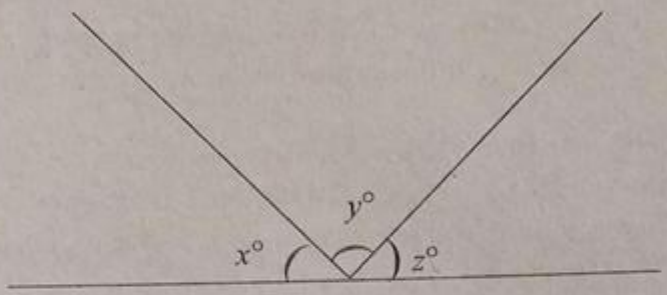
All questions carry equal marks.

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

1. (*a*) If $M = \{\text{Prime integers between 1 and 11}\}$ and $N = \{\text{factors of 12}\}$, find:
   (i) $M \cup N$;
   (ii) $M \cap N$.

   (*b*) Simplify: $45 \div 3 + 2 \times 8 - 12 + 42$.

   (*c*)



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In the diagram, x, y and z are angles on a straight line. If $x° : z° = 2 : 3$ and $y = 80°$, find x.

2. (*a*) Simplify: $5(6 - ab) + 2(-7 + 3ab)$.

   (*b*) The equation of a straight line is given by $3x - 2y - 6 = 0$. Find the:
   (i) gradient of the line;
   (ii) y - intercept.

   (*c*) Adwoa received a commission of 20 % on bread she sold. In one week, Adwoa's commission was GH¢ 540.00.
   (i) How much bread did she sell during that week?
   (ii) Find her average daily commission.

3. (*a*) Express $\left(\frac{13}{15} - \frac{7}{10}\right)$ as a percentage.

   (*b*) Factorize: $ay - y - a + 1$.

   (*c*) In a fishing community of 9,400 people, the number of women exceeds the number of men by 1,500. Find the ratio of men to women in the community.