FINAL EXAMINATION 2022-2023
FORM ONE MATHEMATICS (PAPER II)

June, 2023

1. Total no. of pages: 6 pages
2. Time allowed: 45 minutes
3. Total marks of this paper: 30 marks
4. Weighting: 10% from regular test; 10% from assignment; 10% from project; 70% from exam.
   The score of Paper 2 counts for 35% of the subject total.

Instructions:

1. All questions carry equal marks.
2. Attempt ALL questions. The answers should be marked on the MC Answer Sheet.
3. You should mark only ONE answer for each question. If you mark more than one answer, you will receive NO MARKS for that question.
4. No marks will be deducted for wrong answers.
5. Diagrams in this paper are not necessarily drawn to scale.
6. Use of calculator is allowed.

1. The floor of a rectangular room is covered with n identical square tiles each of area k m^2. If another rectangular room of area 100 m^2 is covered with the same type of square tiles, how many square tiles are needed?

   A. $\frac{100}{k}$ B. $\frac{100}{n}$

   C. $\frac{nk}{100}$ D. $\frac{100}{nk}$

2. Consider the formula $m = \frac{bc-a^2}{2c+5}$. If $a = 3$, $b = 2$ and $c = -3$, find m.

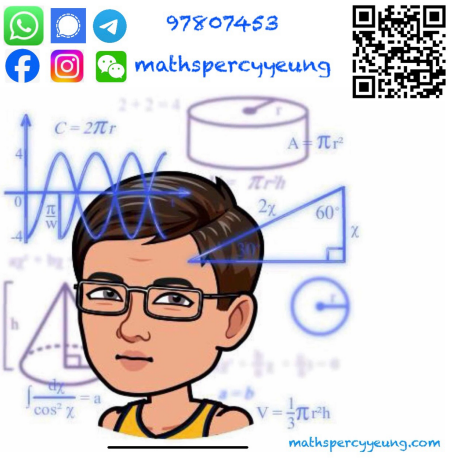
   A. 15 B. $-\frac{3}{11}$

   C. $\frac{3}{2}$ D. -15

3. Which of the following equations has $a = 3$ as its solution?

   A. $5-\frac{a+3}{5}=-7$ B. $\frac{3(2+a)}{8}=6$

   C. $\frac{3}{5}+\frac{a}{10}=\frac{9}{10}$ D. $\frac{2(a+3)}{3}-1=4$



4. A number is rounded off to 3 significant figures and the result is 0.0880. Which of the following may be the actual value of the number?

A. 0.0877
B. 0.087 95
C. 0.088 09
D. 0.088 72

5. Estimate the value of 16 205 ÷ 17 698 – 11 426 + 23 579 by rounding off each number to 3 significant figures.

A. 45 900
B. 46 100
C. 47 000
D. 50 000

6. If $x > 1$, which of the following must be true?

A. $(x^4)^2 = x^{16}$
B. $x^5 \times x^2 = x^{10}$
C. $\frac{x^{16}}{x^4} = x^4$
D. $x^{12} \div x^2 = x^{10}$

7. $(xy^2 + 5x + 4y) - (-3xy^2 + 6x - 2y) =$

A. $4xy^2 - x \div 6y$.
B. $4xy^2 - x + 2y$.
C. $-2xy^2 \div 11x + 6y$.
D. $-2xy^2 + 11x + 2y$.

8. $(-4a \div 2b)^2 =$

A. $-16a^2 + 8ab \div 4b^2$.
B. $-16a^2 - 8ab + 4b^2$.
C. $16a^2 \div 16ab + 4b^2$.
D. $16a^2 - 16ab + 4b^2$.

9. There are 80 employees in a company, in which 40% are male. Among the female employees, 25% of them are of age 30 or above. Find the number of female employees in the company whose ages are below 30.

A. 8
B. 12
C. 24
D. 36

10. A flat is divided into three rooms I, II and III. It is given that room I and room III occupy 35% and 20% of the total area of the flat respectively, and room II is 20 m^2 larger than room III. Find the area of room I.

A. 16 m^2
B. 28 m^2
C. 36 m^2
D. 80 m^2

11. If a number is increased by 42 to 217, find the percentage change.

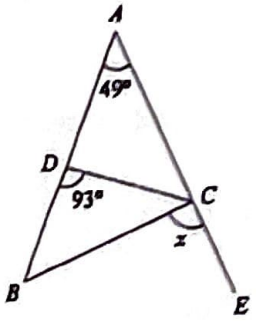
A. +24%
B. $+19\frac{11}{31}\%$
C. $-19\frac{11}{31}\%$
D. –24%

12. In a shop, the marked price of a pair of sunglasses is 60% above its cost price. If the pair of sunglasses is sold at a discount of 45%, a loss of $24 is made. Find the selling price of the pair of sunglasses.

A. $176
B. $200
C. $224
D. $320

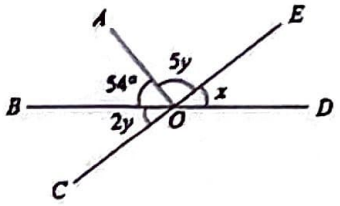
13. In the figure, D is a point lying on AB such that CD bisects $\angle ACB$. AC is produced to point E. Find x.

A. 86°
B. 88°
C. 92°
D. 94°



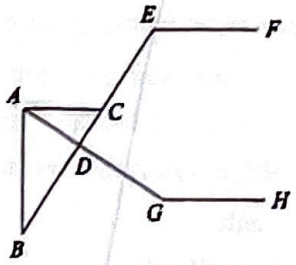
14. In the figure, BD and CE intersect at point O. Find x.

A. 18°
B. 24°
C. 30°
D. 36°



15. In the figure, C is a point lying on BE such that $EF // AC // GH$. AG and BE intersect at point D. If $\angle CEF = 123°$ and $\angle DGH = 146°$, then $\angle ADC =$

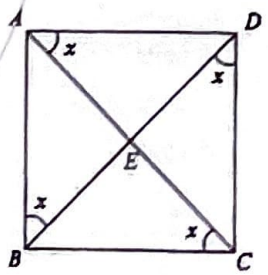
A. 88°.
B. 89°.
C. 90°.
D. 91°.



16. In the figure, $ABCD$ is a quadrilateral. AC and BD intersect at point E. Which of the following are true?

I. $AD // BC$
II. $AB // DC$
III. $\angle ABC = \angle ADC$

A. I and II only
B. I and III only
C. II and III only
D. I, II and III



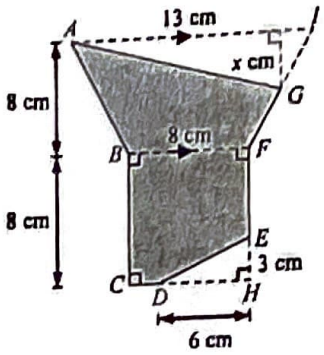
17. In the figure, if the area of the shaded region is 113 cm^2, then x =

A. 3.

B. 4.

C. 5.

D. 6.



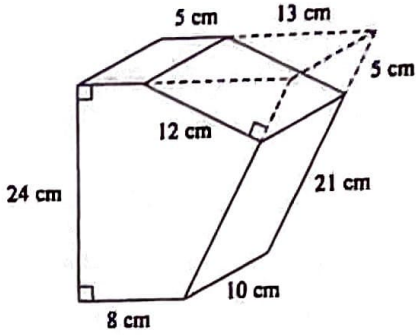
18. In the figure, find the total surface area of the right prism.

A. 982 cm^2

B. 1264 cm^2

C. 1828 cm^2

D. 2820 cm^2



19. If a metal cube is cooled down such that the length of its side is decreased by 10%, then its volume is decreased by

A. 10%.

B. 20%.

C. 27.1%.

D. 33.1%.

20. Which of the following is/are true?

I. If P is a point that lies in quadrant IV, then its y-coordinate must be positive.

II. The origin lies in quadrant I.

III. If Q is a point that lies on the y-axis, then its x-coordinate must be zero.

A. I only

B. III only

C. I and III only

D. II and III only

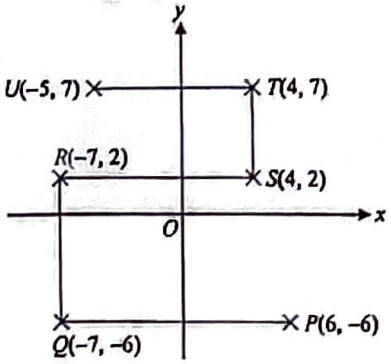
21. The figure shows the line segments PQ, QR, RS, ST and TU. Find $PQ + QR + RS + ST + TU$.

A. 36 units

B. 37 units

C. 46 units

D. 56 units



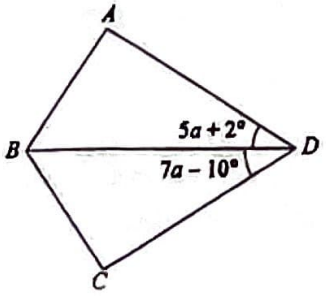
22. The coordinates of point R are $(-8, 6)$. R is rotated about the origin through $180°$ to R_1. In which quadrant does R_1 lie?

A. quadrant I
B. quadrant II
C. quadrant III
D. quadrant IV

23. The coordinates of point R are $(8, 9)$. L_1 is a line passing through the point $(7, 0)$ and parallel to the y-axis. L_2 is a line passing through the point $(0, 4)$ and parallel to the x-axis. R is reflected with respect to L_1 and then reflected with respect to L_2 to R_1. The coordinates of R_1 are

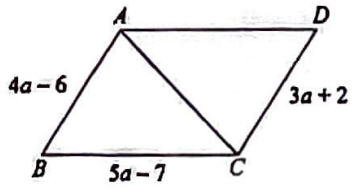
A. $(10, -1)$.
B. $(10, 9)$.
C. $(6, -1)$.
D. $(6, 9)$.

24. In the figure, if $\triangle ABD \cong \triangle CBD$, find $\angle ADB$.



A. 1°
B. 6°
C. 32°
D. 64°

25. In the figure, if $\triangle ABC \cong \triangle CDA$, then $AD =$



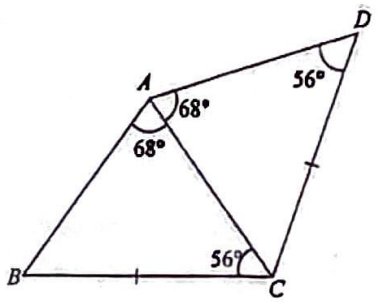
A. 4.
B. 8.
C. 26.
D. 33.

26. It is given that $\triangle ABC \cong \triangle DEF$. If $\angle DEF = 37°$ and $\angle ACB = 97°$, then $\angle BAC =$

A. 37°.
B. 46°.
C. 83°.
D. 97°.

27. In the figure, which of the following CANNOT be a reason to prove that $\triangle ABC \cong \triangle ADC$?

A. SSS
B. SAS
C. AAS
D. ASA



28. The following frequency distribution table shows the distribution of the numbers of hours that Jim slept in the past 25 nights.

Number of hours	Frequency
6	4
7	x
8	y
9	3
10	2

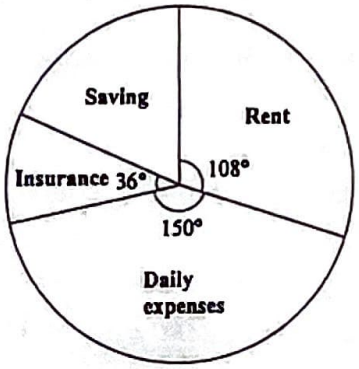
The percentage of the nights that Jim slept fewer than 9 hours is

A. 36%.
B. 64%.
C. 80%.
D. 92%.

29. The following pie chart shows the distribution of the monthly expenses of Elaine. If the rent is \$7200, how much is the saving?

A. \$3600
B. \$4000
C. \$4400
D. \$4800

Distribution of the monthly expenses of Elaine



30. The following stem-and-leaf diagram shows the distribution of the scores of 22 students in a quiz.

Scores of 22 students in a quiz

Stem (10 marks)	Leaf (1 mark)
3	8 9
4	4 5 9
5	0 1 3 x 8
6	1 4 4
7	5 7 8 9
8	1 2 6 7 x

Find the greatest possible difference between the highest and lowest scores of the students.

A. 50 marks
B. 49 marks
C. 52 marks
D. 51 marks

END OF PAPER