FEMSSISA MATHEMATICS OLYMPIAD: Grade 8 - 12

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

SA OLYMPIADS

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MATHEMATICS OLYMPIAD
GRADE TEN

DATE: 4 – 5 AUGUST 2026
TIME: 90 MINUTES

INSTRUCTIONS:

1. This booklet has 15 multiple choice and 5 open ended questions.
2. Use the answer sheet provided. Circle the letter corresponding to your answer.
3. All working details must be done in the space provided.
4. Calculators are not permitted.
5. Diagrams are not necessarily drawn to scale.
6. The first 15 problems carry 1 mark each and the next 5 carry 2 marks each.
7. You have 90 minutes for the paper which works out to an average of 4.5 minutes per question.
8. Read the questions carefully before answering.
9. Visit the website: www.saolympiads.co.za.

ENJOY THE OLYMPIAD!

GRADE TEN

SECTION A: MULTIPLE CHOICE (Questions 1 – 15, 1 mark each)

1. Simplify

$(-4xy)^2 \times \sqrt{36x^6y^4}$

(A) $-96x^5y^4$ (B) $96x^5y^4$ (C) $48x^3y^4$ (D) $64x^3y^4$

2. Simplify

$$\frac{12x^2 + 17x - 5}{4x^2 - x}$$

(A) $\frac{3x+5}{x}$ (B) $\frac{5x+3}{x}$

(C) $\frac{3x-5}{x}$ (D) $\frac{5x+3}{x+1}$

3. Solve for x and y:

$3x - 2y = 5$

$2x + 3y = 12$

(A) (2;-3) (B) (-3;2) (C) (2;3) (D) (3;2)

4. The equation of the line parallel to 6x -2y + 3 = 0 and passing through P(-3; 2) is…

(A) y = 3x +9 (B) y = 2x +9

(C) y = 3x + 11 (D) y = -3x + 11.

5. The graph of $y = \frac{x-a}{x-b}$; passes through (2;0) and (4;2)

Determine a x b

(A) 4 (B) 6 (C) -4 (D) -6

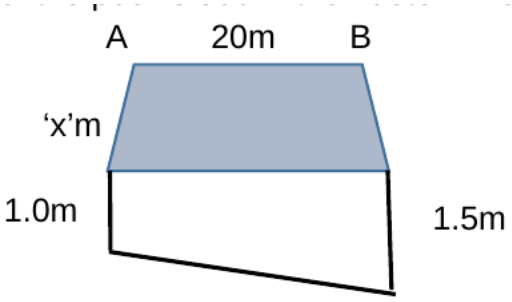
6. Solve for x:

$$\frac{x+1}{2x} = \frac{x+4}{3x+2}$$

(A) $2\ only$ (B) $2\ or\ 1$

(C) $3\ only$ (D) $3\ or\ 2$

7. A rectangular swimming pool has dimensions measuring 20m by 'x'm. The shallow end is 1.0 m and 1.5 m in the deep end. The cross section is a trapezium.
If the capacity of the pool is 300 kl then determine the value of 'x' in metres.



(A) 15 (B) 13 (C) 12 (D) 11

8. 100000 tickets for a cricket match were sold at R500 and R800 each.
The revenue realized was R60.5 million. How many R800 tickets were sold?

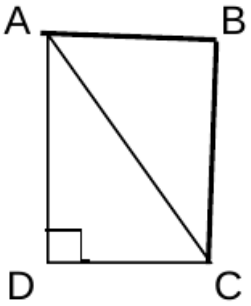
(A) 50000 (B) 45000 (C) 40000 (D)35000

9. If S = $\frac{n}{2}$ [2a + (n-1)d] then d =…..

(A) $\frac{2S-2an}{n(n-1)}$ (B) $\frac{2S-an}{n(n-1)}$

(C) $\frac{S-an}{n(n-1)}$ (D) $\frac{S-2an}{n(n-1)}$

10. In the rectangle ABCD; AC = 13cm and its perimeter is 34cm.
Determine the area of ABCD in cm^2.



(A) 84 (B) 72 (C) 60 (D) 48

11. If ab = 54; ac = 84 and bc = 14 then the value of abc is….

(A) 252 (B) 126 (C) 112 (D) 72

12. Evaluate: $96^2 - 92^2 + 88^2 - 84^2 + 80^2 - 76^2 + \ldots + 16^2 - 12^2$

(A) 4704 (B) 4720 (C) 4736 (D) 4752

13. Evaluate: $29\frac{5}{6} \; x \; 24\frac{3}{10}$

(A) 724 (B) $724\frac{19}{20}$

(C) $720\frac{1}{30}$ (D) $724\frac{1}{20}$

14. Write down the ordered pair (x;y) which is the common solution of both equations:

$$\frac{4}{x-1} + \frac{2}{y+2} = 3 \text{ and } \frac{6}{x-1} - \frac{4}{y+2} = 1$$

(A) $(-3\,;0)$ (B) $(3;\,1)$

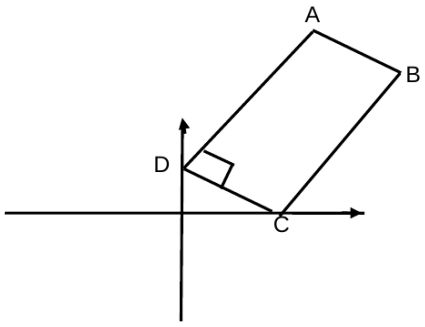
(C) $(3;\,0)$ (D) $(0;\,3)$

15. A company has 100 cars which were either electric or petrol. These cars were either blue or silver. There were 40 blue cars. There are 60 electric cars. There are 36 electric cars which are silver. How many electric cars which are blue?

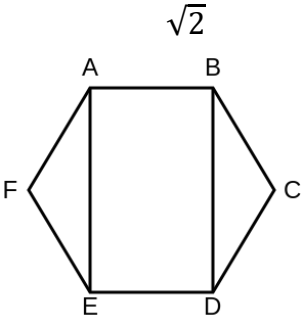
(A) 24 (B) 26 (C) 28 (D) 32

SECTION B: OPEN ENDED (Questions 16 – 20, 2 marks each)

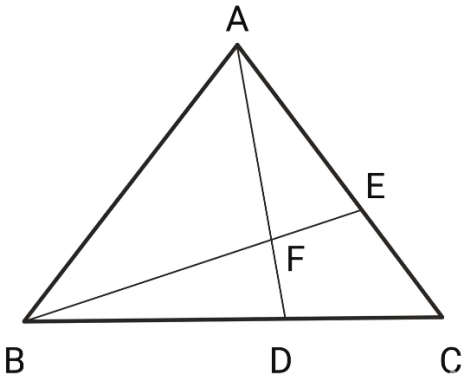
16. D(0;3) and C(3;0) are the y and x-intercepts of rectangle ABCD. Determine the coordinates of A if the area of ABCD is 30 square units.



17. In the following regular hexagon ABCDEF, the area is $50\sqrt{3}$ cm$^{2e\ a}$.
Determine the perimeter in cm



18. In $\Delta\ ABC$, AD divides BC in the ratio 3:2 ; BE divides AC in the ratio 3:1.
AD intersects BE at F. Determine the ratio of BF:FE.



19. This 9 digit code includes the following 3 digits as follows:
2 0 0 2 2 1 1 0 0
How many arrangements are there of these codes?

20. Two scent sticks of equal lengths start burning at the same time. One of the scent sticks burns down in 12 hours and the other burns in 8 hours.
How long must both scents sticks burn such that one scent stick is two thirds the length of the other scent stick?

MARKS: 1–15: 15 × 1 = 15
16–20: 5 × 2 = 10
TOTAL: 25