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 EIGHT

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 EIGHT

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

1. Evaluate: $9 \times 51 \times 11 - 61 \times 99$

(A) 990 (B) –990 (C) –890 (D) –790

2. Determine the value of E if $x = -2$ where $E = 2x^3 - x^2 + 3$.

(A) –17 (B) 17 (C) –16 (D) 16

3. Subtract:

$$\begin{array}{r} 3x - y \\ \underline{-\ 2x + y} \end{array}$$

(A) $-5x - 2y$ (B) $5x + 2y$ (C) $5x - 2y$ (D) $5x$

4. Determine the following product:

$-xy\,(x^2 - 3xy + y^2)$

(A) $x^3y + 3x^2y^2 - xy^3$ (B) $x^3 - 3x^2y^2 - y^3$

(C) $-x^3 - 3x^2y^2 - y^3$ (D) $-x^3y + 3x^2y^2 - xy^3$

5. A recipe for a mealie bread requires 150 g of corn flour. How much corn flour in kg will be required to bake 150 such mealie breads?

(A) 22.5 (B) 24 (C) 26 (D) 28

6. For what value of m will the 5-digit number 247m6 be divisible by 12?

(A) 2 (B) 3 (C) 4 (D) 5

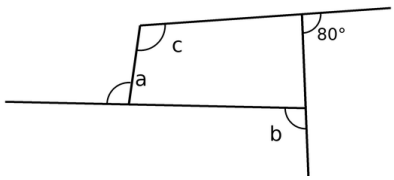
7. A train which is 1500 metres long passes through a tunnel which is 4.5 km long. The train travels at a speed of 120 km/h. How long, in minutes, will it take for the back of the train to exit the tunnel?

(A) 1 (B) 2 (C) 3 (D) 4

8. Evaluate: $48 \times 39\frac{5}{6}$

(A) 1612 (B) 1712 (C) 1812 (D) 1912

9. Find the value of a if $c - b = 100°$, and the 3 sides of the quadrilateral are produced.



(A) 95° (B) 100° (C) 105° (D) 110°

10. If the sum of an angle's supplement and thrice its complement is 130°, then find the angle.

(A) 70° (B) 75° (C) 80° (D) 85°

11. 64 one-cm cubes with all green faces are used to form one large cube. Four of the adjacent faces are painted white (1 face shares a common edge with 3 other faces). These cubes were then dismantled. How many cubes now have at least 4 green faces?

(A) 62 (B) 56 (C) 52 (D) 48

12. Two fractions $\frac{1}{3}$ and x are placed between $\frac{1}{4}$ and $\frac{1}{2}$ such that all 4 fractions are equally spaced from each other. Determine x.

(A) $\frac{1}{12}$ (B) $\frac{1}{6}$ (C) $\frac{5}{12}$ (D) $\frac{5}{9}$

13. Find a + b, if $\frac{5}{a} + \frac{11}{b} = \frac{7}{8}$ and a : b = 1 : 2.

(A) 24 (B) 36 (C) 48 (D) 54

14. Three towns Ansy, Bantry and Cairns are on a straight road. Bantry is between Ansy and Cairns. A car travels from Ansy to Bantry in 72 minutes. At the same time another car travels from Cairns to Bantry at a speed 20 km/h faster, taking 50 minutes. If the distance from Ansy to Cairns is 220 km, determine the distance in km from Cairns to Bantry.

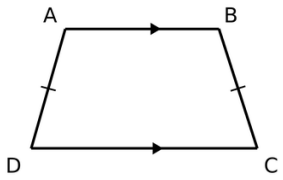
(A) 100 (B) 96 (C) 90 (D) 80

15. An ant travels alongside a regular pentagon with each side measuring 10 metres, always keeping 1 metre from the side of the pentagon. What distance, in metres, would the ant have travelled when it returns to its original position? ($\pi = \frac{22}{7}$)

(A) $56\frac{4}{7}$ (B) $56\frac{3}{7}$ (C) $56\frac{2}{7}$ (D) 56

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

16. ABCD is an isosceles trapezium. AD is 13 units, AB is 20 units and the perimeter of ABCD is 76 units. Determine the area of ABCD.



17. Find the sum of 20 terms of the following series:

$$\frac{1}{2\times 3} + \frac{1}{3\times 4} + \frac{1}{4\times 5} + \frac{1}{5\times 6} + \ldots$$

18. For what positive integral value of n will the following expression have the lowest positive integral value?

$$\frac{3n^2 + 6n + 10}{n + 2}$$

19. 16 litres of a container has 40% concentrate. How many litres of water must be added so that the mixture has 30% concentrate?

20. The minute hand forms an angle of 90° with the hour hand at 3 o'clock. What is the earliest time after 3 o'clock at which the angle will again be 90°?

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