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 NINE

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 NINE

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

1. Factorize: $x^2 - 4x - 192$

(A) (x+16)(x-12) (B) (x-16)(x+12)

(C) (x-48)(x+4) (D) (x+24)(x-8)

2. Write the average rate in km/h if the 200 metres is run in 24 seconds.

(A) 30 (B) 32 (C) 36 (D) 40

3. The product of $(5x + 2y)(25x^2 - 10xy + 4y^2)$ is …

(A) $216x^3 - y^3$ (B) $25x^3 - 8y^3$

(C) $125x^3 - 50xy - 8y^3$ (D) $125x^3 + 8y^3$

4. The table below shows the relationship between x and y which is in the form: y = mx +c. The value of m+c is …

x	-4	2
y	-4	$\frac{1}{2}$

(A) $y = \frac{3}{4}x + 2$ (B) $\frac{1}{4}$

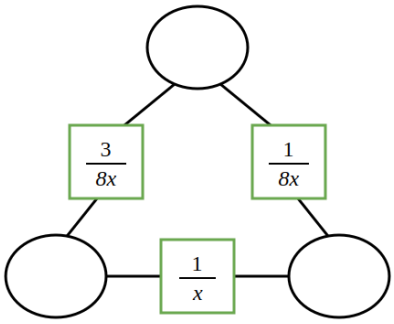
(C) $y = -3x - 2$ (D) $\frac{-1}{4}$

5. Determine the product: $(7x + 4y)^2$

(A) $49x^2 - 56xy + 16y^2$ (B) $x^2 + 56xy + y^2$

(C) $49x^2 + 56xy + 16y^2$ (D) $49x^2 + 16y^2$

6. In the game below the sum of the two expressions in the 2 circles gives the expression in the square between them. Determine the sum in terms of x in the 3 circles.



(A) $\frac{1}{2X}$ (B) $\frac{3}{4X}$

(C) $\frac{-3}{4X}$ (D) $\frac{1}{12X}$

7. Give the value of (2 – 3n)(3-n)(3n+4) if n = - 2.

(A) 80 (B) -70 (C) -75 (D) -80

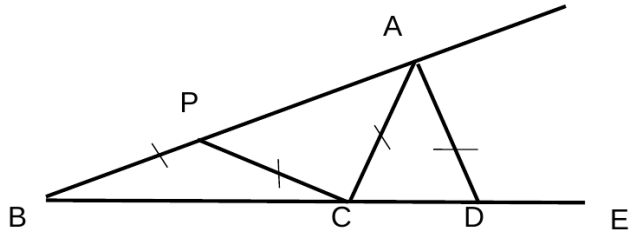
8. The sum of 11 consecutive even numbers with a common difference of 4 is 286. What is the median number?

(A) 24 (B) 26 (C) 28 (D) 30

9. What is the value of: 3604 x 3608 – 3610 x 3602?

(A) 16 (B) 14 (C) 12 (D) 10

10. In the figure below PB = PC = AC & $C\hat{\hat{A}}D = 30^0$.
Determine the measurement of $P\hat{B}C$.

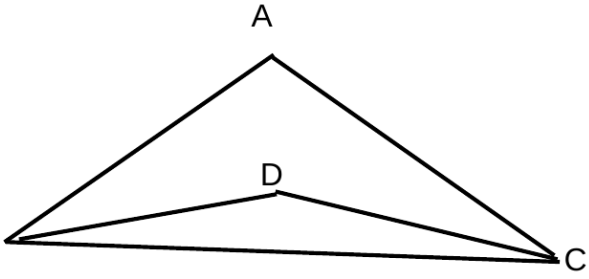


(A) 25^0 (B) 30^0 (C) 35^0 (D) 40^0

11. If (x-5) is the factor of $3x^2$ - (2p+6)x – 5, then find the value of p?

(A) 6 (B) 4 (C) 3 (D) 2

12. In the figure below A$\hat{B}$D = $\frac{3}{2}$ x C$\hat{B}$D and A$\hat{C}$D = $\frac{3}{2}$ x D$\hat{C}$B. If $\hat{A} = 70^0$ then determine the measurement of the smaller angle B$\hat{D}$C.



(A) 84^0 (B) 104^0 (C) 136^0 (D) 120^0

13. If $\frac{4}{13} = 0.\dot{3}07692\dot{}$ then write down the sum of the 64 digits after the decimal point.

(A) 260 (B) 266 (C) 270 (D) 286

14. In a small town the population decreased by 10%. As a result of property development the population one year later increased by 15%. What was the population before the decrease if the net increase was 140?

(A) 4000 (B) 3600 (C) 3000 (D) 2400

15. How many different natural numbers can n have such that M is a natural number?

M = $\frac{8n+8}{2n-1}$

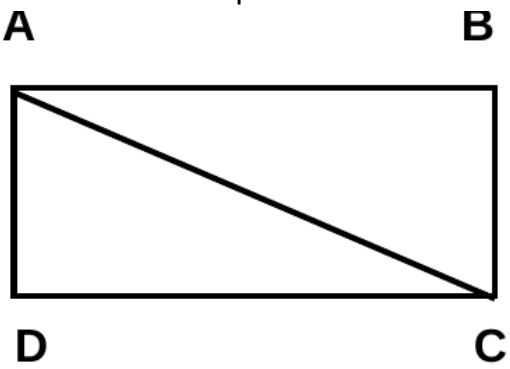
(A) 5 (B) 4 (C) 3 (D) 2

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

16. Penny has 4 indistinguishable red beads and 2 indistinguishable blue beads. How many different arrangements are possible?

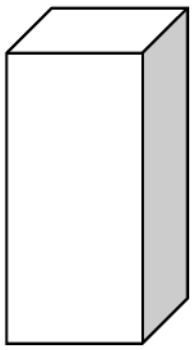
17. 80 athletes participate in 100m(A) or long jump(B) events or both. The number who participate in both is 10 more than the number who participate in A only. The total number who participate in B is 3 times the number who participate in A only.
How many participate in both A and B?

18. ABCD is a rectangle. The perimeter of $\Delta ACD = 30 metres$. If AC = 13 metres then determine the area of ABCD in square metres.



19. Consider this sequence:
4
8 12
16 20 24
28 32 36 40
……..
What is the middle term of the 21st row?

20. A closed rectangular container has a square base with its height being 4 times the length of the base. The volumes is 864 cm^3.
Determine the surface area of this closed container in cm^2.



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