SOUTH AFRICAN MATHEMATICAL LITERACY OLYMPIADS

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Mathematical Literacy Olympiad GRADE 11

DATE: 7-8 SEPTEMBER 2023

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.

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Grade Eleven Mathematical Literacy Olympiad 2023

1. Evaluate: $9 - 9 \times \frac{2}{9}$

   (A) 7 (B) 6 (C) 5 (D) 0

2. Evaluate: 2145 x 2142 – 2146 x 2141

   (A) 8 (B) 6 (C) 4 (D) 2

3. Evaluate: $320 \times 28\frac{5}{8}$

   (A) 9220 (B) 9200 (C) 9180 (D) 9160

4. When $\frac{5}{12}$ is written as a repeating decimal fraction then write down the sum of the 22 digits after the decimal point.

   (A) 120 (B) 125 (C) 130 (D) 135

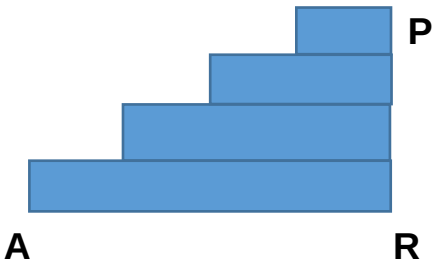
5. One needs 2.7 litres of water to cook 450 grams of rice. How much of water in litres would one need to cook 200 grams of rice?

   (A) 1.1 (B) 1.2 (C) 1.3 (D) 1.40

6. A group of waitrons earned service charges of 11% on sales if the takings for the day was R55 500 (including service charges) then determine the service charges shared by 5 waitrons.

   (A) R5000 (B) R5260 (C) R5500 (D) R5750

7. The gradient of the cross-sectional stairway AP is $\frac{1}{3}$.
   If AR = 2.7m then determine the height of each stair in mm.



   (A) 225 (B) 250 (C) 275 (D) 300

8. 0.4 litres of tint is used to tint 5 litres of paint. If 4.8 litres of tint were used, then determine how many litres of paint was tinted?

(A) 52 (B) 56 (C) 60 (D) 64

9. They used 30 litres of diesel to get from Port Elizabeth to East London which is 400km from each other. Determine the rate as litres per 100km.

(A) 6 (B) 6.5 (C) 7 (D) 7.5

10. Two cows needs to graze on a 3 metres by 3 metres square plot.
What is the maximum number of cows that graze on a farm 400 metres by 300 metres?

(A) 24 732 (B) 24600 (C) 27332 (D) 26600

11. A company manufactures 12" ipads.
The following is a breakdown of costs:
- Fixed cost (FC) = R200 000
- Variable cost (VC) = R400
- Selling price (SP) = R2400

Use the break-even point formula $\frac{FC}{SP-VR}$ to determine the break-even point.

(A) 80 (B) 100 (C) 120 (D) 140

12. If 2 events overlap, they are said to be non-mutually exclusive. What is the probability of drawing a jack or a club?

(A) $\frac{4}{13}$ (B) $\frac{5}{13}$ (C) $\frac{6}{13}$ (D) $\frac{4}{13}$

13. A bag contains 6 green blocks and 4 white blocks. A block is drawn at random and not replaced. A second block is drawn.
What is the probability of drawing a green block followed by a white block?

(A) $\frac{3}{5}$ (B) $\frac{2}{5}$ (C) $\frac{4}{15}$ (D) $\frac{8}{15}$

14. 100 learners had to select at least one of two subjects, namely Accounting and Information Technology:
    - 48 selected Accounting.
    - 64 selected Information Technology.

    What is the probability that a learner selected at random would be studying Accounting only?

    (A) $\frac{9}{25}$ (B) $\frac{11}{25}$ (C) $\frac{13}{25}$ (D) $\frac{14}{25}$

15. Fruit juice is mixed in the ratio of water to concentrate as 8:3. Tina wished to make 330 litres of juice. How many litres of concentrate does she need?

    (A) 76 (B) 80 (C) 84 (D) 90

16. Company High charges R240 per day and a fixed charge of R1000 for hiring specialised equipment for construction work. Let the number of days be represented by n.
    Determine the cost of hire in terms of n.

17. 150ml of olive oil cost R24. How much will 5 litres of olive oil at this same rate cost?

18. The following exchange rates apply:
    - 4 Ts for 7 Rs
    - 3 Es for 5 Fs
    - 2 Ts for 3 Fs

    How many R's can one get for 18 Es?

19. 5 pipes are required to fill a tank in 2 hours and 12 minutes. How long in minutes will it take 11 pipes working at the same rate to fill the tank?

20. Volume and Capacity of Cuboids
    Did you know? 1 cm^3 = 1 ml and 1000 ml = 1 litre
    A rectangular tank with a square base has a capacity of 12 kl. The height is one and half times the length of the base.
    If the tank is closed, then find its surface area in m^2.

MARKS: 15 x 1 = 15
5 x 2 = 10
TOTAL: 25