SOUTH AFRICAN MATHEMATICAL LITERACY OLYMPIADS

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Mathematical Literacy Olympiad GRADE 10

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 Ten Mathematical Literacy Olympiad 2023

1. Evaluate:

   $10 - \frac{1}{3} \times 6$

   (A) 9 (B) 8 (C) 7 (D) 6

2. Evaluate:

   $1245 \times 124 - 1245 \times 16 - 1245 \times 8$

   (A) 124500 (B) 12450 (C) 123500 (D) 12350

3. Evaluate:

   $352 \times 1\frac{3}{8}$

   (A) 472 (B) 476 (C) 480 (D) 484

4. When $\frac{1}{11}$ is written as a repeating decimal fraction then write down the sum of the 20 digits after the decimal point.

   (A) 77 (B) 84 (C) 90 (D) 99

5. One needs 2.5 litres of water to cook 200 grams of rice. How much water in litres, at this rate, would be needed to cook 500 grams of rice?

   (A) 6.25 (B) 6.5 (C) 6.75 (D) 7

6. All items in a departmental store were reduced by 15% and then by 20%. What must the percentage be when represented as a single %?

   (A) 35 (B) 34 (C) 32 (D) 30

7. Thando's salary was increased by 6% to R31800. What was her salary before the increase?

   (A) R30600 (B) R30000 (C) R29800 (D) R29200

8. Fruit juice is mixed in the ratio of water to concentrate as 4:1. Peppy wished to make 280 litres of fruit juice. How many litres of water does he need?

   (A) 256 (B) 248 (C) 240 (D) 224

9. The distance in km a missile travels in t seconds is given by:

$d(t) = - t^2 + 40t$

Determine the average velocity in km/sec over the first 3 seconds.

(A) 35 (B) 36 (C) 37 (D) 39

10. A truck covers a distance of 336km in 4 hours. If the truck maintains the same average speed then how many km can it cover in 2.5 hours?

(A) 240 (B) 210 (C) 204 (D) 196

11. The area of a rectangular land is $1800m^2$. If the length is 30m more than the width, then determine the perimeter of the land.

(A) 180 (B) 160 (C) 140 (D) 120

12. 28 chains are made from 6160 beads. How many chains can be made from 9240 beads if the rate remains the same?

(A) 34 (B) 36 (C) 38 (D) 42

13. The dimensions of a rectangular carton are 48cm by 30cm by 90cm. Determine the surface area in cm^2 of this carton if the surface area = perimeter of base x height + twice the area of the base.

(A) 16800 (B) 16920 (C) 16960 (D) 17200

14. Company Construct charges R180 per day and a fixed charge of R900 for hiring specialised equipment for construction work. If the number of days is represented by the variable **n,** then determine the expression in terms of n for the cost of hiring the equipment.

(A) 180n (B) 900n (C) 180n + 900 (D) 900n + 180

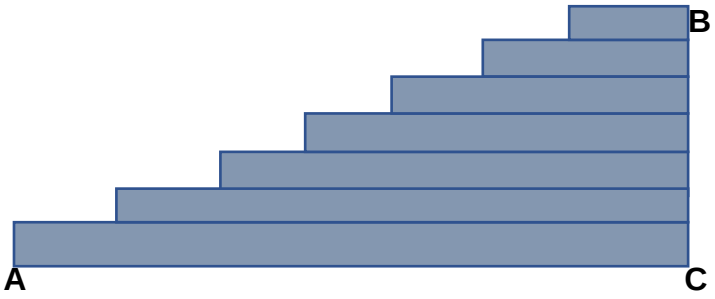
15. Serina purchased goods to the value of R36 000. She was charged simple interest at a rate of 8% per annum for 2 years. Calculate her monthly instalments.

(A) R1860 (B) R1820 (C) R1780 (D) R1740

16. It takes 6 workers to do a job in 5 days working at the same rate. How many days will it take 10 workers working at the same rate to do this job?

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

18. A section of the stairs is as follows:



    The width of each stair is 450mm. The height of each of the 4 stairs (risers) is 300mm and the next 3 stairs is 200mm.
    Determine the gradient (BC/AC) of this staircase from A to B if there are 7 such stairs?

19. The following exchange rates are applied:
    - 9 As could be exchanged for 7 Bs.
    - 6 Cs could be exchanged for 5 Ds.
    - 5 As can be exchanged for 4 Cs.

    How many Bs could one get for 36 Cs?

20. Bess runs one and half times as fast as Candice. If Bess takes 16 minutes to cover the distance from her home to the school then how many minutes will it take Bess to overtake Candice if Candice has a lead of 5 minutes (They both beginning from the same place)?

MARKS: 15 X 1 = 15
5 X 2 = 10

TOTAL = 25