SOUTH AFRICAN MATHEMATICAL LITERACY OLYMPIADS

E-mail : Info@saolympiads .co.za website: www.saolympiads .co.za

Mathematical Literacy Olympiad GRADE 12

DATE: 5-8 AUGUST 2024

TIME: 90 MINUTES

INSTRUCTIONS:

1. This booklet has 10 multiple choice and 10 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 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.

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Grade Twelve Mathematical Literacy Olympiad 2024

1. Evaluate: 111 x 222 – 221 x 111

   (A) 111 (B) 112 (C) 221 (D) 222

2. A basket of items cost R400 one year ago costs R420 now. What is the inflation rate?

   (A) 7% (B) 6% (C) 5% (D) 4%

3. Write correct to 3 significant figures:

   0.028479

   (A) 0.028 (B) 0.0285 (C) 0.0284 (D) 0.0286

4. A team scored 420 runs for 7 wickets over 50 overs.
   Determine the runs per over.

   (A) 8.5 (B) 8.4 (C) 7.4 (D) 7.5

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

   (A) R 800 (B) R 900 (C) 750 (D) R950

6. Write in Scientific notation:

   0.00000002

   (A) 2×10^{-10} (B) 2×10^{-9} (C) 2×10^{-8} (D) 2×10^{-7}

7. One needs 3.5 litres of milk to cook 500 grams of mealie meal. How much of milk in litres would one need to cook 300 grams of mealie meal?

   (A) 2.1 (B) 2.2 (C) 2.3 (D) 2.4

8. A group of 4 waitrons earned service charges of 8% on sales. If the takings for the day was R43 200 (including service charges) then determine the service charges received by each of the 4 waitrons, if each of them received the same amount.

   (A) R750 (B) R800 (C) R850 (D) R900

9. A cyclist travels at 48km/h. How long in minutes will it take the cyclist to cover a distance of 1km travelling at the same rate?

(A) 1.75 (B) 1.5 (C) 1.25 (D) 1.15

10. A 330 millilitre can of Coke contains 8,75 teaspoons of sugar and 140 calories. If one teaspoon of sugar = 4g and 1 teaspoon of sugar = 16 calories. Calculate the total mass of sugar (in kilograms) that will be consumed in ONE year (Assume 365 days in a year) by drinking TWO 330 millilitre's cans of Coke daily.

(A) 22,51 (B) 25,55 (C) 27,53 (D) 26,54

11. 48 litres of diesel is required to get from Durban to Pretoria which is 600km from each other. Determine the rate as litres per 100km (Please provide the number only).

12. Three sheep needs to graze on a 4 metres by 3 metres rectangular plot. What is the maximum number of sheep that can graze on a farm 240 metres by 160 metres?

13. A company manufactures brake pads.
The following is a breakdown of costs:
    - Fixed cost (FC) = R300 000
    - Variable cost (VC) = R200
    - Selling price (SP) = R600

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

14. Every client of CASHSAVE Bank has a personal identity number (PIN) which is made up of 5 digits from the digits 0 to 9. How many PIN's can be made if the digits are repeated?

15. Fruit juice is mixed in the ratio of water to concentrate as 4:1. Denise wished to make 240 litres of juice. How many litres of concentrate does she need?

16. The following exchange rates apply
1 C for 15 B
1 C for 18 D
How many B's can one get for 360 D's?

17. 4 workers build a straight wall in 3 hour 20 minutes. How long will it take 5 workers working at the same rate to build the same wall in minutes?

18. A rectangular container with dimensions 12m by 4m by 4m was used for the purposes carrying boxes measuring 80cm by 60cm by 60cm.
How many boxes can be packed in this container?

19. A group of 60 workers do welding or painting or both.
The number who did welding is twice the number who did painting only. The number who did painting is 26.

Determine the probability that a worker chosen at random does welding. (You may use a venn diagram.)

20. The digits 0,1,2,3,4,5 and 6 are used to make 3-digit codes.
How many unique codes are possible if digits can be repeated?

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