G C FOSTER C0LLEGE OF PHYSICAL EDUCATION AND SPORT

CERTIFICATE IN SPORTS MASSAGE THERAPY

JANUARY 2021 EXAMINATION

MATHEMATICS

[CO113ASC]

YEAR 1   **DURATION: 2 ½ HOURS**

Instruction: This paper contains two sections, Section A & Section B. Do all question in section A and show all workout. Do Question 1 in Section B and any other question of your choice. <u>Show ALL workings marks will not be given for correct answers only.</u>

DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO

SPORT MASSAGE/FITNESS MATH FORMULA SHEET 2021

SIMPLE INTEREST: $\dfrac{PRT}{100}$

π = 3.142

TIME: $\dfrac{I100.}{PR}$

AREA of TRIANGLE = 1/2bh

RATE: $\dfrac{I100}{PT}$

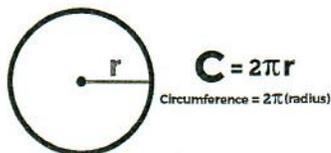AREA of TRIANGLE:= 1/2abSine>

PRINCIPAL: $\dfrac{I100}{RT}$

AREA of TRIANGLE:= $\sqrt{s(s-a)(s-b)(s-c)}$

COMPOUND INTEREST: $A = P(1+\dfrac{R}{100})^n$
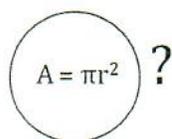
S: = $\dfrac{a+b+c}{2}$

DEPRECIATION: $A = P(1-\dfrac{R}{100})^n$

AREA of RECTANGLE: lb

AREA of SQUARE: l^2

$C = 2\pi r$
Circumference = 2π (radius)

CIRCUMFRENCE of CIRCLE:

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$A = \pi r^2$?

AREA of CIRCLE:

SECTION A
Do all question in this section

1. Prove that the commutative law works by rearranging the following numbers in the appropriate operations: **2, 12, 5.** (2marks)

2. Write the following numbers in exponential form:
   a. 2x2x2x4x4x4
   b. 8x8x6x6x6x3x3x3x3
   c. 2x7x4x3x2x2x7x4x4x4 (2marks each)

3. Express numbers as a product of its prime factors:
   a. 50
   b. 150 (2marks each)

4. Find the L.C.M. of:
   a. 25, 40, 60
   b. 2, 5, 6
   c. 28, 42, 84, 98 (2marks each)

5. Find the H.C.F. of :
   a. 24, 60, 96
   b. 12, 48, 60 (2marks each)

6. By applying the order of operation laws of BOMDAS/BODMAD show step by step how you would evaluate the following:
   a. $6 \times 8 + 21 \div 3 - 8$
   b. $12 - 24 \div 6 + 14$
   c. $7 \times 5 - 2 + 4 + 3$
   d. $5 \times (8 + 2) + 0 \div 3$ (2marks each)

7. Calculate the exact value of the following to their lowest terms:
   a. $8\ 1/3 + 2\ 5/6 - 3\ 4/9$

   b. $(4\ 5/6 - 1\ 2/3) \div 1\ 1/3$

   c. $\dfrac{5\frac{3}{5} - 3\frac{1}{2} \times \frac{2}{3}}{2\frac{1}{3}}$

   d. $\dfrac{2}{5} + \dfrac{2}{3} \times \dfrac{1}{3}$ (3marks each)

3

8. Express the following ratios as a fraction in its lowest terms:
   a. 3 : 12
   b. 24 : 4
      (1mark each)

9. Express the following ratios to the same units:
   a. 1 : ¼
   b. $5 : 600¢
      (1mark each)

10. Two lengths are in the ratio 4:3. If the first length is 118 meters, what is the second length?

11. If a sum of money is shared in the ratio 14:21 and the first amount is $46 what is the second amount, and what is the total amount of money being shared?   (4 marks)

12. The total of $72,000 is to be shared between three friends A, B & C respectively in the ratios 2:4:7. How. Much money did each friend received.   (3 marks)

13. Three rich friends contributed money to a children's home in Clarendon in the ratio of 3:5:10. If the smallest amount contributed is $50,000 calculate:
    a. The total amount of money contributed by the three friends.
    b. The percentage amount of the largest contribution.   (4marks)

14. A sum of money is to be shared among three friends Jackie, Karol and Lorell in the ratio 3:7:10. If Lorell received $500 more than Karol, determine the sum of money shared.   (3marks)

15. A train travels 650km in 6 hours. How long will it take to complete a journey of 300km?

    (2marks)

16. A contractor decides that he can build a barn in 10 weeks using 4 men. If he employs 7 men how long will the job take? Assume that all the men work at the same rate.

    (2marks)

17. Tara received 40 marks out of a total mark of 70. How much percent did Tara received?

    (1mark)

18. After shipping some apples to Jamaica, the receiver discovered that about 20% of the shipment was bad/spoiled which worked out to be 40kg of apples. What was the total kg of apples shipped?
    (2marks)

19. After an increase of 15% a teacher salary was increased to $500,000 per month.
    a. What was his salary before the increase?
    b. How much did his salary increased by?
       (4marks)

20. A store owner buys a fridge for $25,000 and sells it making a profit of 30%.
    Determine:
    a. The selling price
    b. The profit amount
       (2marks)

21. A businessman sells a smart T.V. for $80,000 incurring a loss of 15.5%
    Determine:
    a. The cost price of the T.V. to the businessman
    b. The loss amount
       (4marks)

SECTION B

Instructions: This section contains **four (4) Questions**. You **must do question 1 and any other question of your choice.**
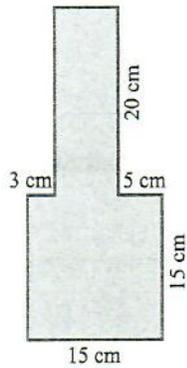
Question 1

Find the perimeter of the figures below:

a.

(4marks)

b.

3 cm | 5 cm
20 cm
15 cm
15 cm
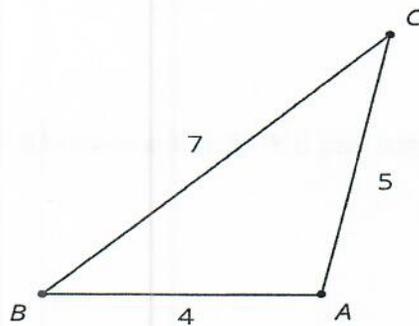
(4marks)

c. The interest on $18,000 invested for 15 years is $6300. What is the rate percent?
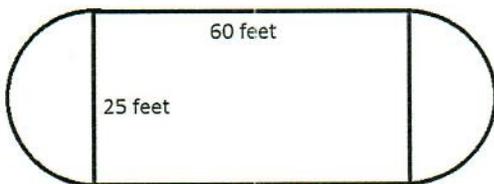
(2marks)

Question 2

a. In what length of time will $1,400 be the interest on $370,000 which is invested at 5% per annum?
   (2marks)

b. What would be the compound interest if $350,000 is invested for 6 years at 7% per annum?
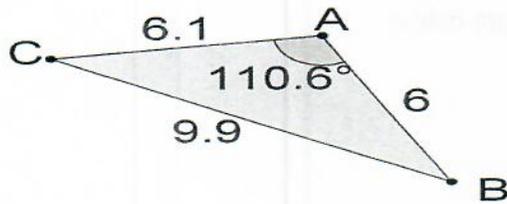   (5marks)

c. Find the total area of the figure below.

60 feet

25 feet

(6marks)

d. What would be the principal if the interest earn is $192, if it is invested at 4% per annum for 2 years?
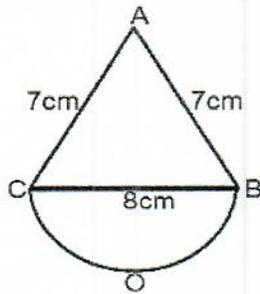
(2marks)

Question 3

a.   Find the simple interest on $50,000 barrowed for 7 years at 11% per annum. (2marks)

b.   The value of a machine depreciates each year at 15% of its value at the beginning of the year. If it cost $20,000 when new what will be its value at the end of 3 years? (5marks)

c.   Use any appropriate formula to find the area of the triangle below.

(3marks)

Find the total area of the figure below.
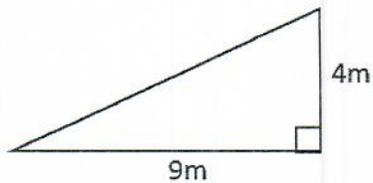

(5marks)

Question 4

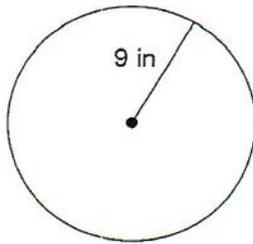Use an appropriate formula to find the area of the triangle below.

a.

(4marks)

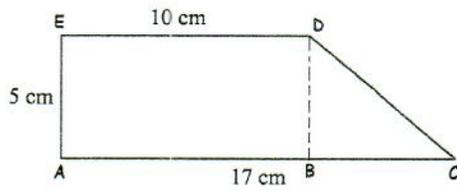b.   Calculate the compound interest earned when $14,000 is invested for 5 years at 7% per annum.

(5marks)

7

c. Find the circumference of the circle below.

9 in

d.
(1marks)
Find the total area of the compound figure below.

E   10 cm   D

5 cm

A   17 cm   B   C

(5marks)

END OF EXAMINATION