

G C FOSTER COLLEGE OF PHYSICAL EDUCATION AND SPORT

ASSOCIATE DEGREE IN SPORTS MASSAGE AND FITNESS

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. Show ALL workings marks will not be given for correct answers only.

DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO

SPORT MESSAGE/FITNESS MATH FORMULA SHEET 2021

SIMPLE INTEREST: $\frac{PRT}{100}$ $\pi = 3.142$

TIME: $\frac{I100}{PR}$ AREA of TRIANGLE = $\frac{1}{2}bh$

RATE: $\frac{I100}{PT}$ AREA of TRIANGLE:= $\frac{1}{2}ab\text{Sine}>$

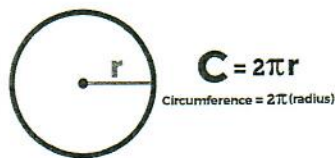
PRINCIPAL: $\frac{I100}{RT}$ AREA of TRIANGLE:= $\sqrt{s(s-a)(s-b)(s-c)}$

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

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

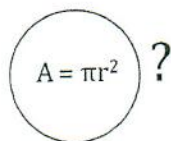
AREA of RECTANGLE: lb

AREA of SQUARE: l^2



CIRCUMFERENCE of CIRCLE:

Calworkshop.com



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. $2 \times 2 \times 2 \times 4 \times 4 \times 4$
 - b. $8 \times 8 \times 6 \times 6 \times 6 \times 3 \times 3 \times 3 \times 3$
 - c. $2 \times 7 \times 4 \times 3 \times 2 \times 2 \times 7 \times 4 \times 4 \times 4$ (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. $8 \frac{1}{3} + 2 \frac{5}{6} - 3 \frac{4}{9}$
 - b. $(4 \frac{5}{6} - 1 \frac{2}{3}) \div 1 \frac{1}{3}$
 - c. $\frac{5 \frac{3}{5} - 3 \frac{1}{2} \times \frac{2}{3}}{2 \frac{1}{3}}$
 - d. $\frac{2}{5} + \frac{2}{3} \times \frac{1}{3}$ (3marks each)

8. Express the following ratios as a fraction in its lowest terms:
- $3 : 12$
 - $24 : 4$
- (1mark each)
9. Express the following ratios to the same units:
- $1 : \frac{1}{4}$
 - $\$5 : 600¢$
- (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:
- The total amount of money contributed by the three friends.
 - 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.
- What was his salary before the increase?
 - 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:
- The selling price
 - The profit amount
- (2marks)
21. A businessman sells a smart T.V. for \$80,000 incurring a loss of 15.5%
- Determine:
- The cost price of the T.V. to the businessman
 - The loss amount
- (4marks)

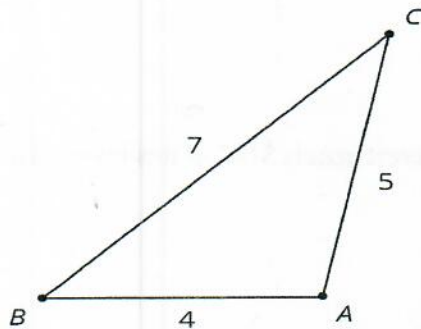
SECTION B

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

Question 1

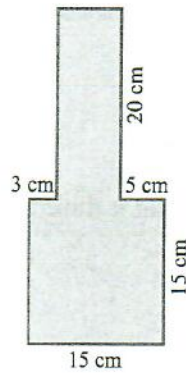
Find the perimeter of the figures below:

a.



(4marks)

b.



(4marks)

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

(2marks)

Question 2

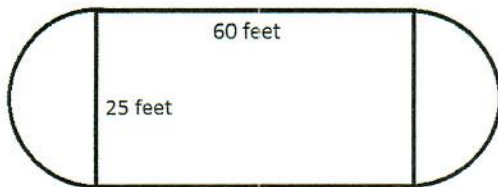
a. In what length of time will \$1,400 be the interest on \$370,000 which is invested at 5% per annum?

(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.



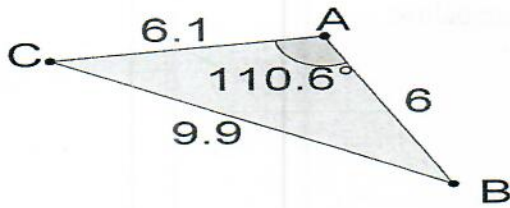
(6marks)

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

(2marks)

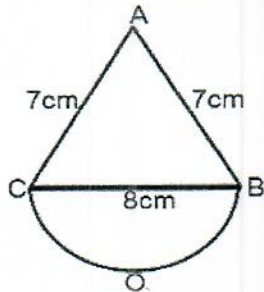
Question 3

- a. Find the simple interest on \$50,000 borrowed 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.

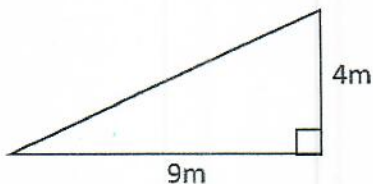


(5marks)

Question 4

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

a.

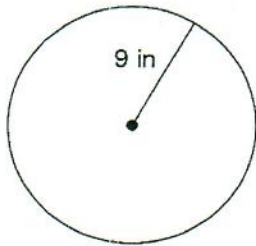


(4marks)

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

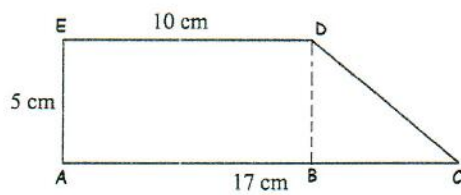
(5marks)

c. Find the circumference of the circle below.



d.
(1marks)

Find the total area of the compound figure below.



(5marks)

END OF EXAMINATION