Index Number:................................

Answer all the questions in this section.
All questions carry equal marks.

1. The third term of an Arithmetic Progression (A.P.) is 23 and the sum of the first seven terms is 210. Find the:

(a) common difference;

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(b) first term;

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SECTION B

[60 marks]

Answer **five** *questions* **only** *from this section.*

All questions carry **equal** *marks.*

6. In a house of 20 people, 8 liked Ampesi, 12 liked Banku and 12 liked Fufu. 5 liked both Ampesi and Fufu, 6 Banku and Fufu, 2 only Ampesi and 3 liked all three types of food.
    (a) Illustrate the information on a Venn diagram.
    (b) Find the number of people in the house who liked:
        (i) **only** fufu;
        (ii) **exactly** two types;
        (iii) **only** one type of food.

7. (a) A man covers a distance of 8 km to a stadium in 1 *hour*. He walks part of the distance at 6 km/h and runs the rest at 10 km/h. How many kilometres did he run?
    (b) A factory purchased a new machine at the cost of ₦ 3,000,000.00. In its operation, it depreciates at the rate of 15 % in the first year and 20 % yearly thereafter. Calculate the value of the machine at the end of the third year.

8. (a) Copy and complete the table of values for the relation $y = 2x - x^2$, $-2 \leq x \leq 4$.

x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2	2.5	3	3.5	4
y	-8		-3		0		1		0	-1.3		-5.3	

   (b) Using a scale of 2 cm to 1 unit on both axes, draw the graph for $y = 2x - x^2$, $-2 \leq x \leq 4$.
   (c) Using the graph, find the:
       (i) maximum point;
       (ii) line of symmetry,
       (iii) range of values of x for which $y \geq 0$.

9.

Marks	1 - 3	4 - 6	7 - 9	10 - 12	13 - 15
Frequency	8	3	6	2	1

The table shows the distribution of marks scored by students in a test. Calculate the:
(a) mean;
(b) mean deviation, of the distribution.

illustrate the information on a Venn diagram.

Find the number of people in the house who liked:
(i)   only fufu;
(ii)   exactly two types;
(iii) only one type of food.

A man covers a distance of 8 km to a stadium in 1 hour. He walks p the distance at 6km/h and runs the rest at 10 km/h. How many kilo did he run?

A factory purchased a new machine at the cost of ₦3,000,000. it depreciates at the rate of 15 % in the first year and 20 % yearl Calculate the value of the machine at the end of the third year.

Copy and complete the table of values for the relation $y = 2x$

x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2	2.
y	-8		-3		0		1		0	-1

Using a scale of 2 cm to 1 unit on both axes, draw the gra $y = 2x - x^2, -2 \le x \le 4$.

Using the graph, find the:
(i)   maximum point;
(ii)   line of symmetry;
(iii) range of values of x for which $y \ge 0$.

**10.** A boat is on the same horizontal level as the foot of a vertical tower. The angle of depression of the boat from the top of the tower is 39°. If the boat is 30 *m* away from the foot of the tower, :

    (a)   illustrate the information in a diagram;

    (b)   find, correct to **three** significant figures, the height of the tower.

    (c)   If the boat moves further away to a new position, P and the initial angle of depression decreased by 5°, calculate the distance moved by the boat from its initial position.

11. A military tent is in the form of a pyramid with square base. The vertex of the tent, *V* and the base *ABCD* is of side length 8 *m*. The angle between a sloping face and the base is 70°. Calculate, correct to **two** decimal places, the:

    (a)   height of the tent;

    (b)   area of tarpaulin needed to cover the tent completely;

    (c)   total amount needed to buy the tarpaulin in **11***(b)* if 3 m^2 of tarpaulin cost $7.20.
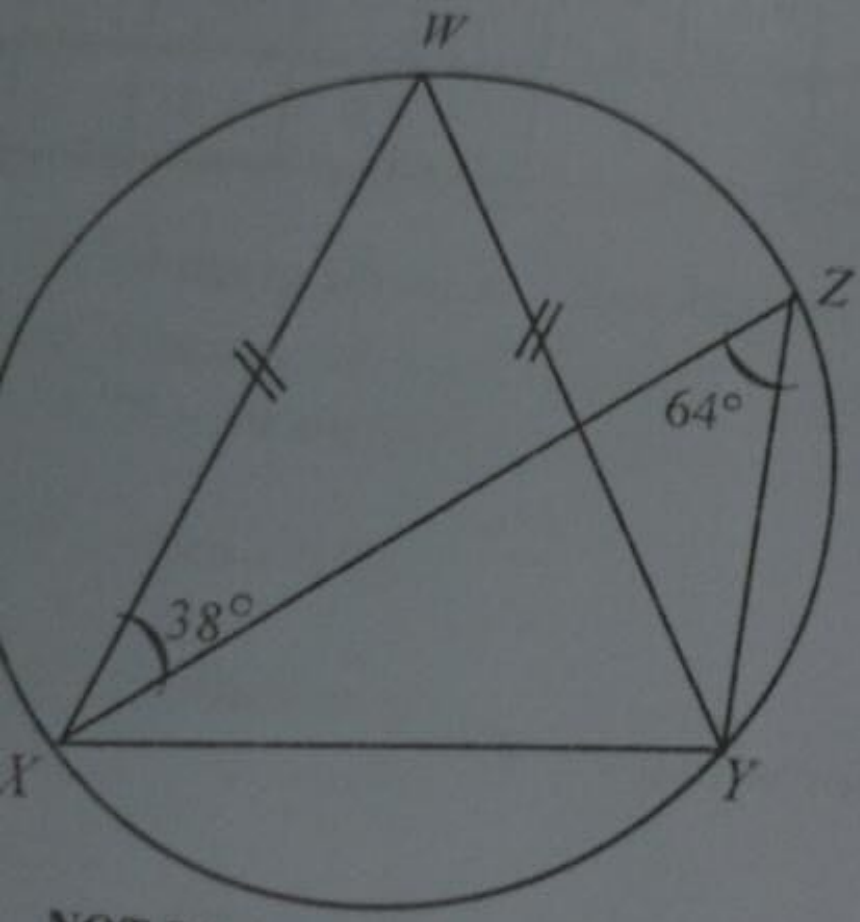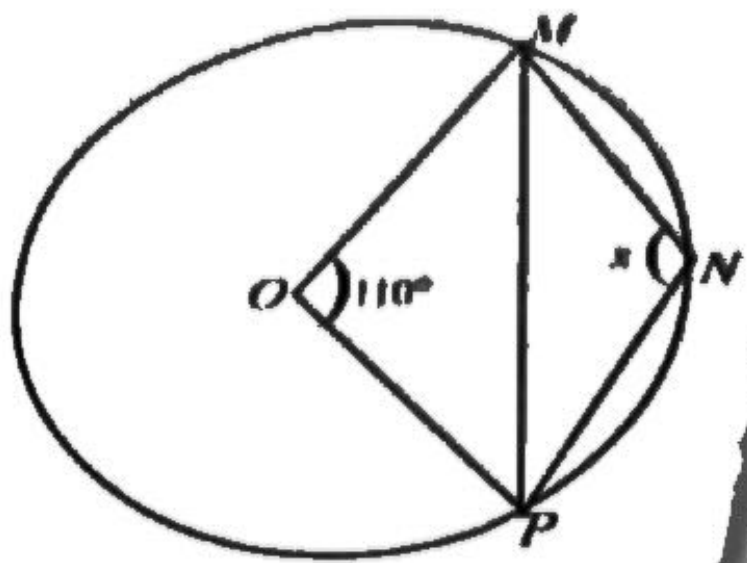
12. *(a)*
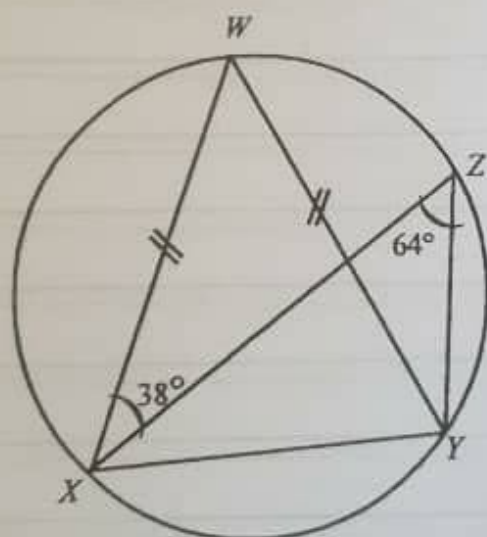
NOT DRAWN TO SCALE

In the diagram, *WXYZ* are points on a circle. $\overline{WX} = \overline{WY}$, $\angle XZY = 64^\circ$ and $\angle WXZ = 38^\circ$. Find:

    (i) $\angle WYX$;

    (ii) $\angle YXZ$.

(b) The probabilities that Afi and Naa will pass an aptitude test are 60 % and 80 % respectively. Find, correct to **one** decimal place, the probability that:

    (i)   **only** one of them will pass the test;

    (ii) **none** of them will pass.

its initial position.

A military tent is in the form of a pyramid with square base. Th
nd the base *ABCD* is of side length 8 m. The angle between a
ase is 70°. Calculate, correct to **two** decimal places the:

)   height of the tent;

    area of tapolean needed to cover the tent completely;

    total amount needed to buy the tapolean in (*b*) if 3 m²

NOT DRAWN TO SCALE

WXYZ are points on a circle. $|\overline{WX}| = |\overline{WY}|$, ∠X⁻
°.Find:

Mr Jibril is four times as old as his son. Four years ago, he was ...
as old as his son. In how many years will Mr Jibril's age be twice ...

NOT DRAWN TO SCALE

e diagram, O is the centre of the circle MNP. If $\angle MOP = 110$

re m identical beads in a bag. 50 are blue, 30 are red and

obability of choosing at random a white bead is $\frac{1}{3}$, find

, h metres, of water above sea level at the entrance to

$= 18 - 10 \sin (5x)^\circ$, $0 < x < 15$. Find:

v when $x = 12$;

significant figures, x when $y = 10$.

quilateral triangle is $53\sqrt{3}$ cm^2. Find, corre

ter.

(c) sum of the first 20 terms

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2. (a) In a restaurant, the total cost of 2 packed lunch and 3 packed breakfast is $40.00. If the cost of 2 packed lunch is $12.00 less than the cost of a packed breakfast, find the cost of a packed breakfast.

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(b) Form a quadratic equation whose roots are $-\dfrac{1}{3}$ and 5.

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