MATHEMATICS FORM 2

TIME: 2 HOURS

NAME………………………………………… CLASS…………ADM …..……..

INSTRUCTIONS
1. **Answer all questions in the spaces provided**
2. **The paper consists of two sections. Answer all questions in section A and any two in section B**
3. **Show all your workings**

SECTION A

1. Evaluate;

$$\sqrt{\frac{3.45 + 2.62}{786 \times 0.007}}$$ (3mks)

2. The exterior angle of a rectangular polygon is an eighth of interior angle. How many sides does the regular polygon have? (3mks)

3. Represent the following inequality on a number line.

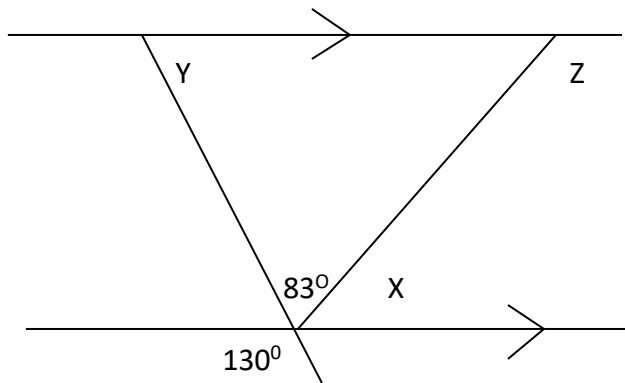 $1 \frac{3}{4}x - 1 \le 3x - 2 \le 6 (2/3x + 2)$ (3mks)

4. Find the area of a triangular piece of land whose sides are 7m, 9m and 14m. (2mks)

5. Use reciprocal tables to solve the following. (3mks)

$$\frac{17}{0.051} + \frac{3}{0.0027}$$

6. Solve $2^{8x} = 512$ (2mks)

7. In the figure below, lines AB AND LM are parallel. Find angle X, Y and Z. (3mks)

8. The ratio of the area of two similar rooms is 4/25.
   (a) Find the ratio of their length.

   (b) Find the area of the bigger room if the area of the smaller room is $8m^2$.   (2mks)
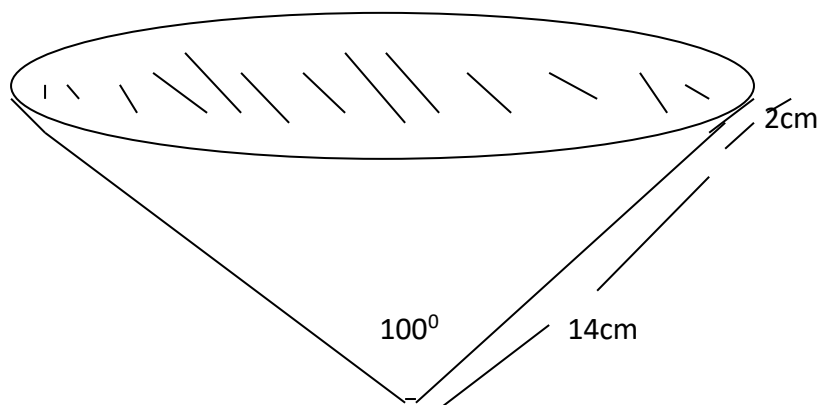
9. A ladder leans against a wall so that its foot is 2.5m away from the foot of the wall and its top is 4m up the way. Calculate the angle it makes with the ground. (3mks)

10. Given cos x = sin 2x, find x. (2mks)

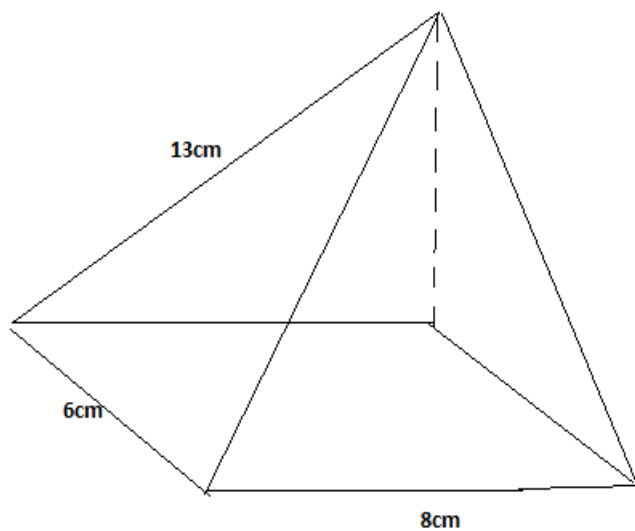11. Calculate the area of the following figure.   (3mks)

10cm

4cm

55^0

12cm
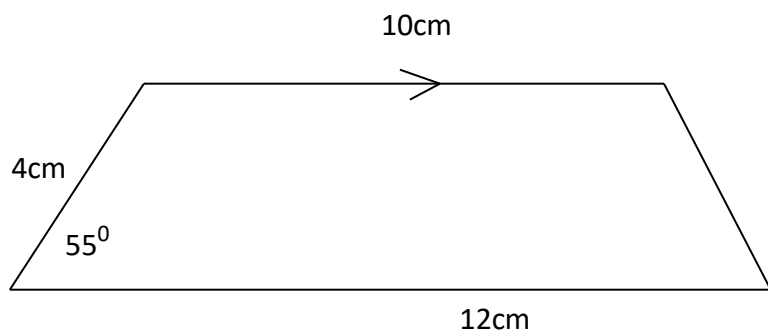
12. Calculate the area of the shaded region. (3mks)

2cm

100^0 14cm

13. Calculate surface area of the rectangular based pyramid below.   (4mks)

13cm

6cm

8cm

14. Solve the following quadratic equation. (2mks)

$5x^2 - 21x + 4$

15. Five men each working 10 hours a day, take two days to cultivate one acre. How long will two men each working six hours a day, take to cultivate 3 acres?   (3mks)

16. Evaluate ½ of ¼ ÷ 1/8 + ¾ -1/8   (3mks)

17. Using a pair compasses only construct a triangle A B C in which A B= 4.6 cm, B C= 5.4 cm and < ABC = 75%. Measure A C. (4mks)

18. Solve the following simultaneous equations. (2mks)

    $3x + 2y = 13$

    $5x + 3y = 15$

19. Water and alcohol is mixed in the ratio 1:4. Find the density of the mixture if the density of water is $1g/cm^3$ and that of alcohol is $0.8 \ g/cm^3$. (3mks)

20. Mary was allowed   discount of 11% for goods worth sh. 8000 and a discount of 8.6% for goods worth sh. 17000. What percentage discount was she allowed altogether? (3mks)

21. A pond holds 13000 litres of water. Find the number of litres of water a similar pond would hold if the dimensions were double the first one. (3mks)

22. Factorise; $9x^2 - 16y^2 + (3x - 4y)^2$. (1mk)

SECTION B

23. A bus left Nairobi at 8.00 am and travelled towards Kisumu at an average speed of 80km/h. At 8.30 am, a car left Kisumu towards Nairobi at an average speed of 120km/h. Given that the distance between Nairobi and Kisumu is 400km, calculate; (10mks)
    (a) The time the car arrived in Nairobi.

    (b) The time the two vehicles met.

    (c) The distance from Nairobi the meeting point.

    (d) The distance of the bus from Kisumu when the car arrived in Nairobi.

24. Three towns P,Q and R are such that, P is on a bearing of 120^0 and 20km from Q. Town R is on a bearing of 220^0 and 12km from P.
    (a) Using a scale of 1cm to 2km, draw and locate the position of the three towns

(b) Measure;

    (i)   The distance between Q and R in Kilometres.

    (ii)   The bearing of P from R.

    (iii)   The bearing of R from Q.

    (iv)   Calculate the area bounded by PQR.

25. A bucket is in the shape of a frustrum with base radius 12cm and top radius 16 cm. The slant height of the bucket is 30cm as shown below. The bucket is full of water. (10mks)
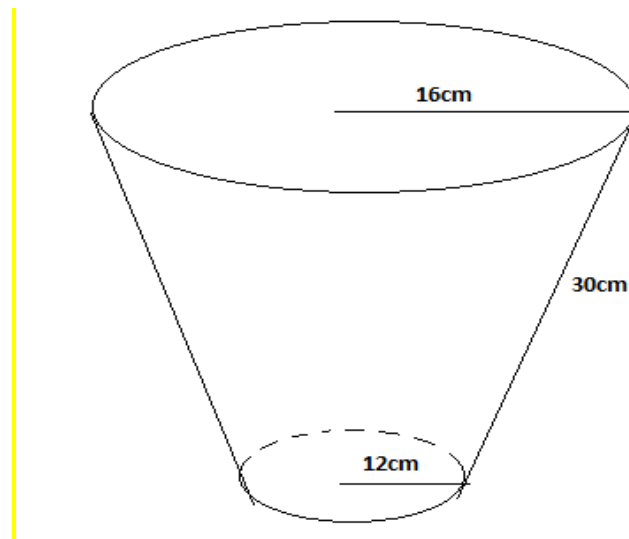
(a) Calculate the volume of the water. Take x = 3.142

(b) If the water is poured into a cylindrical container of circular radius 12cm. If the cylinder has height of 45cm, calculate the surface area of the cylinder which is not in contact with water.

26. A surveyor recorded the measurement of a field book using line AB = 260M as shown. (10mks)

	B	
	130	R. 40
	70	Q. 10
	50	P. 20
S 50	10	
	A	

(a) Use a suitable scale to draw the map of the field.

(b) Find the area of the field.