

4. If the line  $y=3x -1$  is reflected in the  $y$  axis, find the equation of the image. (3mks)
5. The figure below shows a rectangle ABCD where  $AB=2m$  and  $AD=1m$  which forms the open top of a water container of semi-circular cross-section. Calculate the capacity of the container if the depth of the water at the deepest point is  $0.2m$ . Use  $\pi$  as  $\frac{22}{7}$ . (4mks)
6. A particle is moving with an initial speed of  $4m/s$ . In the next four seconds its speed increases uniformly to  $10m/s$  and then the speed decreases uniformly until the particle stops, moving after a further eight seconds. Find
- (a) The total distance travelled by the particle (3mks)
- (b) The acceleration in the last eight seconds (1mk)

(10 marks)

4. The figure below shows a rectangular tank where  $AB=2m$  and  $BC=3m$  which stands the open top of a water container of semi-circular cross-section. Calculate the depth of the container if the depth of the water at the deepest point is  $0.5m$ . Use  $\pi=3.14$ . (10 marks)



5. A particle is moving with an initial speed of  $10m/s$ . In the next  $10s$  seconds its speed increases uniformly to  $20m/s$  and then the speed decreases uniformly until the particle stops, moving after a further eight seconds. Find

(a) The total distance travelled by the particle (10 marks)

(10 marks)



(b) The construction in the last eight seconds (10 marks)

(10 marks)

7. Find the total surface area of a solid hemisphere of radius 7cm (3mks)

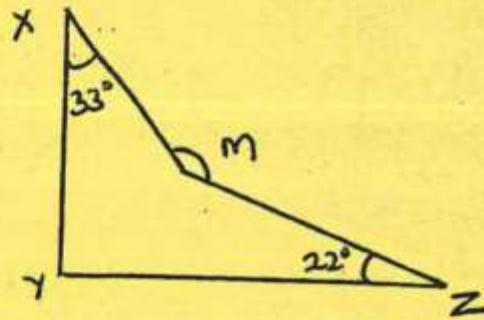
d

8. find the value of the reflex angle of m in the diagram below. (2mks)

9. In the figure below, ABCD and CDEF are parallelograms. Line ABEF is a straight line  
If AF=11cm and BE=3cm. Find the length of DC (3mks)

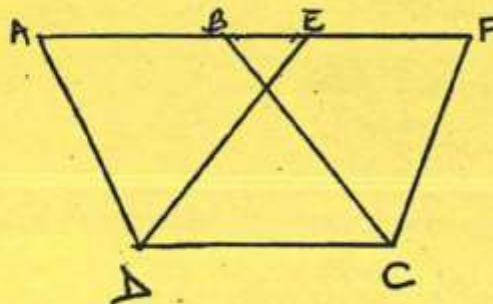
2. Find the value of the interior angle of  $m$  in the Diagram Below.

(2 marks)



3. In the figure below,  $ABCD$  and  $CEFG$  are parallelograms. Line  $BEFC$  is a straight line.  $BE=2.5\text{cm}$  and  $EF=3\text{cm}$ . Find the length of  $BC$ .

(2 marks)



10. Find two consecutive odd numbers such that 6 times the smaller added to 4 times the greater comes to 138. (3mks)

11. The figure below shows part of a certain school badge. Taking O as a centre, complete the diagram under order 6. (3mks)

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12. A chord 6.6cm long is 5.6cm from the centre of a circle. Calculate the length of a chord which is 6.3cm from the centre of the circle. (3mks)

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13. The angles of elevation of the highest point of a building from two points S and T are  $60^\circ$  and  $30^\circ$ . T is vertically above S and  $ST=10\text{M}$ . Calculate the height of the building above the level of S. (4mks)

14. The mean of 10 observations is 12.5 while calculating the mean one of the reading was mistaken as (-9) instead of (+9). Find the correct mean (2mks)

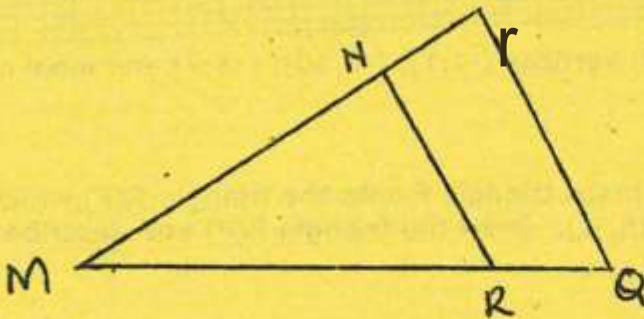
14. The mean of 10 observations is 12.5 while calculating the mean one of the reading was mistaken as (-9) instead of (+9). Find the correct mean (2mks)

15. Use reciprocal and square root tables to evaluate

(3mks)

$$\sqrt[3]{37} \times \sqrt{7} + 3i$$

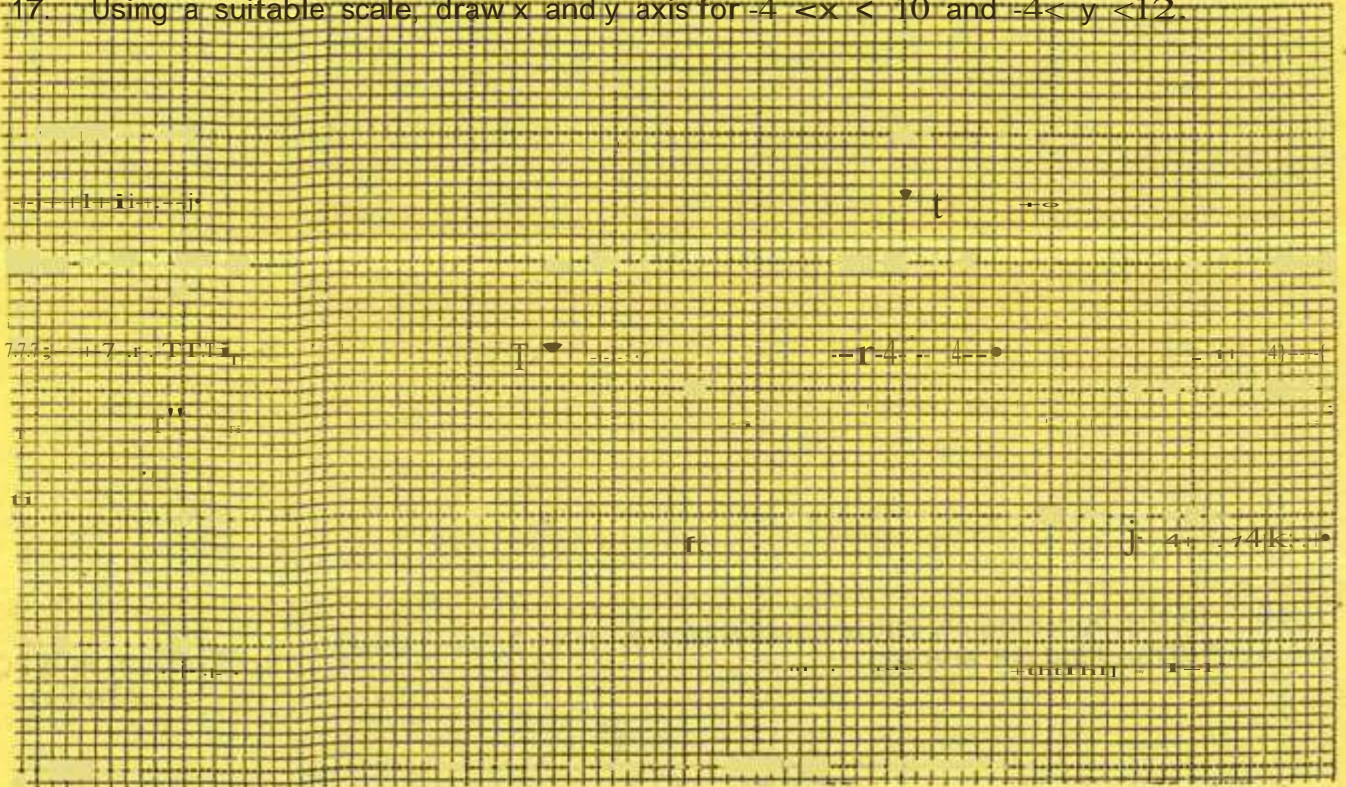
16. In the figure below NR is parallel to PQ. MN=7.5cm, NP=2.5cm, MR=9cm and PQ=8cm. Find NR and RQ (3mks)



**SECTION B (50 MARKS)**

Answer **all** questions in the spaces provided

17. Using a suitable scale, draw x and y axis for  $-4 < x < 10$  and  $-4 < y < 12$ .



(i) Draw a triangle with vertices  $(-1,1)$ ,  $(-1,10)$ ,  $(-4,7)$  and label it F. (3mks)

(ii) A transformation R maps triangle F onto the triangle R(F) which has vertices  $(0,-2)$ ,  $(9,-2)$  and  $(6, 1)$ . Draw the triangle R(F) and describe R fully. (3mks)

(iii) M is a reflection in the line  $y=x$ . Find, by drawing, the coordinate of the vertices of the triangle MF (4mks)





18. (a) Find the equations of the sides of a triangle which has vertices  $A(0,0)$ ,  $B(7,0)$  and  $C(5,6)$  (6mks)

- (b). Lines  $r$  and  $s$  both pass through the point  $(k, 9)$ . Line  $r$  has a gradient of  $\frac{4}{3}$  and passes through the point  $(5, -3)$ .  
(i) Find the value of  $k$  (2mks)

- (ii) Find the equation of line  $s$  given that it crosses the  $x$ -axis at  $(-14, 0)$  (2mks)

19. Every year a school takes 42 students accompanied by 7 adults to ASK show. In 2013, the reduced fare for a student was sh.24.50 and this was two third of the adult fare. For every complete group of 10 students in the party, one of the adults was allowed to travel without paying.

(i) What was the total cost of the journey (4mks)

- (ii) The full-fare for a student going to the show was sh.29.40. Find the percentage reduction granted to a student who travelled with school party. (2mks)

- (iii) In 2014, a student's full fare was increased to sh.36.00. The fare for school party was increased in the same proportion. Find the fare for a student travelling with the school party in 2014. (4mks)

20. The distance between two towns A and B is 360km. A minibus left A at 8.15am and travelled towards B at an average speed of 90km/h. A matatu left B at 10.35am on the same day and travelled towards A at an average speed of 110km/h

(i) How far from A did they meet? (4mks)

(ii) At what time did the two vehicles meet? (2mks)

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(iii) A motorist started from his home at 10.30 am on the same day and travelled at 100km/h. He arrived at B at the same time as the minibus. Calculate the distance from B to his home. (4mks)



21. The figure below shows a solid frustum of a cone. The radii of the circular ends are 2.8cm and 1.4cm. The slanting height of the frustum is 12cm.



Calculate

- (i) The volume of the frustum (4mks)
- (ii) The surface area of the frustum (4mks)
- (iii) The frustum was melted to form a solid cube. In the process 15% of the metal was lost. Calculate the length of the cube formed. (2mks)