

SECTION I (50MARKS)

Answer all questions in this section

1. Kamau withdrew some money from the bank. He spent $\frac{3}{8}$ of the money to pay Korir's school fees and $\frac{2}{5}$ to pay Omollo's school fees. If he remained with ksh 12,330, calculate the amount of money he paid for Omollo's fees.
(4mks)

2. Evaluate without using mathematical table or calculator.
(3mks)

$$\sqrt{\frac{0.0625 \times 2.56}{0.25 \times 0.08 \times 0.5}}$$

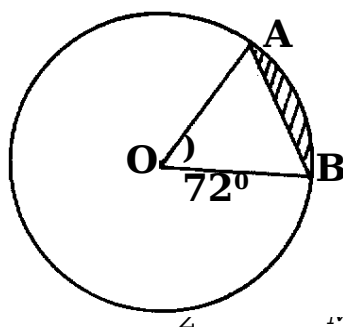
3. The line which joins **A**(3,k) and **B**(-2, 5) is parallel to the line whose equation is $5y + 2x = 7$
Find the value of **k**
(3mks)

4. Kirui bought a suit for sh 1200 and marked it at a price such that after allowing his customer a 10% discount, he would make a profit of 20%. Calculate the marked price of the suit. (4mks)

5. Simplify:
(3mks)

$$\frac{x-2}{x+2} - \frac{2x-4}{x^2-4}$$

6. The figure below shows a circle centre **O** and **AOB** is a sector of the circle and angle **AOB** = 72° as shown. Given that the area of a sector **AOB** is $5\pi\text{cm}^2$, find the radius of the circle and hence calculate the area of the shaded part. (4mks)



7. Thirty men working at the rate of 10 hours a day can complete a job in 14 days. Find how long it would take 40 men working at the rate of 7 hours a day to complete the same job. (3mks)
8. A straight line passing through the points **P**(4,5) also passes through the origin and makes an acute angle θ with the x - axis. Calculate to 2 decimal places the sizes of angle θ . (2mks)

9. The length of a rectangle is increased by 25% while its width is decreased by 5%. Determine the percentage increase in the area of the rectangle.

(3mks)

10. The angle of elevation of the top of a tree from a point **P** is 22.6° . From another point **Q** which is 12m from the base of the tree, the angle of elevation of the top of the tree is 47.5°

Calculate to the one decimal place

- (a) The height of the tree

(2mks)

- (b) The distance between **P** and **Q**

(2mks)

11. Three towns **A**, **B**, and **C** are situated such that **B** is 50km on a bearing of 150° from town **B**

- (a) Draw a sketch showing the positions of towns **A**, **B** and **C**.

(1mk)

(b) Calculate;

(i) The size of Angle **ABC**

(1mk)

(ii) The distance of **C** and **A**

(2mks)

12. The surface area of two similar bottles is 12cm^2 and 108cm^2 respectively. If the larger one has a volume of 810cm^3 . Find the volume of the smaller one.

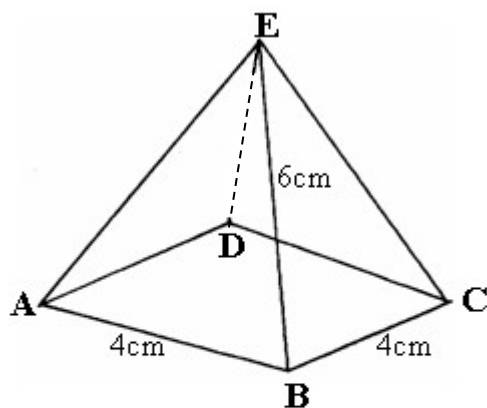
(3mks)

13. The size of an interior angle of a regular polygon is $3x$ while its exterior is $(x + 20)$. Find the number of triangles that makes the polygon.
(3mks)

14. A sales woman earns a monthly wage of ksh. 3000 and gets a commission for the goods she sells. In a certain month she sells goods worth ksh. 16,000 and her earning was ksh. 16,000 and her total earning was ksh. 4,280. Determine the rate of the commission.
(3mks)

15. Solve for x in the equation
(3mks)
$$2 \log x + \log 5 = 1 + 3 \log 2.$$

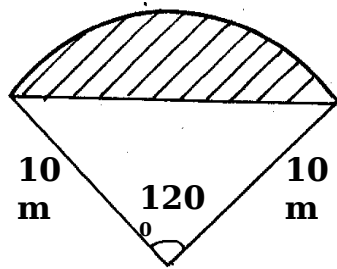
16. Draw the net of the solid below given that it is a right pyramid and that $\mathbf{AB} = 4\text{cm} = \mathbf{BC} = \mathbf{CD} = \mathbf{AD}$ and $\mathbf{BE} = 6\text{cm}$



SECTION (II) (50 MARKS)

Answer only five questions in this section.

17. The ends of the roof of a workshop are segment of a circle of radius 10m. The roof is 20m long . The angle of the centre is 120° as shown in the figure below.



(a) Calculate:

- (i) The area of one end of the roof.

(4mks)

- (ii) The area of the curve surface of the roof.

(2mks)

- (b) What would be cost to the nearest shilling of covering the two ends and the curved surface with galvanized iron sheet costing sh.80 per square meter.

(4mks)

18. A straight road northwards along the top of a vertical cliff of height 40m. A man at the top of the cliff spots a stationary boat on a bearing of a 90° from the foot of the cliff and at an angle of depression of 30° . He walks northwards and after one minute views the stationary boat on a bearing of 110° from the foot of the cliff as he moves at a constant speed.

(a) Make a sketch to represent the position of the man and the boat.

(2mks)

(b) Calculate the distance of the boat from the foot of the cliff.

(2mks)

(c) Find the shortest distance from the position of the man to the stationary boat after 1 minute

(2mks)

(d) Calculate the speed of the man in meters per second.

(4mks)

19. The table below shows the masses of form four students of Tenwek high school.

Mass(kg)	40-44	45-49	50-54	55-59	60-64	65-69	70-74
No. of students	3	30	29	33	13	1	1

(a) State the modal class

(1mk)

(c) Using an assumed mean of 57, calculate the

(i) Mean mass

(3mks)

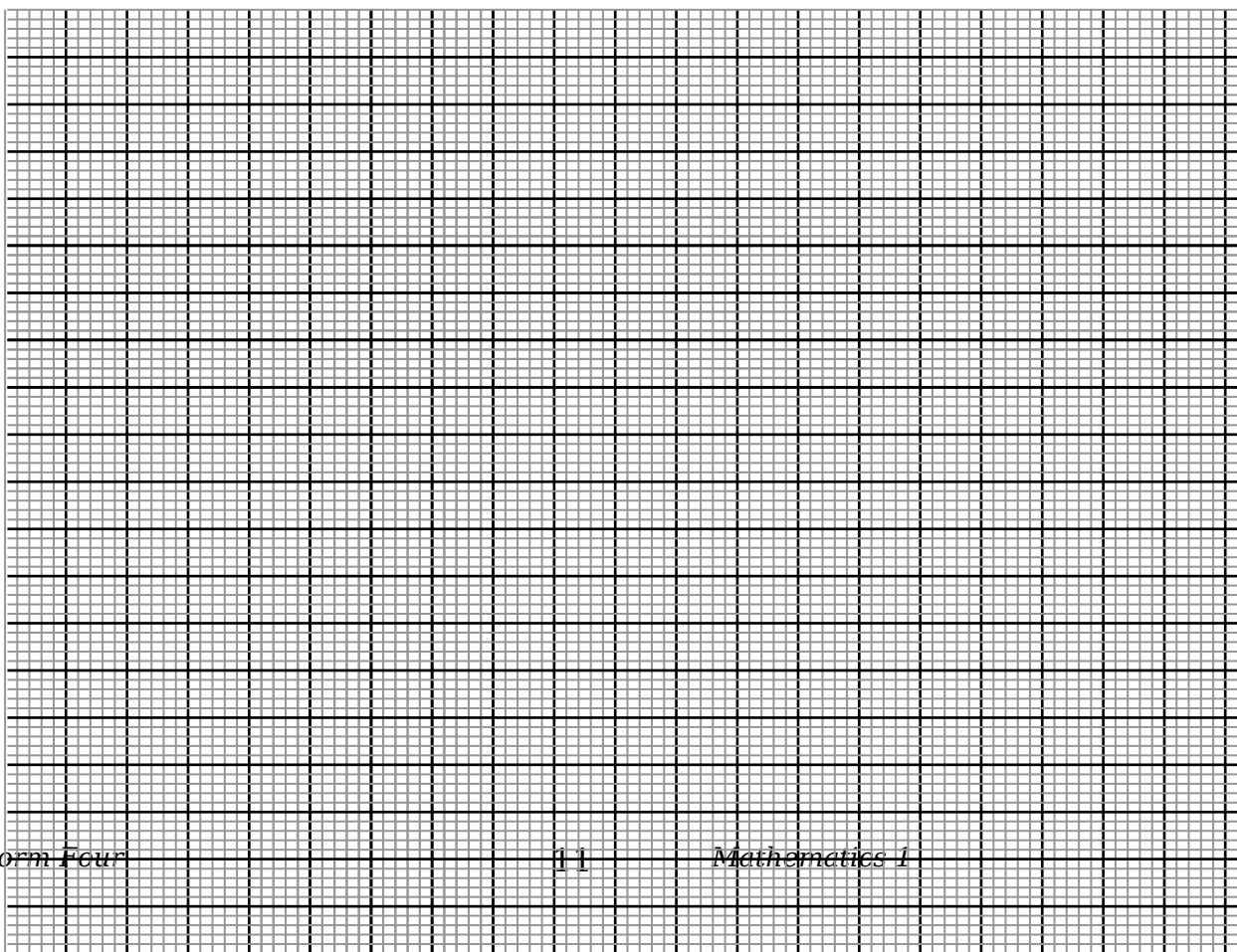
(ii) The standard deviation

(4mks)

(d) Find the mass of the 50th Student
(2mks)

20. (a) Triangle **ABC** has its vertices as **A**(3,0), **B**(2,3) and **C**(5,1) If **A'**(5,0), **B'**(3,6) and **C'**(9,2) is the image of Δ **ABC** under an enlargement, On the Same axis and grid provided determine the centre at enlargement and linear scale factor.

(3mks)

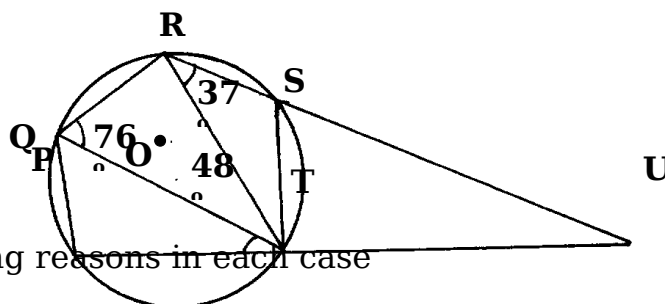


(b) If triangle $\mathbf{A^2B^2C^2}$ is the reflection of $\mathbf{A^1B^1C^1}$ in the line $x = 0$, write down the coordinate of the vertex of $\mathbf{A^2B^2C^2}$. Draw triangle $\mathbf{A^2B^2C^2}$ on the same grid provided (2mks)

(c) If triangle $\mathbf{A^3B^3C^3}$ is the image of triangle $\mathbf{A^2B^2C^2}$ under 90° clockwise turn about the origin, on the same grid draw triangle $\mathbf{A^3B^3C^3}$ and state its coordinates. (2mks)

(d) Triangle $\mathbf{A^4B^4C^4}$ is another image $\mathbf{ABC}$ under a translation $\begin{pmatrix} -8 \\ -6 \end{pmatrix}$. Draw on the same grid triangle $\mathbf{A^4B^4C^4}$ and state its coordinates (3mks)

21. In the figure below $\mathbf{QOT}$ is a diameter and angle $\mathbf{QTP} = 48^\circ$, angle $\mathbf{TQR} = 76^\circ$ and angle $\mathbf{SRT} = 37^\circ$.



Calculate giving reasons in each case

(a) Angle $\mathbf{RST}$

(1mk)

(b) Angle **SUT**

(3mks)

(c) Obtuse angle **ROT**

(2mks)

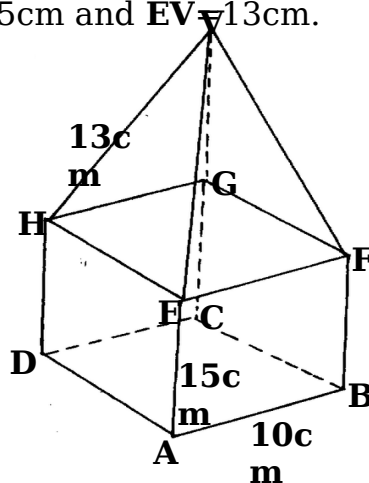
(d) Angle **PST**

(2mks)

(e) Reflex angle **SOP**

(2mks)

22. The figure below represents a model of a house whose base **ABCD** is a square of sides 10cm. **AE**= 15cm and **EV**=13cm.



(a)

- (i) Draw the net of the model
(2mks)

(ii) Calculate the total surface area of the solids

(2mks)

(b) The cross section of a prism consists of a regular hexagon of side 4.8cm as shown in the figure below

(i) Find the area of the cross-section

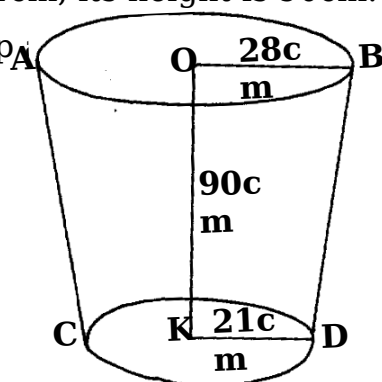
(2mks)

(ii) If the prism is 15cm long, calculate its volume

(2mks)

(c) Find the number of sides of a regular polygon whose sum of interior angle is 2520° (2mks)

23. A wooden drum closed at the top and bottom has a top radius of 28cm and bottom radius 21cm, its height is 90cm. The drum is covered with leather excluding the top.



Calculate;

(a) The volume of the drum in litres

(5mks)

(b) The area of the leather covering the drum excluding the top and bottom. (5mks)

24. A certain number of people were to contribute equally to buy books worth sh.1200 for a school library. Five people pulled out, so the others agreed to

contribute on extra sh.10 each. Their contributions enabled them to buy books worth sh.200 more than originally expected.

(a) If the original number of people was x , write an expression of how much each was originally
to contribute.

(1mk)

(b) Write down **two** expression of how much each contributed after the five people pulled out. (2mks)

(c) Calculate how many people made the contribution.
(5mks)

(d) State how much each contributed
(2mks)

