

FORM TWO HOLIDAYS SMART PASS **MATHEMATICS 10 QUESTION PAPERS**



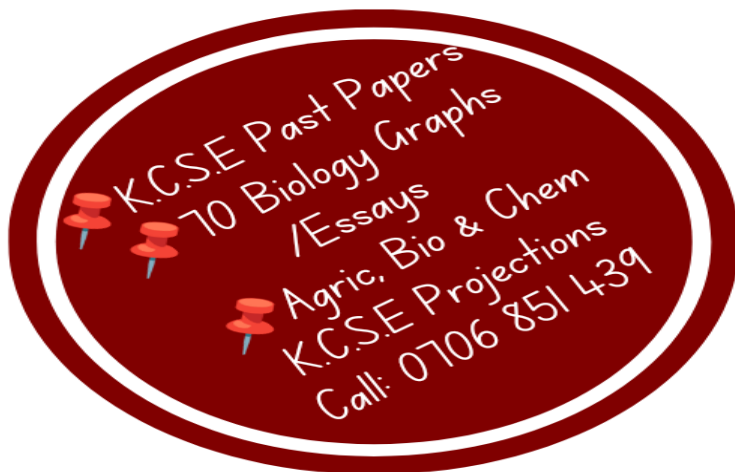
FORM 2 HOLIDAYS SMART PASS **MATHEMATICS** **TEN QUESTION PAPERS**

Prefer Calling Amobi Group of Examiners
@ 0743 333 000 OR 0706 851 439
For Marking Schemes

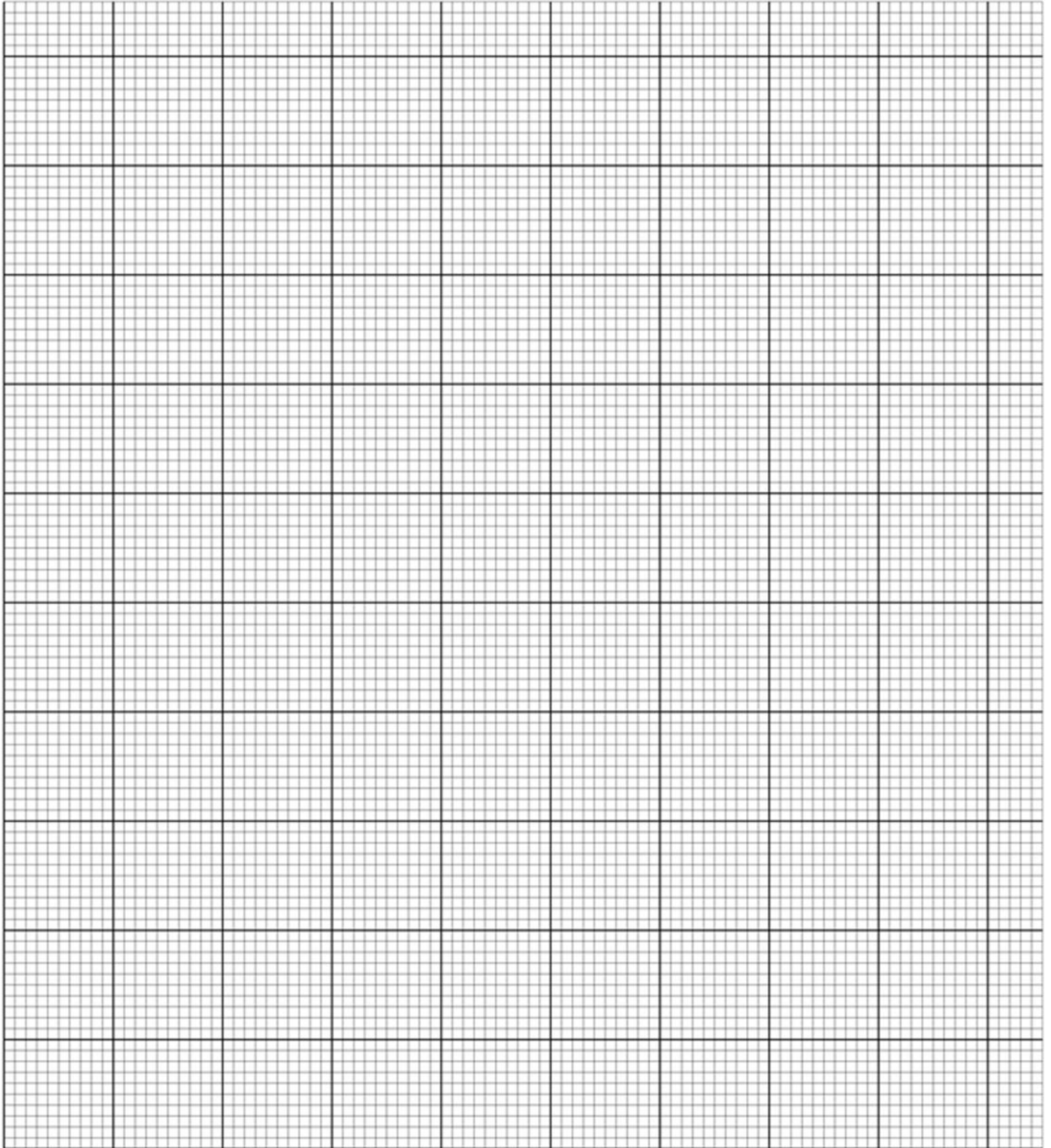
N/B In Response to the Huge Costs Associated in Coming Up with Such/Similar Resources **Regularly**, We inform us All, **MARKING SCHEMES ARE NOT FREE OF CHARGE**. However Similar **QUESTIONS**, Inform of **soft Copies**, are Absolutely **FREE** to Anybody/Everybody. Hence **NOT FOR SALE**

by Amobi Group of Examiners.

**CALL AMOBI GROUP OF EXAMINERS @
0743 333 000 OR 0706 851 439 TO
ACQUIRE :**



MATHEMATICAL GRAPH PAPER



FORM TWO HOLIDAYS SMART PASS

MATHEMATICS QUESTION PAPER NO: 01

SECTION 1 ANSWER ALL THE QUESTIONS (50 MARKS)

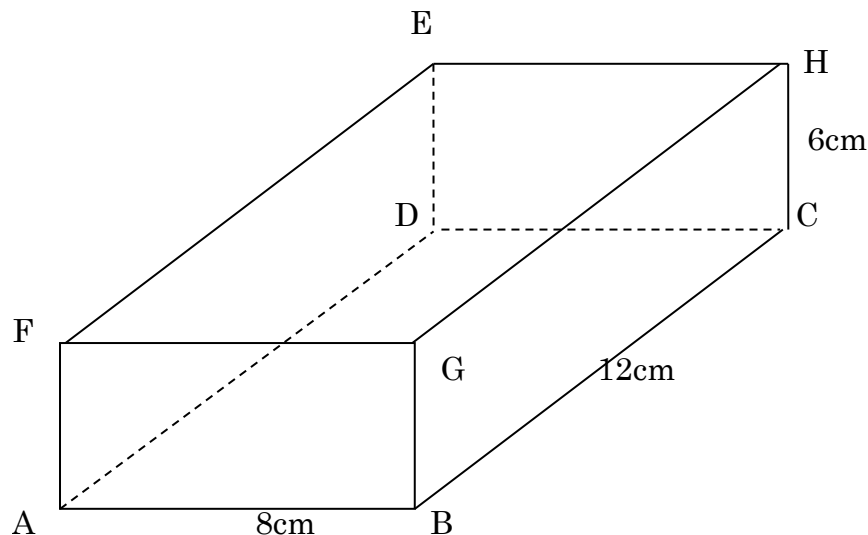
1. Use logarithm tables to evaluate. (4mks)
- $$\sqrt[3]{\frac{41.07 \times 0.03142}{156 \times 5.8941}}$$
2. A straight line passes through points (-2,1) and (6,3) . Find the equation of the line in the form $y=mx + c$ where m and c are constants. (3mks)
3. Simplify (2mks)
- (a) $\frac{ax - ay + bx + by}{(a+b)}$
- (b) $\frac{6vu^2 - 6vu}{3vu - 3u^2v}$ (2mks)
4. Find the value of x in (3mks)
- $$2^{x-3} \times 8^{x+2} = 128$$
5. Two shirts and a pair of trousers cost Ksh240. By buying two pairs of trousers and one shirt Njoroge pays sh300. Find the cost of one shirt and pair of trousers. (4mks)
6. Convert the recurring decimal into a fraction. $0.\overline{321}$ (3mks)
7. Three bells ring at intervals of 9 minutes, 15 minutes and 21 minutes. The bells will next ring together at 11.000pm. Find the time the bells had last ring together. (3mks)
8. If 5 men can erect 2 cottages in 21 days how many men working at the same rate will be needed to erect 6 cottages in seven days. (2mks)
9. The difference between the exterior angle and interior angle of a regular polygon is 100° . Determine the number of sides of the polygon. (3mks)
10. Find correct to 4 s.f the value of (4mks)
- $$\frac{1}{1.63} + \frac{3}{7.92} - \frac{2}{2.84} \quad \text{using reciprocal tables.}$$

11. Solve for x in (3mks)

$$\frac{x+3}{3} - \frac{x-2}{4} = \frac{x+1}{2}$$

12. In a manufacturing firm a radio costs Ksh500 to produce. The cost of materials labour and overheads are in the ratio 7:5:n. If the difference between the cost of materials and labour cost is ksh50 find the cost of overheads. (4mks)

13. The figure below shows a cuboid of length 12cm, width 8cm and height 6cm. Draw the net of the cuboid and use it to calculate area of the solid. (4mks)



14. Given that $a = -2$ and $b = 2$. What is the value of $a^b - b^a$. (2mks)
15. Find, using tables the value of $(0.05317)^2$ (2mks)
16. Simplify without using a calculator. (2mks)

$$2\frac{1}{3} - 1\frac{2}{3} \div \frac{5}{9} .$$

SECTION 2 ANSWER ALL THE QUESTIONS (50 MARKS)

17. A trader sold an item at sh7 500 after allowing his customer 15% discount on the marked price of the item. In so doing he made a profit of 35%
- (a) Calculate
- (i) The marked price of the item. (3mks)
 - (ii) The price at which the trader had bought the item. (2mks)
- (b) If the trader had sold the item without giving a discount, calculate the percentage profit he would have made. (3mks)
- (c) To clear his stock the trader decided to sell the remaining items at a loss of 10%. Calculate the price at which he sold each item. (2mks)

18. Using a pair of compasses and ruler only;
- (a) Construct triangle ABC such that $AB=7\text{cm}$, $BC=6\text{cm}$ and $CA=4\text{cm}$. (4mks)
 - (b) Measure and state the size of angle ABC. (1mk)
 - (c) Drop a perpendicular from point C to line AB. Measure and state the length of this line. (3mks)
 - (d) Hence or otherwise, find the area of triangle ABC. (2mks)

19. (a) On the graph paper draw A(1,2) B(1,5) C(4,6) (1mk)
- (b) Draw $A^1B^1C^1$ the image of ABC after a rotation of 90° anti-clockwise about (0,0). State the coordinates of A^1B^1 and C^1 . (3mks)
- (c) $A_{11}B_{11}C_{11}$ is the image of $A_1B_1C_1$ after a reflection on the x-axis. Draw $A_{11}B_{11}C_{11}$ and state its coordinates. (3mks)
- (d) $A^{111}B^{111}C^{111}$ is the image of $A^{11}B^{11}C^{11}$ after a reflection in the line $y=x$. Draw $A^{111}B^{111}C^{111}$ and state the coordinates of the vertices. (3mks)

20. Measurement of a maize field using a base line XY were recorded in metres as shown below

	Y	
	240	
60 TO R	190	
	180	75 TO Q
	150	50 TO P
100 TO S	120	
		100 TO N
	20	20 TO M
	X	

- (a) Sketch the map of the maize field (4mks)
 - (b) Find the area of the field in hectares. (6mks)
21. A line L passes through points (-2, 3) and (-1, 6) and perpendicular to a line P at (-1, 6) .
- (a) Find the gradient of line L. (2mks)
 - (b) Find the equation of line P in the form $ax + by = c$ where a, b and c are constants. (3mks)
 - (c) Given that another line Q is parallel to L and passes through (1,2). Find x and y intercept of Q. (3mks)
 - (d) Find the point of intersection of line P and Q. (2mks)

FORM TWO HOLIDAYS SMART PASS
MATHEMATICS QUESTION PAPER NO: 02

SECTION I (50 MARKS)

1. Using mathematical tables; find (4 mks)

$$(0.0546)^{0.5} + (2/4.327)^2$$

2. Solve the equation; (3 mks)

$$\frac{x-2}{3} - \frac{3-x}{4} = \frac{x-2}{2}$$

3. 3g of metal A of density 2.7g/cm³ is mixed with 2.4dm³ of metal B of density 4.8g/cm³. Determine the density of the mixture. (3 mks)

4. Korir is now four times as old as his daughter and six times as old as his son. Twelve years from now, the sum of the ages of his daughter and son will differ from his age by 9 years. Determine present ages. (3mks)

5. Convert 2.2 $\dot{2}\dot{3}$ into an improper fraction. (3 mks)

6. Evaluate $\frac{1}{3}$ of $(2\frac{3}{4} - 5\frac{1}{2}) \times 3\frac{6}{7} \div \frac{9}{4}$ (3 mks)

7. Evaluate ; (3 mks)

$$\left(\frac{2}{5}\right)^{-3} \times \left(\frac{4}{5}\right)^2 \times (32)^{2/5}$$

8. Cynthia exchanged Ksh.600,000 to Sterling pounds. After settling the bills worth £1200, she changed the balance to Euros. She then purchased goods worthy 200 Euros. Using the exchange rates below, calculate her balance in Kenyan shillings. (3 mks)

	Buying (Ksh)	Selling (Ksh)
1 Sterling pound	114.20	114.50
1 Euro	101.20	101.30

9. Find the equation of line whose gradient is $-\frac{3}{2}$ and y – intercept is 2. Give the answer in the form $y = mx + c$. (4 mks)

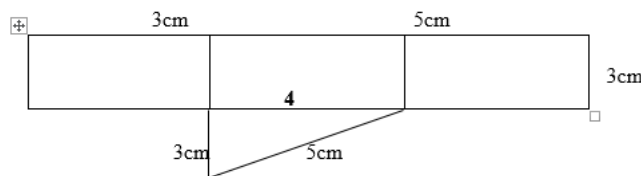
10. In a month of March a motorbike salesman sold 3 motorbikes, one at Kshs 150,000, the second at Kshs 120,000 and the other Kshs 100,000. If he is paid a salary of Ksh 15,000 and a commission of 10% how much did he get during the month of March? (3 mks)

11. A cylindrical tank has a diameter of 700cm and can hold 120,000l of water. What is the height of the water tank in meters to four significant figures? (Take $\pi = \frac{22}{7}$) (3 mks)

12. Two similar solids weigh 625g and 40g respectively. If the surface area of the smaller solid is 4.8cm^2 . Determine the surface area of the larger one. (3 mks)

13. Evaluate $\frac{-10 - (-6) \times (-6) \div -2 + (-18)}{-8 + (-6) \div (-2) \times 2}$ (3 mks)

14. The figure below shows the sketch of a net of a solid (measurement in centimeters)



Below is part of a sketch of the solid whose net is shown above. Complete the sketch of the solid showing the hidden edges with broken lines. (4 mks)

15. Given that $(5m - 2n) : (2m - n) = 7 : 5$. Find the ratio $m : n$. (2 mks)

16. The size of an exterior angle is $\frac{1}{3}$ of the interior angle of a regular polygon. Determine the number of sides of the polygon. (3 mks)

SECTION II (50 MARKS)

Answer all the questions from this section

17. Ariell is a sales executive earning a salary of Kshs. 20,000 and a commission of 8% for the sales excess of Kshs. 100,000. If in May he earned a total of Kshs, 48,000 in salaries and commission

a. Determine the amount of sales he made in that month. (4 mks)

b. If the total sales in the months of June and July increased by 18% and then dropped by 30% respectively. Calculate.

i. Ariell's commission in the month of June. (3 mks)

ii. His total earnings in the month of July. (3mks)

18. Town B is 20km N60°W from village A. Town B is 25km 040° from town C. Village D is due East of town C and due South of village A

(a) Using a scale 1:500,000 draw a diagram showing a relative position of town B, town C, village A and village D **(4 mks)**

(b) Determine;

(i) Distance between village A and town C **(2 mks)**

(ii) Distance between town C and village D **(2 mks)**

(iii) Compass bearing of town C from village A **(1 mk)**

(iv) Compass bearing of village D from town B **(1 mk)**

19. A Rhombus has its vertices as PQRS. The co-ordinates of the vertex P and Q of the rhombus are P(-1, 3) and Q(2, 4). The diagonal QS and PR meet at point M. Given that the equation of the line PR is $y = x + 4$.

a) Find the equation of the diagonal QS. **(1 mk)**

b) Find the co-ordinates of the mid-point M of QS. **(2 mks)**

c) Find the co-ordinates of the points R and S. **(4 mks)**

d) Calculate the length of diagonal PR. **(3 mks)**

20. A triangle has vertices A(-4, -1), B(-1, -3), C(-2, -1).

a) Draw triangle ABC on the graph below. **(1 mk)**

b) Plot the image $A^1B^1C^1$ of triangle ABC under reflection in the line $y = -x$. **(3mks)**

c) Plot the image $A^{11}B^{11}C^{11}$ of triangle $A^1B^1C^1$ under rotation of +90° about the origin. **(3 mks)**

d) Plot the image $A^{111}B^{111}C^{111}$ of $A^{11}B^{11}C^{11}$ under enlargement scale factor -2 and centre (1, 0). **(3 mks)**

21. The ratio of men to women in a self-help group is 8:13. Two more men joined the group while 5 women left it. The new ratio of men to women in the group is 7:10.

a) Find the original:

i) Number of men in the group **(4 mks)**

ii) Number of women in the group **(2 mks)**

iii) Original number of members in the group. **(2 mks)**

b) Determine the new number of members in the group. **(2 mks)**

FORM TWO HOLIDAYS SMART PASS

MATHEMATICS QUESTION PAPER NO: 03

Attempt all the questions in the spaces provided.

1. Solve for x in the equation: (3 mks)

$$32^{(x-3)} \times 8^{(x+4)} = 64 \div 2^x$$

2. Simplify without using a calculator or a mathematical table

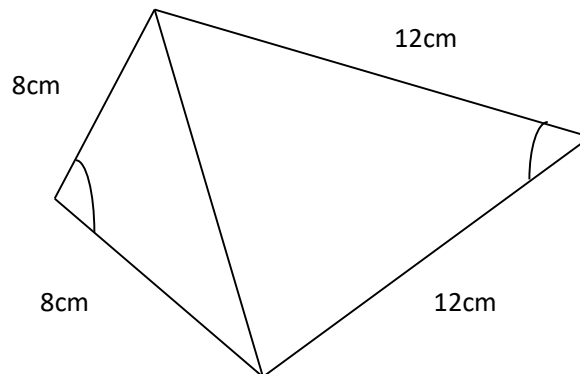
$$\frac{\sin 90^\circ \cos 45^\circ}{\sin 45^\circ}$$

(2 mks)

3. A line which joins the point A(3, k) and B(-2, 5) is parallel to another line whose equation is $5y + 2x = 10$. Find the value of K. (3 mks)

4. A group of 5 people can do a piece of work in 6 hours. Calculate the time a group of 8 people, working at half the rate of the first group could take to complete the same work. (3 mks)

5. Calculate the area of the shape below. (3 mks)



6. The length of a minute hand of a clock is 3.5cm. Find the angle it turns through if it sweeps an area of 48cm. (Take $\pi = 22/7$) (2 mks)

7. Two years ago, Jane was twice as old as John. If the sum of their ages 5 years from now will be 44 years, calculate their present ages. (3 mks)

8. Express $1.\dot{9}\dot{3} + 0.\dot{2}\dot{5}$ as a single fraction. (3 mks)

9. The surface area of two similar bottles are 12cm^2 and 108cm^2 respectively. If the larger one has a volume of 810cm^3 , find the volume of the smaller one. **(3 mks)**

10. Simplify the following expression

$$\frac{7x - 7xy}{7 - 7y}$$

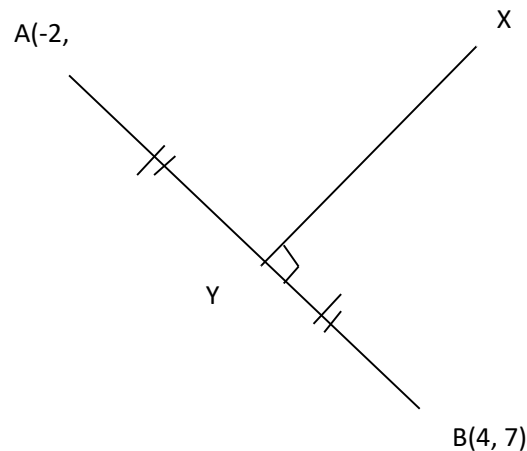
(2 mks)

11. Use mathematical tables to evaluate:

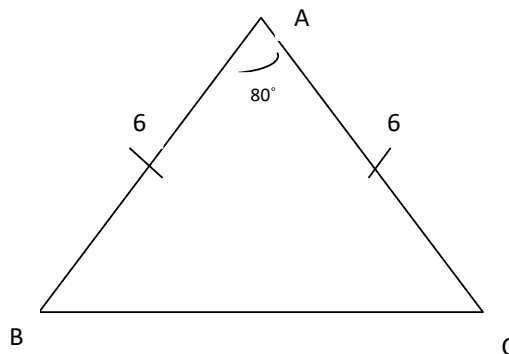
(4 mks)

$$\sqrt{\frac{1.794 \times 0.038}{12.43}}$$

12. In the diagram below, determine the equation of the line XY in the form $y = mx + c$ **(3 mks)**



13. An aircraft flying onto an airport calls out the control tower and says it is at height of 500m above the tower. If its horizontal distance from the tower is 8km, calculate the angle of elevation from the tops of the tower. **(3 mks)**
14. The figure below shows an isosceles triangle in which $AB = AC = 6\text{cm}$. Angle $BAC = 80^\circ$. Calculate the length of BC. **(3 mks)**



15. Solve the equation.
 $\sin y^2 = \cos 26^\circ$

(1 mk)

SECTION II(30 MARKS)

Choose any three questions only.

16. The vertices of a triangle PQR are P(0, 0) Q(6,0) and R(2,4)
- (a) Draw triangle PQR on the grid provided. (1 mk)
 - (b) Triangle P'Q'R' is the image of a triangle PQR under an enlargement scale factor $\frac{1}{2}$ and centre (2,2) write down the coordinates of P'Q'R' and plot on the same grid. (3 mks)
 - (c) Draw triangle P''Q''R'' the image of triangle P'Q'R' under a positive quarter turn about point (1,1) (3 mks)
 - (d) Draw triangle P'''Q'''R''' the image of P''Q''R'' under a reflection in the line $y = 1$. (3 mks)
17. In a school, there are 1250 students, each student contributed sh 380 towards a welfare programme. The money contributed was used to purchase 75 bales of maize flour which was shared equally among 50 families. One bale of maize flour contains 12 packets and costs sh 1050. The remaining amount was shared equally among 125 students as bursary. Calculate:
- (a) The total amount collected. (2 mks)
 - (b) The total number of maize flour bought (2 mks)
 - (c) The number of packets each family got. (2 mks)
 - (d) The amount of money that remained. (2 mks)
 - (e) The amount of bursary that each student got. (2 mks)
18. Find the area in hectares of a maize field whose measurements are shown in the field book below. The baseline PQ is 300m long. (10 mks)

	Q	
	250	70B
C100	180	
	80	150A
	P	

19. The marked price of a sewing machine is sh 30,000. A discount of 10% is given on cash payment. The sewing machine can also be bought on hire purchase. The hire purchase terms requires a deposit of sh 10500 followed by 12 equal monthly installments of sh 2150 each.
- (a) Calculate:
 - (i) The cash price of the sewing machine. (2 mks)
 - (ii) The hire purchase value of the sewing machine. (3 mks)
 - (b) Korir bought the sewing machine by cash while Akinyi bought it on hire purchase. How much did Akinyi pay for the machine than Korir? (3 mks)
 - (c) Calculate the percentage increase in hire purchase price over the marked price. (2 mks)

20.(a) Complete the following tables for the equations:

(i) $y = 5x - 7$

(ii) $y = 9 - 3x$

Table 1

X	-2	-1	0	1
y		-12		7
(x,y)		(-1, -12)	(0, -7)	

Table 2

X	-2	-1	0	1
y	13			7
(x,y)	(-2, 13)			(1, 7)

(b) On the same grid, draw the graphs of:

(4 mks)

(i) $y = 5x - 7$

(ii) $y = 9 - 3x$

(c) Use your graphs to solve the following simultaneous equations.

(2 mks)

(i) $5x - y = 7$

(ii) $3x + y = 9$

FORM TWO HOLIDAYS SMART PASS

MATHEMATICS QUESTION PAPER NO: 04

SECTION I (50 Marks)

Answer **all** the questions in this section.

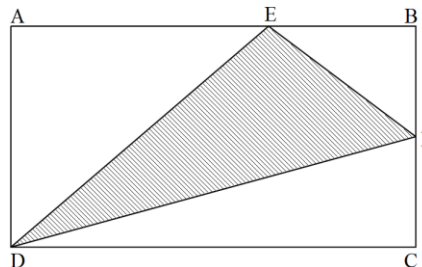
1. Evaluate without using a mathematical table or calculator: (3 mks)

$$\sqrt{\left(\frac{64^{\frac{1}{3}} \times 46656^{\frac{1}{3}}}{0.0001}\right)}$$

2. One – seventh of the money that was raised in a school fund raiser was used to renovate classes while two – thirds of the remainder was used for construction of a laboratory. If Kshs. 630,000 remained, calculate the amount of money that was raised. (3 mks)
3. A rectangular room measuring 7.8 metres by 6 metres is covered by a number of whole square tiles with the largest possible dimensions. Calculate the least possible number of tiles required. (4 mks)
4. The following are the exchange rates that were used by a certain forex bureau in Kenya.

Currency	Buying (Kshs)	Selling (Kshs)
1 Euro (€)	133.20	134.60
1 Saudi Riyal	29.40	31.80

- Farida arrived in Kenya with 4,000 Euros and converted the whole amount to local currency. She spent Kshs. 343,590 and converted the balance to Saudi Riyals before leaving for Riyadh, Saudi Arabia. Calculate the amount, in Saudi Riyals that she received. (3 mks)
5. Two similar blocks have masses of 275.6 g and 81.6 g respectively. If the surface area of the smaller block is 340 cm², calculate the surface area of the larger block. (3 mks)
6. Simplify completely $(2p + 3q)^2 - (3q - 2p)^2$ (3 mks)
7. The figure below shows a rectangle ABCD in which DC = 11 cm, BC = 7 cm, EB = 3 cm and F the midpoint of BC

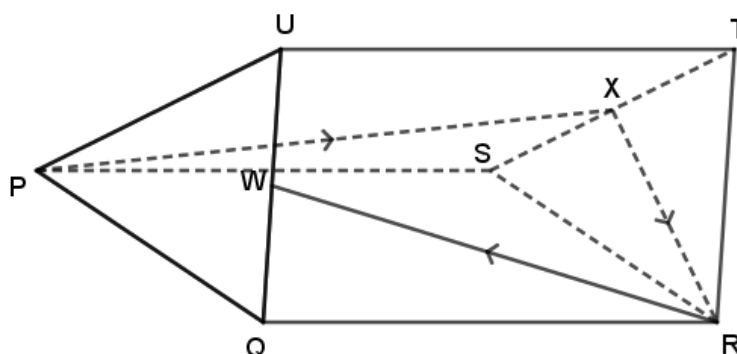


- Calculate the area of the shaded part. (3 mks)

8. A rectangular maize farm measures 100 m by 70 m. One length of the farm has a wall erected on it. The remaining three sides of the farm are to be fenced using poles at intervals of 6 m. How many poles will be used? **(2 mks)**
9. The cost of three sweaters and four jumpers is Kshs. 10,650. The cost of 3 similar jumpers and four similar sweaters is Kshs. 9,300. Calculate the cost of a jumper and a sweater. **(3 mks)**
10. George bought a computer and sold it to Eric at a profit of 10%. Eric then sold it to Ralph at a price of Kshs. 27,000 thus making a loss of 15%. Find the price Eric bought the computer from George. **(3 mks)**
11. The sum of the interior angles of a regular polygon is 1080° . Calculate
 (a) The number of sides of the polygon **(2Mks)**
 (b) The sizes of the exterior angles of the polygon. **(1 mk)**
12. Five men working for 8 hours a day take 2 days to cultivate an acre of land. How many days would four men working 10 hours a day take to cultivate 3 acres of land? **(3 mks)**
13. A cyclist left Bondo at 7.45 a.m. and travelled to Kisumu. In Kisumu, he took a half-hour break and left for Kericho at 9.55 a.m. If the distance from Bondo to Kisumu is 60 km, calculate the average speed of the cyclist. **(3 mks)**
14. Use logarithms only to evaluate **(4 mks)**

$$\sqrt{\frac{0.4271 \times 609.3}{80.08^2}}$$

15. Using a ruler and a pair of compasses only, construct triangle ABC such that $AB = 7.8$ cm, $BC = 5.5$ cm, and $\angle ABC = 135^\circ$. Find the length of the perpendicular from C to AB produced. **(4 mks)**
16. The figure below shows a triangular prism PQRSTU. W and X are midpoints of QU and ST respectively. On the surface of the prism is a continuous path PXRW.



- (a) Draw and label the net of the prism **(2mks)**
 (b) On the same net, show the path **(1 mk)**

SECTION II (50 Marks)

Answer *all* the questions in this section

17. A community water tank is in the shape of a cuboid of base 6 m by 5 m and height 4 m. A feeder pipe of diameter 14 cm supplies water to this tank at a flow of 50 cm per second.

$$\text{Take } \pi = \frac{22}{7}$$

Calculate:

- (a) (i) The capacity of the tank in litres (2 mks)
- (ii) The amount of water in litres, delivered to this tank in one hour. (3 mks)
- (iii) The time taken to fill the tank (2 mks)
- (b) The community uses a full tank a day, with each family consuming an average of 150 litres per day. If each family pays a uniform rate of Kshs. 550 per month, find the total amount due monthly. (3 mks)

18. A pirate boat sails from port **P** on a bearing of $N50^{\circ}E$ at a speed of 112 km/h, for 2 hours 30 minutes to port **Q**. From **Q**, it changed its course and traveled on a bearing of 155° covering a distance of 328 km to port **R**. From **R** it traveled to port **S** on a bearing of 220° from **R** and due south of **Q**.

- (a) Using a scale of 1 cm to represent 40 km, draw a diagram showing the positions of ports **P**, **Q**, **R** and **S**. (4 mks)
- (b) Use your scale drawing to find:
 - (i) The distance between ports **P** and **S**. (1 mk)
 - (ii) The bearing of port **P** from port **R**. (1 mk)
- (c) A marine police patrol boat leaves port **P** to intercept the pirate boat at **M** as it moves from port **Q** to port **R** in the shortest time possible.
 - (i) How far from port **S** will the two boats meet at **M**? (2 mks)
 - (ii) If the boats meet after 2 hours, what is the speed of the marine police boat? (2 mks)

19. On the grid provided,

- (a) Draw a trapezium whose vertices are $K(6, -2)$, $L(7, -2)$, $M(8, -1)$ and $N(6, -1)$ (1mk)
- (b) On the same grid, draw:
 - (i) $K'L'M'N'$, the image of $KLMN$ under an enlargement scale factor 3 about $(8, -4)$. State the coordinates of $K'L'M'N'$ (3 mks)
 - (ii) $K''L''M''N''$, the image of $K'L'M'N'$ under a reflection in the line $x = 0$ (2 mks)
 - (iii) $K'''L'''M'''N'''$, the image of $K''L''M''N''$ under a rotation of $+90^{\circ}$ about $(0, 0)$. (2 mks)
- (c) Describe fully, a single transformation that maps $K'L'M'N'$ onto $K'''L'''M'''N'''$. (2 mks)

20. A line L_1 has the x and y intercepts as -3 and -5 respectively.
- (a) Find the equation of L_1 in the form $ax + by = c$, where a , b and c are integral values. (3 mks)
- (b) Another line L_2 is perpendicular to L_1 and cuts the x -axis at 4. Find the equation of L_2 in the form $y = mx + c$ (3 mks)
- (c) Given that another line L_3 is parallel to L_2 and passes through point $(5,6)$, find the x and y intercepts of L_3 . (4 mks)
21. Faith is a sales lady with a company that pays her a basic salary of Kshs. 30, 000 per month and commissions on goods sold as follows:
- 0% on the first Kshs. 100, 000
 - 3% on sales above Kshs. 100, 000 up to Kshs. 300, 000
 - 7.5% on sales above Kshs. 300, 000
- (a) In a certain month, she sold goods worth Kshs. 500,000. What was her total salary in that month? (4 mks)
- (b) In the next month, she earned a total of Kshs. 52, 500. Calculate the value of goods she sold that month. (4 mks)
- (c) Calculate the percentage change in her sales in the two months. (2 mks)

THIS IS THE LAST PRINTED PAGE

FORM TWO HOLIDAYS SMART PASS
MATHEMATICS QUESTION PAPER NO: 05

SECTION A (50MKS)

1. Use logarithms to evaluate. (4mks)

$$\frac{\sqrt{415.2 \times 0.0761}}{135}$$

2. Three similar bars of length 200 cm , 300cm and 360 cm are cut into equal pieces. Find the largest possible area of square which can be made from any of the three pieces. (3mks)

3. A triangle has vertices A(2,5), B(1, -2) and C(-5,1). Determine:

a) The equation of the line BC. (3mks)

b) The equation of the perpendicular line from A to BC. (3mks)

c)

4. The ratio of the radii of two spheres is 2:3. Calculate the volume of the first sphere if the volume of the second is 20cm^3 . (3mks)

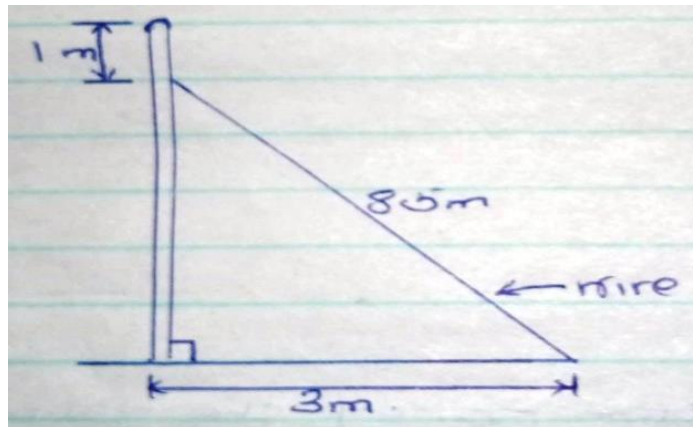
5. Without using a mathematical table or calculator solve the following. (3mks)

$$\frac{3\sqrt{0.729 \times 409.6}}{0.1728}$$

6. Three boys shared some money, the youngest boy got $\frac{1}{2}$ of it and the next got $\frac{1}{9}$, and the eldest got the remainder. What fraction of money did the eldest receive? If the eldest got sh 330, what was the original sum of money? (4mks)

7. Ten men working 6 hours a day take 12 days to complete a job. How long will it take 8 men working 12 hours a day to complete the same job? (3mks)

8. An electric pole is supported to stand vertically by a tight wire as shown below. Find the height of the pole and leave to 2 decimal places. (3mks)



9. From a window 25m above a street, the angle of elevation of the top of a wall on the opposite side is 15° . If the angle of depression of the base of the wall from the window is 35° find:
- The width of the street. (2mks)
 - The height of the wall on the opposite side. (2mks)

10. Simplify: (2mks)

$$\frac{25^{3/2} \times 9^{1/2} \times 2^2}{5^2 \times 3^2}$$

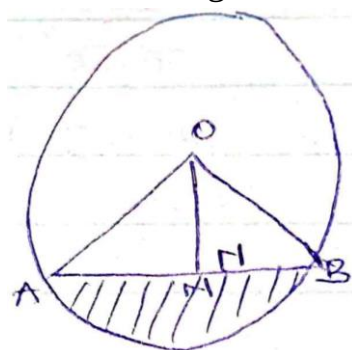
11. Solve the inequality: (3mks)

$$2x - 1 \leq 3x + 4 < 7 - x$$

12. Solve the following: (3mks)

$$x^2 + 3x - 54 = 0$$

13. The figure below shows a circle with centre O and radius 5cm. if $ON = 3\text{cm}$, $AB = 8\text{cm}$ and $\angle AOB = 106.3^\circ$. Find the area of shaded region. (3mks)



14. Expand and simplify: (2mks)

$$4(q + 6) + 7(q - 3)$$

15. The length of a rectangle is three times its breadth. If its perimeter is 24cm

- What is the length of the rectangle. (2mks)
- Area of rectangle. (2mk)

SECTION B

16. A rectangular tank whose internal dimensions are 1.7m by 1.4m by 2.2m is filled with milk.
- Calculate the volume of milk in the tank in cubic metres. (2mks)
 - The milk is to be packed in small packets. Each packet is in the shape of a right pyramid on an equilateral triangular base of side 16cm. The height of each packet is 13.6cm.
 - Calculate the volume of milk contained in each packet. (3mks)
 - If each packet was to be sold at sh 25 per packet, what is the sale realized from the sale of all exact packets of milk. (5mks)

17. A triangle ABC with vertices A(-2,2), B (1, 4) and C(-1, 4) is mapped on to triangle A'B'C' by a reflection in the line $y=x+1$.

a. On the grid provided draw:

i. Triangle ABC

(1mk)

ii. The line $y=x+1$

(2mks)

iii. Triangle A'B'C'

(3mks)

b. Triangle A''B''C'' is the image of triangle A'B'C' under a negative quarter turn, with the centre of rotation as origin (0, 0). On the same grid draw triangle A''B''C''

(4mks)

18. The following measurements were obtained while measuring a coffee field. The measurements were entered in a field book as follows:

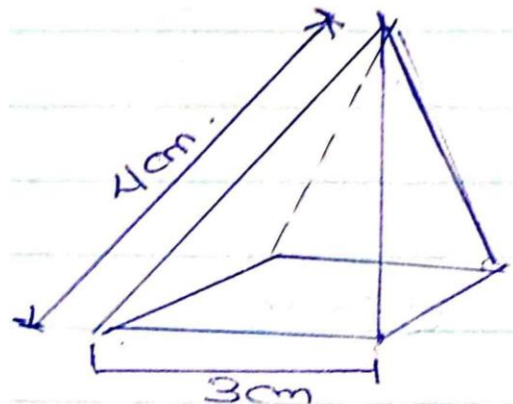
	Y	
	360	80 to Q
	280	
To R 80	200	
To S 160	80	200 to P
	X	

a) Taking the baseline $XY = 400$ m. draw the map of the coffee field using a scale of 1cm represents 40m.

b) Calculate the area of the coffee field.

(5mks)

19. The figure below represents a right pyramid. On a square base of side 3cm. the slant edge of the pyramid is 4cm.



a) Draw the net of the pyramid.

(2mks)

b) Calculate the surface area of the pyramid.

(4mks)

c) Calculate the volume of the pyramid to 2 decimal places.

(4mks)

FORM TWO HOLIDAYS SMART PASS

MATHEMATICS QUESTION PAPER NO: 06

SECTION I (50 MARKS)

1. Work out the following, giving the answer as a mixed number in its simplest form

$$\frac{2}{5} \div \frac{1}{2} \text{ of } \frac{4}{9} - 1\frac{1}{10}$$
$$\frac{1}{8} - \frac{1}{6} \times \frac{3}{8}$$

(3mks)

2. When a certain number is divided by 30, 45, 54, there is always a remainder of 21. Find the least numbers. **(3mks)**

3. Evaluate without using mathematical tables of a calculator, $\frac{0.0084 \times 1.23 \times 3.5}{2.87 \times 0.056}$ expressing your answer as a single fraction. **(3mks)**

4. Use logarithm to solve tables to evaluate **(4 mks)**

$$\sqrt[3]{\frac{45.3 \times 0.00697}{0.534}}$$

5. If each interior angle of a regular polygon is 150° , how many sides does the polygon have? **(3mks)**

6. Solve for x in the equation $32^{(x-3)} \div 8^{(x-4)} = 64 \div 2^x$ **(3mks)**

7. Use reciprocal table to work out. $\frac{7}{0.5283} + \frac{0.5}{3.735}$ **(4mks)**

8. Three pens and four exercise books cost sh. 87. Two pens and five exercise books cost sh.93. Find the cost of one pen and one exercise book. **(3mks)**

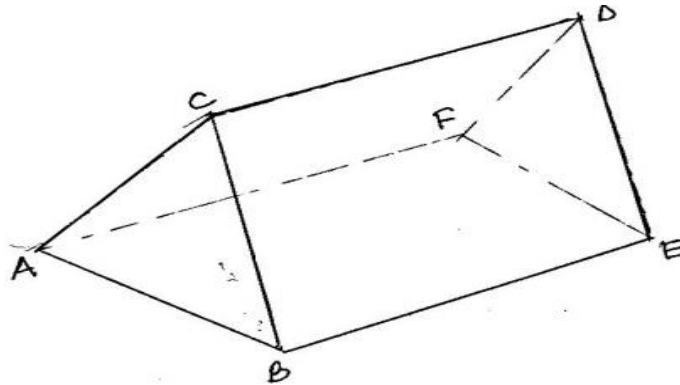
9. A Kenyan Company received US dollars 100,000. The money was converted into Kenya Shillings in a bank which buys and sell foreign Currencies as shown below.

	Buying (kshs)	Selling (ksh)
1 US Dollar	77.25	77.44
1 sterling pound	119.93	120

- a) Calculate the amount of money in ksh, the Company received. **(1mk)**
- b) The company charged the Kenya shillings calculated above into sterling pounds to buy Car in Britain. Calculate the cost of the car to the nearest sterling pounds. **(2mks)**

10. A company saleslady sold goods worth sh. 1,600,000. From this sale she earned a commission of sh. 40,000.
- Calculate the rate of Commission. (1mk)
 - If she sold goods whose marked price was sh. 3 600,000 and allowed a discount of 2%, calculate the amount of commission she received. (2mks)
11. A piece of metal has a volume of 20cm^3 and a mass of 300g. Calculate the density of the metal in kg/m^3 . (3mks)
12. The area of a sector of a circle of diameter 126cm is 4158cm^2 . Calculate the angle subtended at the centre of the circle. (Take $\pi = \frac{22}{7}$) (3mks)
13. Simplify completely by factorization. (3 mks)
- $$\frac{ax + bx + ya + yb}{ma + mb + na + nb}$$
14. Evaluate: (3 mks)
- $$\frac{-12 \div (-3) \times 4 - (-20)}{-6 \times 6 \div 3 + (-6)}$$
15. Use the tables of cubes to evaluate: (3 mks)
- $$(3.461)^3 - \sqrt[3]{2809}$$

16. The figure below is a prism whose cross-section is an equilateral triangle such that $AB=BC=CA=3\text{cm}$, $BE=CD=AF=5\text{cm}$



Draw the net of the prism

(3mks)

SECTION II (50 MARKS)

17. A line L passes through point $(-2,3)$ and $(-1, 6)$ and is perpendicular to a line P at $(-1, 6)$
- Find the equation of L. (3mks)
 - Find the equation of P in the form $ax + by = c$. (3mks)
 - Given that another line Q is parallel L and passes through point $(1, 2)$, find the x and the y intercepts of line Q. (2mks)
 - Find the point of intersection of lines P and Q. (2mks)

- 18.** Triangle PQR has vertices at P(2,3), Q(1,2) and R(4,1), while triangle $P^1Q^1R^1$ has vertices at $P^1(-2,3)$, $Q^1(-1,2)$, $R^1(-4,1)$.
- (a)(i) Draw triangle PQR and $P^1Q^1R^1$ on the grid provided below (2mks)
- (ii) Describe fully a single transformation which maps triangle PQR onto triangle $P^1Q^1R^1$.
- (b)(i) On the same plane, draw triangle $P^{11}Q^{11}R^{11}$ the image of PQR, under reflection on line $y + x = 0$ (2mks)
- (ii) Describe fully a single transformation which maps triangle $P^{11}Q^{11}R^{11}$ onto triangle $P^1Q^1R^1$. (1mk)
- (c) Draw triangle $P^{111}Q^{111}R^{111}$ such that it can be mapped onto triangle PQR by a positive quarter turn about the origin (2mks)
- (d) State all pairs of triangles that are oppositely congruent (2mks)
- 19.** A businessman sold a car at sh.900 000 after allowing his customer a 10% discount on the marked price of the car. In so doing he made a profit of 20%.
- a) Calculate
- (i) The marked price of the car. (3 mks)
- (ii) The price at which the businessman had bought the car (2mks)
- b) If the businessman had sold the same car without giving a discount. Calculate the percentage profit he would have made. (3mks)
- c) In the month of December the businessman sold 20 vehicles without giving a discount. Determine the total profit he received from the sale. (2mks)
- 20.** Four towns A, B, C and D are such that town B is 180 km East of A. Town C is at a distance of 120km on a bearing of 300° from B. Town D is due West of C and North Of A.
- (a) Using a scale of 1cm to represent 20km, make an accurate scale drawing to show the relative positions of the towns. (4 mks)
- (b) Find:
- (i) Determine the bearing of C from A (1mk)
- (ii) Determine the distance of C from D (2 mks)
- (iii) Determine the bearing of B from D (1 mk)
- (iv) Determine the distance of A from D (2 mks)
- 21.** The measurements (in metres) of a field were given in a field note book as follows:
Base line XY = 240m

-----	Y	
	150	50 to P
To Q 60	120	
	50	20 to M
	X	

- (a) Using a scale of 1 cm to represent 20 m, draw an accurate map of the farm. (4 mks)
 (b) Find the area of the field in hectares. (4mks)
 (c) If the farm is on sale at sh. 900 000 per hectare, find how much the farm costs. (2mks)

22. Triangle ABC is such that $AB = 7\text{cm}$, $\angle ABC = 120^\circ$ and $\angle BAC = 30^\circ$.

- (a) Using a ruler and a pair of compass only, construct triangle ABC. (3 mks)
 (b) Measure the length of:
 (i) Line BC (1 mk)
 (ii) Line AC (1 mk)
 (c) Drop a perpendicular from C to meet line AB extended at M. (2 mks)
 (d) Measure the length of line CM (1 mk)
 (e) Calculate the area of triangle ABC (2 mks)

23. A hollow metal pipe whose internal and external diameters are 6.3cm and 2.8cm respectively is 3.5m long.

- (a) Calculate the volume of the metal used to make the pipe. (4 mks)
 (b) The pipe is melted down and recast into a solid cylinder of height 1.75m. Calculate the radius of the cylinder to two decimal places. (4 mks)
 (c) Given that the density of the metal above is 4.2g/cm^3 , calculate the mass of the solid cylinder in kilograms. (2 mks)

24. Three business people Kamau, Gachui and Maina agreed to contribute Kshs. 1 210 000 to start a business. The ratio of Kamau's contribution to Gachui's contribution is 3 : 2 while that of Gachui to Maina is 1 : 3.

- (a) Determine the ratio of Kamau's contribution to Maina's contribution. (2 mks)
 (b) Determine the amount of money contributed by Kamau (2 mks)
 (c) They agreed to share their profits as follows;

50% to be shared in the ratio of their contributions

40% to be retained for the running of the business

10% to be set aside for emergencies

If their total profit for the year 2014 was sh.704 000, determine the

- (i) Amount of money retained for running the business. (2mks)
 (ii) The amount of money set aside for emergencies. (2mks)
 (iii) The amount of received by Gachui (2mks)

FORM TWO HOLIDAYS SMART PASS
MATHEMATICS QUESTION PAPER NO: 07

1. Using logarithms tables only, evaluate.

(4Mks)

$$\sqrt[3]{\frac{849.6 \times 2.41}{3941}}$$

2. Solve the equation

(3Mks)

$$\frac{x-2}{3} - \frac{3-x}{4} = \frac{x-2}{2}$$

3. A tourist arrived in Kenya with sterling pound (€) 4680 all of which he exchanged into Kenyan shillings. He spent ksh. 52,352 while in Kenya and converted the rest of the money into US dollars. Calculate the amount he received in US dollars. The exchange rates were as follows.

(3mks)

Currency	Buying	Selling
US\$	65.20	69.10
Sterling pound €	123.40	131.80

4. Solve for the value of x

(3Mks)

$$2^{3x-2} \times 8^x = 4^{(x+1)}$$

5. A line passes through the point whose coordinates are A(1,3) and B (-2,-1) find the equation of the line

(3Mks)

6. Express $1.\dot{5}2\dot{3}$ as a fraction.

(3mks)

7. Use reciprocal and square tables to evaluate, to 4 significant figures, the expression.

(3Mks)

$$\frac{1}{0.3654} - 4.151^2$$

8. The diagonal of a square measures 44cm. Calculate the perimeter of the square.

3mks

9. Calculate;

3mks

$$\frac{2.61 \times 21.83 \times 0.073}{61.72 \times 11.73}$$

10. Patrick spent $\frac{2}{5}$ of his salary on food, $\frac{1}{3}$ of the remainder on electricity and saved the rest.

(a). What fraction of his salary did he save?

(2mks)

(b). If he spent Sh. 1,200 on food, how much did he spend on electricity?

(2Mks)

11. Solve the following simultaneous equation

(3Mks)

$$5x + 6y = 28$$

$$3x + 4y = 18$$

12. Two similar containers have base areas of 750 cm^2 and 120 cm^2 respectively. Calculate the volume of the larger container in liters given that the volume of smaller container is 400 cm^3 (3Mks)
13. If $r=5$, $s=2$, and $t=3$, find the value of: (3mks)
- $$\frac{r^2 + s^2 - t}{t^3}$$
14. A farmer has three containers of capacity 12L, 15L and 21L, calculate the capacity of:
- a) The smallest container which can be filled by each one of them an exact number of times (2Mks)
- (b). The largest container which can fill each one of them an exact number of time. (2 Mks)
15. Given that $\tan x = \frac{3}{4}$, find $\cos(90-x)$ (2Mks)
16. The two arms of a pair of compass of dividers are spread so that the angle between them is 45° . Find the area of the sector formed if the length of the arm is 8.4cm. Take $\pi = \frac{22}{7}$. (3mks)

SECTION II (50 MARKS)

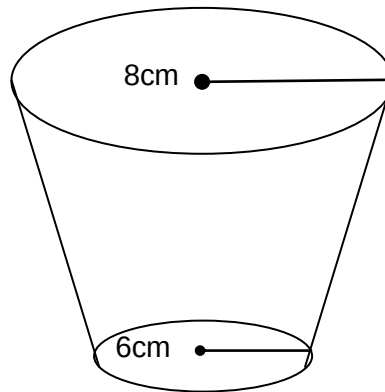
17. An amount of money was shared among five girls, Alice, Jane, Brenda, Mary and Ivy. Alice got $\frac{1}{8}$ of the total amount while Jane got $\frac{2}{5}$ of the remainder. The remaining amount was shared equally among Brenda, Mary and Ivy each getting ksh.490.
- a. How much did Jane get? (3mks)
- b. How much was shared among the three girls. (3mks)
- c. Alice, Jane and Ivy invested their money and earned a profit of ksh.3640. a half of the profit was left to maintain the business and the rest shared according to their investments. Calculate how much each got. (4mks)
18. A surveyor recorded the measurements of a field book using $xy=400\text{m}$ as the base line as shown below

	Y	
To E 200	320	
	210	150 To D
To F 205	170	150 To C
	50	225 To B
	X	

- a) Use a scale of 1 cm to represent 50 m to draw the map of the field. (5Mks)
- b) Find the area of the field in hectares (5Mks)

19. (a). On the grid provided, draw the square whose vertices are A(6,-2) B(7,-2) C(7,-1) and D(6,-1). **(2mks)**
- b. On the same grid draw;
- (i). A'B'C'D', the image of ABCD under an enlargement scale factor 3 centre (9,-4). **(4mks)**
- (ii). A''B''C''D'', the image of A'B'C'D' under a rotation of $+90^\circ$ about (0,0). **(4 mks)**

20. A pail is in the shape of a container frustrum with base radius 6cm and top radius 8cm. The slant height of the pail is 30cm as shown below. The pail is full of water.



- a. Calculate the volume of water in the pail. **(6mks)**
- b. All the water is poured into a cylindrical container of circular radius 7cm, if the cylinder has the height of 35cm, calculate the height of the cylinder above the water level, which is not in contact with water. **(4mks)**
21. The sides of a triangular plot of land are 170m, 190m and 210m, but the altitudes of the plot as well as the angles are not known. Find
- a) The area of the plot in Hectares **5mks**
- b) The angles of the plot **5mks**

FORM TWO HOLIDAYS SMART PASS

MATHEMATICS QUESTION PAPER NO: 08

SECTION I (50 MARKS)

1. Evaluate

(3Mks)

$$\frac{-12 \times 3 \times 4 - (-15)}{-5 \times 6 \times 2 + (-5)}$$

2. Evaluate without using a calculator.

(3Mks)

$$\frac{(2\frac{3}{7} - 1\frac{5}{6}) \div \frac{5}{6}}{\frac{2}{3} \text{ of } 2\frac{1}{4} - 1\frac{1}{7}}$$

3. Use logarithms to evaluate.

(4Mks)

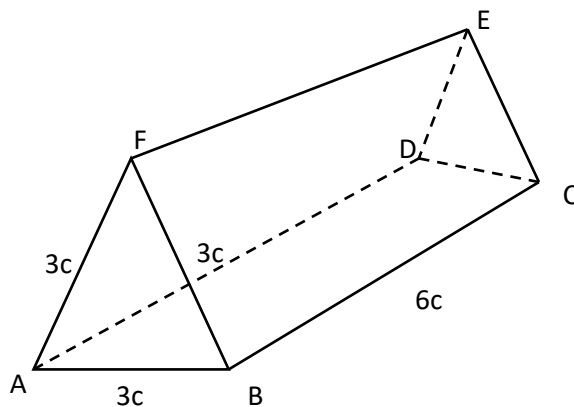
$$\sqrt[4]{\frac{43.52 \times 0.08792}{785.3}}$$

4. Find the equation of the L_1 in the form $y = mx + c$ which is perpendicular to the line $3y + 2x = 6$ and passes through the point $(-3, 4)$.

(3mks)

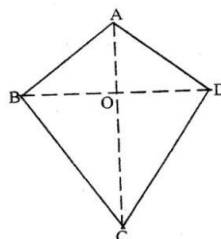
5. The diagram below represents a prism of length 6cm whose cross-section is an equilateral triangle of sides 3cm. Draw a well labeled sketch of the net of the prism.

(3Mks)



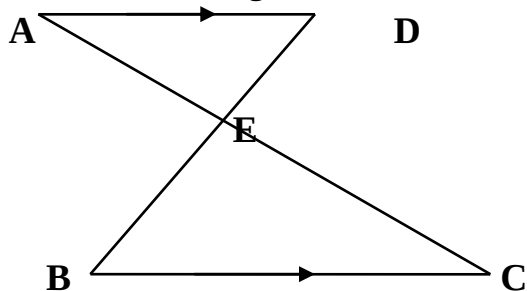
6. The figure below represents a kite ABCD, $AB = AD = 15$ cm. The diagonals BD and AC intersect at O. $AC = 30$ cm and $AO = 12$ cm. Find the area of the kite

(3mks)



7. Mrs. Musyoka has Sh. 700 in Sh. 50 notes and Sh. 100 notes only. If she has a total of 11 notes find how many notes she has of each denomination. **(3mks)**

8. In the figure below $AD \parallel BC$. AC and BD intersect at E . Given that $AE: EC = 1:5$ and $BD=12$ cm, calculate the length of DE . **(3 mks)**



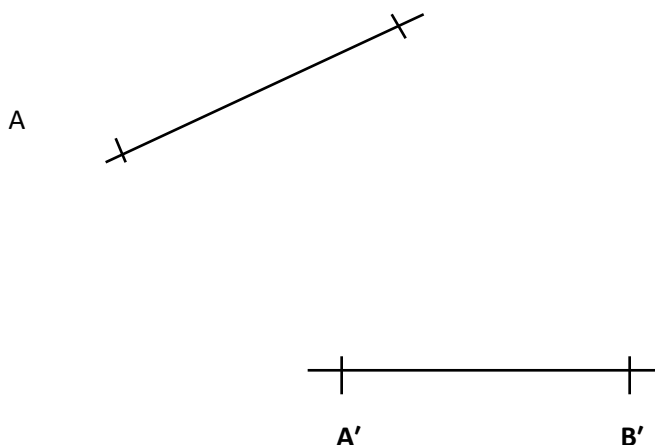
9. Given that $(3x - 35) = \cos \cos (x + 20)$. Find $x + 10$ **(3mks)**

10. Without using a mathematical tables or a calculator evaluate $\sqrt{\frac{153 \times 0.18}{0.68 \times 0.32}}$. **(3mks)**

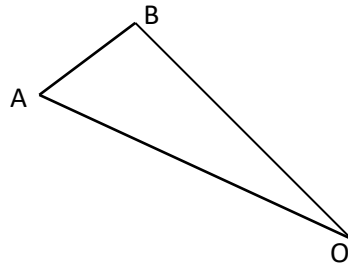
11. Three bells ring at intervals of 9 minutes, 15 minutes and 21 minutes. The bells will next ring together at 11.00pm. Find the time the bells had last rung together. **(3Mks)**

12. The surface areas of two similar bottles are 12cm^2 and 108cm^2 respectively. If the bigger one has a volume of 810cm^3 . Find the volume of the smaller one. **(3Mks)**

13. In the figure below $A'B'$ is the image of AB under rotation. By construction, find and label the centre O of the rotation. Hence, determine the angle of the rotation. **(4mks)**



- 14.** Mr. Ombogo the principal of Chiga secondary would wish to cover the floor of the new administration block using the square tiles. The floor is a rectangle of sides 12.8m by 8.4m. Find the area of each of the largest tiles which can be used to fit exactly without breaking
(3mks)
- 15.** The size of an interior angle of a regular polygon is $(3x)^\circ$ while the exterior angle is $(x + 20)^\circ$. Find the number sides of the polygon
(3Mks)
- 16.** In the figure below triangle ABO represents a part of a school badge. The badge has as symmetry of order 4 about O. Complete the figure to show the badge.
(3mks)



SECTION II (50MKS)

- 17.** The vertices of quadrilateral OPQR are O (0, 0), P (2, 0), Q (4, 2) and R (0, 3). The vertices of its image under a rotation are O' (1, -1), P'(1, -3), Q'(3, -5) and R'(4, -1).
- (a)(i) On the grid provided, draw OPQR and its image O'P'Q'R' (2mks)
- (b)(ii) By construction, determine the centre and angle of rotation. (3mks)
- (c) On the same grid as (a) (i) above, draw O''P''Q''R'', the image of O'P'Q'R' under a reflection in the line $y = x$ (3mks)
- (d) From the quadrilaterals drawn, state the pairs that are:
- (i) Directly congruent; (1mks)
 - (ii) Oppositely congruent (1mks)
- 18.** A slaughter house bought a number of goats at Sh. 2000 each and a number of bulls at Sh. 15000 each. They paid a total of Sh. 190,000. If they bought twice as many goats and three bulls less, they would have saved Sh. 5000.
- (a) If the number of goats and bulls bought were x and y respectively, write down two simplified equations involving the above information. (2mks)
- (b) Solve the two equations above and hence find the number of each type of animals bought. (4mks)
- (c) The slaughter house sold all the animals at a profit of 25% per goat and 30% per bull. Determine the total profit they made. (4Mks)

19.a) In a safari rally drivers are to follow route ABCDA. B is 250km from A on a bearing of 075° from A. C is on a bearing of 110° from A and 280km from B. The bearing of C from D is 040° and a distance of 300km. By scale drawing show the position of the point A, B, C and D. (4mks)

b) Determine

(i) The distance of A from C. (2mks)

(ii) The bearing of B from C. (1mk)

(iii) The bearing of A from D. (1mk)

(iv) The distance A from D (2mks)

20. A saleswoman is paid a commission of 20% on goods sold worth over Ksh 100,000. She is also paid a monthly salary of Ksh 12,000. In a certain month, she sold 360 handbags at Ksh 500 each.

(i) Calculate the saleswoman's earnings that month. (3 mks)

(ii) The following month, the saleswoman's monthly salary was increased by 10%.

Her total earnings that month were Ksh 17,600. Calculate the total amount of money received from the sales of handbags that month. (5mks)

(iii) The number of handbags sold that month. (2 mks)

21. Using a ruler and a pair of compasses only, draw a parallelogram ABCD, such that angle $DAB = 75^{\circ}$. Length $AB = 6.0\text{cm}$ and $BC = 4.0\text{cm}$.

From point D, drop a perpendicular to meet line AB at N. (7Mks)

(i) Measure length DN. (1Mrk)

(ii) Find the area of the parallelogram. (2Mks)

22. Two cubes of length 5cm and 7cm are melted and cast into a single cube.

Determine the:

i. Volume of the new cube (3mks)

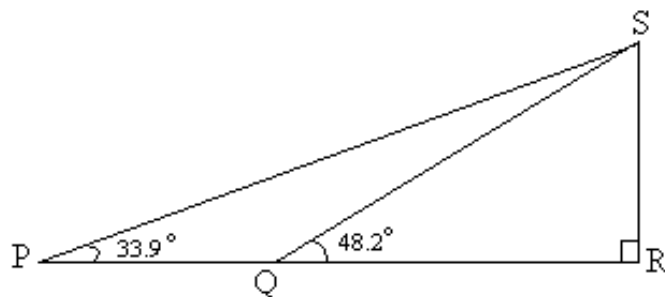
ii. Length of the new cube correct to 1 decimal place (2mks)

iii. Surface area of the new cube (2mks)

b. Suppose that it was instead cast into a cylinder of radius 3.5 cm. what would the height be

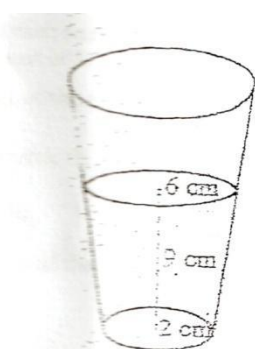
to the nearest cm? Take $\pi = \frac{22}{7}$, (3 mks)

23. The diagram below shows vertical telephone pole RS supported by wires SP and SQ pegged at points P and Q respectively on a level ground. Points P and Q are on the same straight line from the base R of the pole. The angles of elevation of S from P and Q are 33.9° and 48.2° respectively. Given that $PR = 5\text{ m}$, calculate:



- (a) The distance QR (4 mks)
- (b) The length of the wires SP and SQ (4 mks)
- (c) If the cost of the pole and labour is sh. 1600 and the cost of 1 meter of the wire is sh. 233. Find the total cost of the installation. (2 mks)

24. A glass in the form of a frustum of a cone, is represented by the diagram below. The glass contains water to a height of 9 cm. The bottom of the glass is a circle of radius 2 cm while the surface of the water is a circle of radius 6 cm.



- (a) Calculate the volume of the water in the glass. (3Mks)
- (b) When a special marble is submerged into the water in the glass, the water level rises by 1 cm.

Calculate :

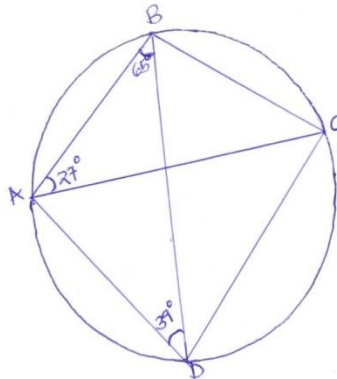
- (i) the volume of the marble (4 mks)
- (ii) the radius of the marble (3 mks)

FORM TWO HOLIDAYS SMART PASS

MATHEMATICS QUESTION PAPER NO: 09

Attempt all the questions in the spaces provided.

- Two spheres have surface areas of 36cm^2 and 49cm^2 . If the volume of the smaller sphere is 20.2cm^3 calculate the volume of the larger one. (3 mks)
- Using mathematical tables, evaluate: (4 mks)
$$\frac{5467 \times 0.3278}{\sqrt[5]{0.0894}}$$
- Simplify the expression below (3 mks)
$$\frac{6b + 2ab - 3a - a^2}{3a + 2ab - 6b - a^2}$$
- If $4^{3y-4x} = 64$ and $3^y \div 9^x = 1$, solve for x and Y. (3 mks)
- A straight line passes through point B(-2,1) and C(6,3). Find the equation of a line parallel to BC and passes through a point D(2,4). (3 mks)
- In the figure below, angle CAB = 27° , angle ABD = 65° and angle DB = 39° . Find the size of angle CBD. (3 mks)



- Common salt has a density of 2.2g/cm^3 while sand has a density of 3.2g/cm^3 . If 0.8kg of salt is mixed with 1.5kg of sand, find the density of the mixture. (3 mks)
- The volume of water in a measuring cylinder is 25.2cm^3 . After a solid metal sphere is immersed into it, the measuring cylinder reads 29.4cm^3 . Calculate the radius of the sphere. (3 mks)

9. $\cos \theta = \frac{1}{\sqrt{3}}$ where θ is an acute angle. Without using mathematical tables, find;

$$\sqrt{3}$$

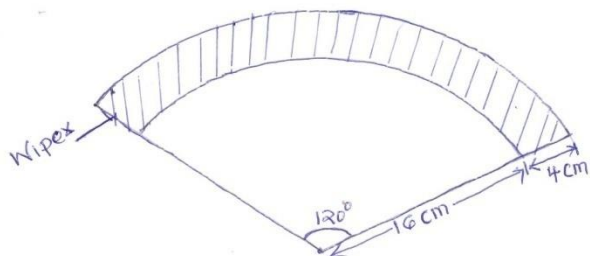
(a) $\tan (90^\circ - \theta)$

(1 mk)

(b) $\sin \theta$ in the form $\frac{\sqrt{a}}{\sqrt{b}}$ where a and b are integers.

(2 mks)

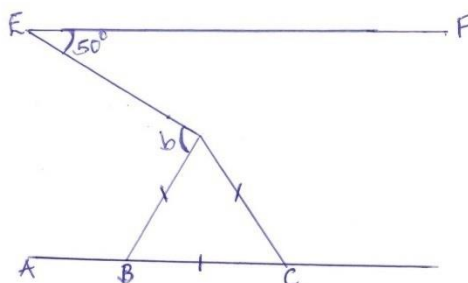
10. The shaded region in the figure below shows the area swept out on a flat windscreen by a wiper. Calculate the area of this region. (3 mks)



11. A triangular flower garden measures 10m, 15m and 24m. Find the area of the garden. (3 mks)

12. Triangle OAB is such that $OA = a$ and $OB = b$. C lies on OB such that $OC:CB = 1:1$. D lies on AB such that $AD:DB = 1:1$ and E lies on OA such that $OA:AE = 3:1$. Find CD in terms of a and b. (3 mks)

13. Giving reasons, find the angle marked b, given that EF is parallel to AC. (3 mks)



SECTION B: (30 MARKS)

14. The height (in cm) of some seedlings in a nursery are recorded in the table below.

Height (cm)	1.0 – 1.4	1.5 – 1.9	2.0 – 2.4	2.5 – 2.9
No. of seedlings	2	6	4	8

(a) State the median class

(1 mk)

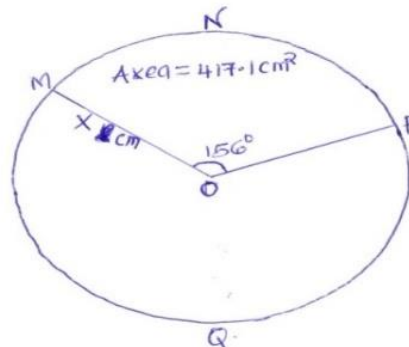
(b) Calculate the mean height of the seedlings in the nursery.

(4 mks)

(c) On the grid provided, draw a histogram and a frequency polygon to represent the information.

(5 mks)

15. On the graph paper provided, plot the triangle whose co-ordinates are A(1, 3) B(2, 1) and C(3, 4). (1 mk)
- (a) On the same grid, draw;
- (i) A'B'C' the image of ABC under an enlargement, centre (0,0), scale factor -1 and state its co-ordinates. (3 mks)
- (ii) A''B''C'' the image of A'B'C' under a rotation of $+90^\circ$ about origin. State the co-ordinates of A''B''C''. (3 mks)
- (iii) A'''B'''C''' the image of A''B''C'' under reflection in the line $Y=x$ and state its coordinates (3 mks)
16. Three warships P,Q and R leave port X at 9.00 a.m. Ship P sails at a steady speed on a bearing of 070° , 100km from port X while ship Q sails on a bearing of 320° , 80km from port X. Ship R is on a bearing of 150° from port X and due south of ship P.
- (a) Construct a scale drawing to show the position of P, Q, R and X. (4 mks)
- (b) Use the scale drawing to determine:
- (i) The distance and bearing of ship P from ship Q. (2 mks)
- (ii) The distance of ship R from port X. (2 mks)
- (iii) The distance of ship R from ship P. (2 mks)
17. (a) Use a ruler and a pair of compasses only to construct triangle ABC such that $AB = 2.5\text{cm}$, $BC = 3.5\text{cm}$ and $AC = 5.5\text{cm}$. Measure $\angle ABC$. (3 mks)
- (b) Drop a perpendicular from A to a point T on CB produced. Measure the length AT. (3 mks)
- (c) With BT as the base, calculate the area of triangle ABT and triangle ACT. (4 mks)
18. The circle in figure below has a radius Xcm and centre O. Minor arc MNP subtends an angle of 156° at the centre of the circle. Sector MNP has an area of 417.1cm^2



- (a) Taking $\pi = \frac{22}{7}$, find x. (3 mks)
- (b) The major sector MQP is obtained from the circle and folded into a cone. Find:
- (i) The radius of the cone's base. (2 mks)
- (ii) The height of the cone. (3 mks)
- (iii) The surface area of the cone. (2 mks)

FORM TWO HOLIDAYS SMART PASS
MATHEMATICS QUESTION PAPER NO: 10

1. Using logarithms tables only, evaluate.

(4Mks)

$$\sqrt[3]{\frac{849.6 \times 2.41}{3941}}$$

2. Solve the equation

(3Mks)

$$\frac{x-2}{3} - \frac{3-x}{4} = \frac{x-2}{2}$$

3. A tourist arrived in Kenya with sterling pound (€) 4680 all of which he exchanged into Kenyan shillings. He spent ksh. 52,352 while in Kenya and converted the rest of the money into US dollars. Calculate the amount he received in US dollars. The exchange rates were as follows.

(3mks)

Currency	Buying	Selling
US\$	65.20	69.10
Sterling pound €	123.40	131.80

4. Solve for the value of x

(3Mks)

$$2^{3x-2} \times 8^x = 4^{(x+1)}$$

5. A line passes through the point whose coordinates are A(1,3) and B (-2,-1) find the equation of the line

(3Mks)

6. Express $1.\dot{5}2\dot{3}$ as a fraction.

(3mks)

7. Use reciprocal and square tables to evaluate, to 4 significant figures, the expression.

(3Mks)

$$\frac{1}{0.3654} - 4.151^2$$

8. The diagonal of a square measures 44cm. Calculate the perimeter of the square.

3mrks

9. Calculate;

[3mks]

$$\frac{2.61 \times 21.83 \times 0.073}{61.72 \times 11.73}$$

10. Patrick spent $\frac{2}{5}$ of his salary on food, $\frac{1}{3}$ of the remainder on electricity and saved the rest.
- (a). What fraction of his salary did he save? (2mks)
- (b). If he spent Sh. 1,200 on food, how much did he spend on electricity? (2Mks)
11. Solve the following simultaneous equation (3Mks)
- $$5x + 6y = 28$$
- $$3x + 4y = 18$$
12. Two similar containers have base areas of 750 cm^2 and 120 cm^2 respectively. Calculate the volume of the larger container in liters given that the volume of smaller container is 400 cm^3 (3Mks)
13. If $r=5$, $s=2$, and $t=3$, find the value of; (3mks)
- $$\frac{r^2 + s^2 - t}{t^3}$$
14. A farmer has three containers of capacity 12L, 15L and 21L, calculate the capacity of:
- a) The smallest container which can be filled by each one of them an exact number of times (2Mks)
- (b) The largest container which can fill each one of them an exact number of time. (2Mks)
15. Given that $\tan x = \frac{3}{4}$, find $\cos(90-x)$ (2Mks)
16. The two arms of a pair of compass of dividers are spread so that the angle between them is 45° . Find the area of the sector formed if the length of the arm is 8.4cm. Take $\pi = \frac{22}{7}$ (3mks)

SECTION II (50 MARKS)

17. An amount of money was shared among five girls, Alice, Jane, Brenda, Mary and Ivy. Alice got $\frac{1}{8}$ of the total amount while Jane got $\frac{2}{5}$ of the remainder. The remaining amount was shared equally among Brenda, Mary and Ivy each getting ksh.490.
- a. How much did Jane get? (3mks)
- b. How much was shared among the three girls. (3mks)
- c. Alice, Jane and Ivy invested their money and earned a profit of ksh.3640. a half of the profit was left to maintain the business and the rest shared according to their investments. Calculate how much each got. (4mks)

18. A surveyor recorded the measurements of a field book using $xy=400\text{m}$ as the base line as shown below

	Y	
To E 200	320	
	210	150 To D
To F 205	170	150 To C
	50	225 To B
	X	

- a) Use a scale of 1 cm to represent 50 m to draw the map of the field. **(5Mks)**
b) Find the area of the field in hectares **(5Mks)**

- 19. (a)** On the grid provided, draw the square whose vertices are A(6,-2) B(7,-2) C(7,-1) and D(6,-1). **(2mks)**
b. On the same grid draw;
(i). A'B'C'D', the image of ABCD under an enlargement scale factor 3 centre (9,-4). **(4mks)**
(ii). A''B''C''D'', the image of A'B'C'D' under a rotation of $+90^\circ$ about (0,0). **(4mks)**

- 20.** A pail is in the shape of a container frustrum with base radius 6cm and top radius 8cm. The slant height of the pail is 30cm as shown below. The pail is full of water.
a. Calculate the volume of water in the pail. **(6mks)**
b. All the water is poured into a cylindrical container of circular radius 7cm, if the cylinder has the height of 35cm, calculate the height of the cylinder above the water level, which is not in contact with water. **(4mks)**

- 21.** The sides of a triangular plot of land are 170m, 190m and 210m, but the altitudes of the plot as well as the angles are not known. Find
a) The area of the plot in Hectares **5mks**
b) The angles of the plot **5mks**

**CALL AMOBI GROUP OF EXAMINERS @
0743 333 000 OR 0706 851 439 TO
ACQUIRE :**

