

F2 ENDYEAR ASSIGNMENT

MATHEMATICS

10+ HOLIDAY ASSESMENT PAPERS

***Dear Students, Make Maximum Utilization of limited time
Available to Attempt and Work on these Year-Round
Examination Trials.***

A Comprehensive Evaluation Analysis of F1 & F2 Syllabus Coverage.

SERIES 1

***For Marking Schemes
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MWALIMU CONSULTANCY

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 1

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

Answer All the questions in the spaces provided

1. Given $a:b = 2:3$ and $b:c = 4:8$ find $a:b:c$. (2 marks)

2. Using mathematical tables to find;
 0.0912^3 (2 marks)

3. Solve for x in the equation.
 $27^x \times 3^{(2x-2)} = 9^{(x+2)}$ (3 marks)

4. Simplify: $\frac{512^{\frac{4}{3}} \times 27^{\frac{-2}{3}}}{128^2 \times 9^{-2}}$ (4 marks)

5. Use logarithms to 4 decimal places to evaluate: (4 marks)

$$\left(\frac{0.7841 \times \sqrt{0.1356}}{84.92} \right)^{\frac{1}{3}}$$

6. Use squares, square roots and reciprocals tables only to evaluate;

$$\frac{3}{\sqrt{42.15}} + \frac{4}{(3.152)^2}$$
 (4 marks)

7. Find the equation of a line through point (5, -1) and perpendicular to line $4x + 2y - 3 = 0$.

(4 marks)

8. Four towns **P**, **Q**, **R**, and **S** are such that the town **Q** is 120 Km due to East of town **P**. Town **R** is 160km due north of town **Q**, town **S** is on a bearing of 330° from **Q** and on a bearing of 300° from **R**.

- a) Show the relative position of towns **P**, **Q**, **R**, and **S**.

Take the scale of 1cm to rep. 50km.

(5mks)

- b) Use the drawing to determine

- i) The distance **SP** in Km

(2mks)

- ii) The bearing of **S** from **P**

(1mk)

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 2

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

Answer All the questions in the spaces provided

1. Evaluate

3mks

$$-3(-5+7) \div +2(-3+-6)$$

2. Evaluate $3/8 - 1/16 + 3/4$ of $1/2 (1/3 \div 2/3)$

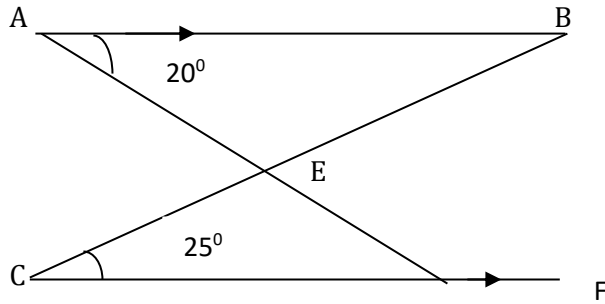
3mks

3. Express the following as a fraction

2mks

$\overset{\bullet}{0}.\overset{\bullet}{2}15$
0.215

4. In the figure below AB is parallel to CF angle BAD = 20° , angle ECD = 25° and CEB is a straight line.



Calculate Angle AEC

2mks

Angle ADF

2mks

5. Solve for x

(2mks)

$$3^{2x-3} = 27$$

6. Use tables of square roots and reciprocals table to evaluate.

3mks

$$\frac{10}{\sqrt{0.625}} + \frac{4}{\sqrt{164}}$$

7. Find the equation of a line perpendicular to $y = -2x + \frac{1}{3}$ and passing through (1,4) **3mks**

8. Njoroge boarded a bus that took off at 9.45pm on a Sunday to visit his sister in Nairobi. The bus took 8hours 20 minutes to arrive in Nairobi. After 10 minutes he took a taxi that took 42minutes to arrive at his sister's home. Find the day and time in 24hr system when Njoroge arrived at his sister's home. **(3mks)**

9. Solve the following simultaneous equations. **3mks**

$$3x + 4y = 6$$

$$4x - 6y = 11$$

10. A forex Bureau in Kenya buys and sells foreign currencies as shown below.

Buying		Selling	
Currency	Kshs	Kshs	
Chinese Yuan	12.34	12.38	
South African Rand	11.28	11.37	

A business woman from China converted 195250 chinese Yuan into Kenya shillings.

a) Calculate the amount of money in Kenya Shillings that she received. **1mk**

b) While in Kenya the business woman spent Ksh. 1.258,000 and then converted the balance into south African rand. Calculate the amount of money to nearest rand that she received. **3mks**

11. The interior angle of a regular polygon is three times the exterior angle.

i) Find the number of sides of the polygon **2mks**

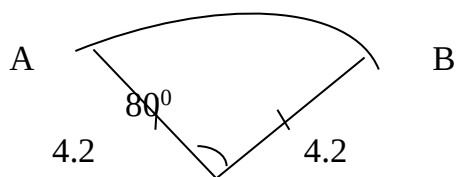
ii) Name the Polygon **1mk**

12. Factorize and then simplify **3mks**

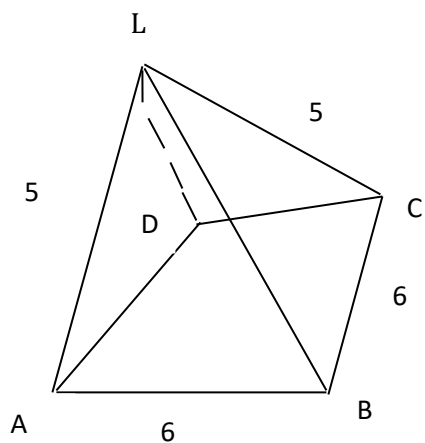
$$\frac{2bx - 2by + 3ax - 3ay}{3a + 2b}$$

13. Find the perimeter of the figure below give your answer correct to 4s.f

3mks



14. The figure below represent a pyramid with a square base



Draw the net of the solid

2mks

Calculate its surface area.

2mks

15. Use tables to evaluate

4mks

$$\frac{41.56 \times 52.3}{\sqrt{42.88}}$$

- 16.** Three alarms are programmed to sound at intervals of 25 minutes 30 minutes and 35 minutes. Given that the three alarms sound together at a particular time. Determine the time in hours, it will take for them to sound again.

3mks

- 17.** Three partners Munene, Elias and Sirma contributed Ksh 200,000, Ksh, 175,000 and Ksh. 125,000 respectively for a business. At the end of the year, the business realized a profit of Kshs. 148,000. A tax of 16% was charged on the profit made. The partners also saved 12½% of the profit after taxation. They decided to share the rest of the profit in the ration of their contribution.

a) How much money was shared?

5mks

b) How much more money did Munene receive than Sirma?

5mks

18. The vertices of a triangle are A(2, 4) B (1,2) C (5,2) On the graph paper provided below, draw:

a) Triangle ABC **(2mks)**

b) Triangle A'B'C is the image of ABC under a reflection in the line $Y = X$ **(3mks)**

c) Triangle A''B''C'' is the image of A'B'C' under a reflection in the line $X=0$ (y-axis) **(2mks)**

d) Triangle A''' B''' C''' is the image of A''B''C'' under a rotation of $+90^\circ$ about centre (0,0) **(3mks)**

19. A piece of land is in the shape of a quadrilateral ABCD. Point B is 450m east of A. Point D is 500m from A on a bearing of 310° . Point C is 700m from D on a bearing of 080° .

a. Using 1cm to represent 100m, make a scale drawing of the piece of land **(4mks)**

b. Find;

(i) The perimeter of the piece of land **(3mks)**

(ii) The length of AC **(1mk)**

(iii) The bearing of A from C **(2mks)**

20. Using a pair of compasses and a ruler only construct

a. Triangle XYZ in which $XY=6\text{cm}$, $YZ=5\text{cm}$ and $\angle XYZ=60^\circ$ **(3mks)**

b. A circle that touches all the three sides of a triangle. Measure the radius of the circle. **(3mks)**

c. Drop a perpendicular from Z to meet XY at N. Measure the height **(2mks)**

d. Calculate the area of the triangle **(2mks)**

21. a) Express as a single fraction in its simplest form **(3mks)**

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

b) Given that P: Q=1:4 and Q:R = 3:2 find the ratio R: Q:R **(2mks)**

c. A closed cylindrical container has a diameter of 7cm and a height of 4.9cm find the area of the material used to make the cylinder **(3mks)**

d. Evaluate **(2mks)**

$$\sqrt[3]{27X^3Y^9}$$

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 3

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION I:

Answer all questions in this section (40 marks)

1. Simplify $\frac{5}{6} \text{ of } \left(4\frac{1}{3} - 3\frac{5}{6} \right)$ without using a calculator. (3marks)

$$\frac{5}{12} \times \frac{3}{25} \div 2\frac{1}{3}$$

2. Evaluate: $\frac{44 - (-28)}{12 \times -2} - \frac{8^2 \times -12 - 24}{96 \div -12 \times 9}$ (3marks)

3. Reduce the following expression into a single fraction.

$$\frac{4x - 5}{2} - \frac{2x - 1}{6} \quad (3 \text{ marks})$$

4. Simplify: $\frac{512^{\frac{4}{3}} \times 27^{\frac{-2}{3}}}{128^2 \times 9^{-2}}$ (3 marks)

5. The size of an interior angle of a regular polygon is $3x^\circ$ while exterior is $(x - 20)^\circ$. Find the number of sides of the polygon. (3marks)

6. All prime numbers less than ten are arranged in ascending order to form a number.

a) Write down the number formed. (1 mark)

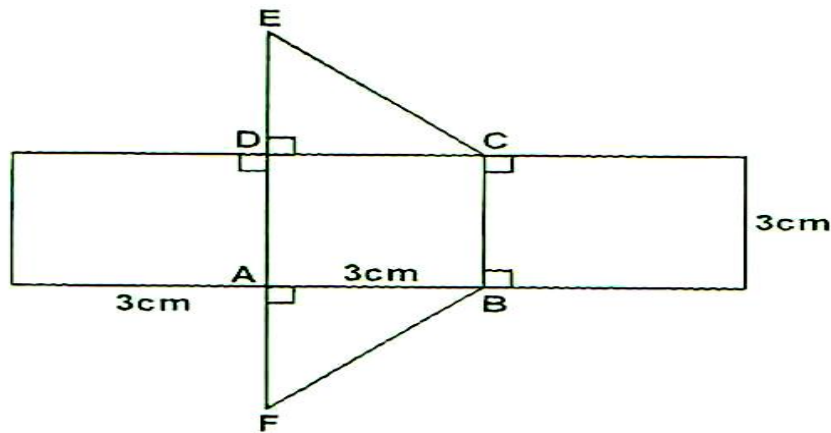
b) Express the number in (a) above in expanded form. (1mark)

7. Use the tables of reciprocals and square roots to evaluate.

$\frac{0.1}{0.0351} + \sqrt{0.498}$ (4 marks)

8. The G.C.D. and L.C.M. of three numbers are 3 and 1008 respectively. If two of the numbers are 48 and 72, find the least possible value of the third number. **(3marks)**
9. The ratio of Mueni's earning to Kilonzo's earning is 5:3. If Mueni's earning is increased by 17% her new figure becomes Kshs. 18,000. Find the corresponding percentage change in Kilonzi's earnings if the sum of their new earnings is Kshs. 24,600. **(3 marks)**
10. A straight line through the points A (2, 1) and B (4, m) is perpendicular to the line whose equation is $3y = 5 - 2x$. Determine the value of m. **(3marks)**
11. Use logarithms to evaluate, correct to 4 decimal places. $\sqrt[4]{\frac{3.45 + 2.62}{786 \times 0.0007}}$ **(4marks)**

12. The figure below shows a net of a solid which is not drawn to scale.



Sketch the solid ABCDEF with ABCD as the base.

(2 marks)

13. A number n is such that when divided by 3, 7, 11 or 13, the remainder is always one.

Find the number n .

(3marks)

SECTION II: (30 MARKS)

Answer any 3 questions in this section

14. A line T, which passes through the points $(-3, -5)$ and $(3, -6)$ and is perpendicular to a line L at the point $(-2, -2)$.

a) Find the equation of L. **(3 marks)**

b) Find the equation of line T in the form $ax + by = c$ where a, b and c are constants. **(2 marks)**

c) Given that another line Q is parallel to T and passes through $(1, -3)$ find x and y intercepts of Q. **(2 marks)**

d) Find the points of intersection of L and Q. **(3 marks)**

15. Three warships A, B and C are at sea such that ship B is 500km on a bearing N30E from ship A. Ship C is 700km from ship B on a bearing of 120° . An enemy ship D is sighted 800km due south of ship B.

a) Taking a scale of 1cm to represent 100km, locate the positions of ships A, B, C and D. **(4 marks)**

b) Find the bearing of:

i) Ship A from D. **(1 mark)**

ii) Ship D from C. **(1 mark)**

c) Use scale drawing to determine the distance between

i) D and A. **(1 mark)**

ii) C and D. **(1 mark)**

d) Measure angle DAC and angle BCD **(2 marks)**

- 16.** A surveyor recorded the measurements of a field in a field book as shown below. Using line AB= 260m as the baseline:

	B	
	170	
E50	140	
	110	C60
F80	100	
	30	B50
	A	

- a)** Draw the map of the field. **(4marks)**

- b)** Find the area of the field in hectares. **(6marks)**

- 17.a)** Atyang bought 3 blouses and 2 skirts for a total of Ksh.500. Awino bought 4 blouses and 5 skirts for a total of Ksh.900. Find the cost of 1 blouse and 3 skirts. **(6marks)**

- c)** A two digit number is such that the difference between the ones digit and the tens digit is 2. If the two digits are interchanged, the sum of the new and the original number is 132. Find the original number. **(4 marks)**

- 4) Given that $x=2y$ and $3y=5z$. find the ratio $x:y:z$ hence or otherwise find the amount of money Ali got if Ali, Ben and Chris shared Kshs. 36000 in the ratio $x:y:z$ respectively. **(4mks)**
- 5) A plane leaves town A for town B at 0540 hours. If the journey takes 6.5 hours, at what time does the plane reach its destination? **(3mks)**
- 6) A cylindrical solid metal is 3m long and has a mass of 4kg. if its density is 5.6g/cm^3 , find the radius of its end. (take $\pi=3.142$) **(4mks)**
- 7) Express the number 9000 as a product of its prime factors. **(1mk)**

b) Find the value of P if the number 9000P is a perfect cube. (2mks)

8) Find the value of T given that $T = \frac{a^2 + b^2 + c^2}{a^2 + b^2 + c^2}$ and $a=2$, $b=-1$, and $c=-3$ (3mks)

9) A shop keeper sells a shirt for Kshs. 350 thereby making a profit of 40%. Calculate the buying price of the shirt. (3mks)

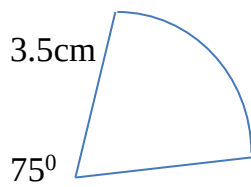
10) The GCD of three numbers is 45 and their LCM is 18900. Two of the numbers are 675 and 540.

Find the other possible numbers.

(2mks)

11) Find the perimeter of the figure below. (Take $\pi=22/7$).

(3mks)



12) John is twice as old as his friend Peter. Peter is 5 years older than Alice. In 5 years John will be three times as old as Alice. How old is Peter now?

(3mks)

13) Ondieki had travelled from Texas to Kenya and arrived with U\$17500 on 12/2/2013. On arrival he changed the dollars into Kenya shillings and immediately used Kshs. 850,000. Later on 15/2/2013 he had some immediate use of £3600 and therefore changed all the money he had into sterling pounds. Finally on 18/2/2013 he converted what remained to Kenya shillings.

Buying

Selling

Kshs.Kshs.

12/2/2013 U\$ 82.36

85.74

15/2/2013 £ 110.14

118.26

18/2/2013 £ 112.64

119.56

How much did he remain with in Kenya shillings?

(3mks)

14) The sum of the digits of a two digits number is 13. If the digits are reversed the number decrease by 27. Find the number. **(3mks)**

15) A man walks to work at 16km/hr and back home at 5km/hr. find the distance from his work place if the whole journey takes him 2 hours 12 minutes. **(3mks)**

16) If $3 = -$, find the ratio

(3mks)

SECTION II (50 MARKS)

ANSWER ANY FIVE QUESTIONS

- 17) (a) Using a ruler and a pair of compasses only construct a triangle ABC such that $AB=4\text{cm}$, $BC=5\text{cm}$ and $\angle ABC=120^\circ$. Measure AC. **(4mks)**

- b) On the diagram, construct a circle which passes through the vertices of the triangle ABC. Measure the shortest distance from the centre of the circle to line BC. **(4mks)**

- c) Measure the radius of the circle. **(2mks)**

- 18)** Two aero planes P and Q leave an airport at the same time. P flies on a bearing of 240° at 900km/h while Q flies due East at 750km/h.

Using a scale drawing of 1cm to represent 100km, make a scale drawing to show the positions of the planes after 40 minutes. **(5mks)**

Determine the bearing of
P from Q

(2mks)

Q from P

(2mks)

Find the shortest distance between plane P and plane Q after 40 minutes.

(1mk)

19) A construction company requires to transport 144 tonnes of stones to sites A and B. the company pays Kshs. 24000 to transport 48 tonnes of stone for every 28 km. kimani transported 96 tonnes to a site A, 49km away.

a) Find how much he paid. **(3mks)**

b) Kimani spends Kshs. 3000 to transport every 8 stones to the site. Calculate his total profit. **(4mks)**

c) Achieng transported the remaining stones to sites B, 84km away. If she made 44% profit, find her transport cost. **(3mks)**

- 20)** A tank has two inlet taps P and Q and an outlet tap R. when empty, the tank can be filled by tap P in $4\frac{1}{2}$ hours and by tap Q in 3 hours. When full the tap can be emptied in 2 hours by tap R. The tank is initially empty, find how long it would take to fill up the tank;
If tap R is closed and taps P and Q are opened at the same time. **(3mks)**

If all the three taps are opened at the same time. **(3mks)**

Find the fraction of the tank that would be filled by 9.00am if initially the tank is empty and the taps are opened as follows. **(4mks)**

P at 8.00 am R at 9.00 am
Q at 8.45 am

21) a) Plot the graphs of the equations $y=2x + 3$ and $y=-x + 3$. (Graph Attached) **(4mks)**

Use your graph to find the coordinates of the point of intersection of the two lines. **(2mks)**

Hence, state the solutions to the equations $y=2x + 3$ and $y=-x + 3$. **(2mks)**

Find the angle made by the line $y=2x+3$ and the x-axis. **(2mks)**

- 22)** A coffee farm was surveyed and its measurements entered in a field book as shown below. (Take XY=400m as the baseline.)

360 80 to Q
to R 80 280
to S 160 200
40 200 to P

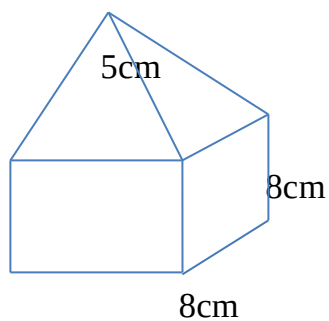
Y

X

- a)** Using a scale of 1cm to represent 40m, draw the map of the coffee farm. **(3mks)**

- b)** Find the area of the coffee farm in hectares. **(7mks)**

23) A model of a tent consists of cube and a pyramid on a square base as shown below.



a) Draw accurately the net of the model.

(2mks)

b) Use the net to calculate the total surface area of the model.

(4mks)

c) If the ratio of the area of the model to the area of the actual is 1:10000, find the area of the material required to make the tent (floor area inclusive) in m^2 .

(4mks)

- 24)** a) Water and alcohol are 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 0.8g/cm^3 . **(4mks)**

40 cm^3 of water is poured into an empty measuring cylinder. A stone of mass 129g is put into the cylinder. If the density of the mixture of the stone is 8.6g/cm^3 , find the new reading of the cylinder. **(4mks)**

Convert 8.6g/cm^3 into kg/m^3 . **(2mks)**

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 5

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION I (50 MARKS)

Answer all the questions from this section

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

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

(3marks)

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

(3marks)

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.

(3marks)

4. Use logarithm to solve tables to evaluate

(4 marks)

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

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

(3 marks)

6. Solve for x in the equation

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

(3 marks)

7. Use reciprocal table to work out.

$$\frac{7}{0.5283} + \frac{0.5}{3.735}$$

(4marks)

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. **(3marks)**

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)
US Dollar	77.25	77.44
sterling pound	119.93	120

- a) Calculate the amount of money in ksh, the Company received. **(1mark)**

- 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.
(2marks)

10. A company saleslady sold goods worth sh. 1,600,000. From this sale she earned a commission of sh. 40,000.

- (i) Calculate the rate of Commission. **(1mark)**

- (ii) 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. **(2marks)**

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 . **(3marks)**

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 $\pi = \frac{22}{7}$) **(3marks)**

13. Simplify completely by factorization. **(3 marks)**

$$\frac{ax + bx + ya + yb}{ma + mb + na + nb}$$

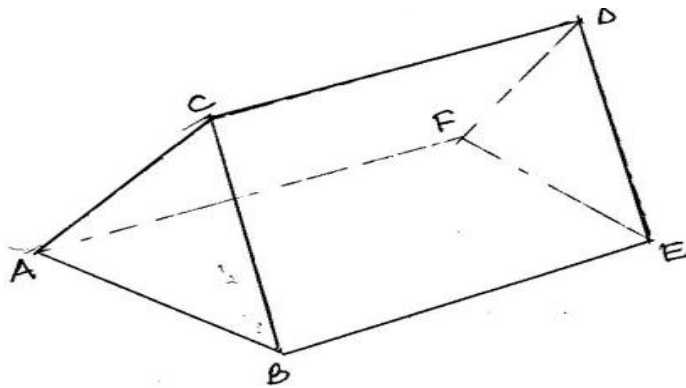
14. Evaluate: $\frac{-12 \div (-3) \times 4 - (-20)}{-6 \times 6 \div 3 + (-6)}$ **(3 marks)**

15. Use the tables of cubes to evaluate:

(3 marks)

$$(3.461)^3 - \sqrt[3]{2809}$$

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

(3marks)

SECTION II (50 MARKS)

Answer five questions only from this section

17. A line L passes through point $(-2,3)$ and $(-1, 6)$ and is perpendicular to a line P at $(-1, 6)$

a) Find the equation of L. **(3marks)**

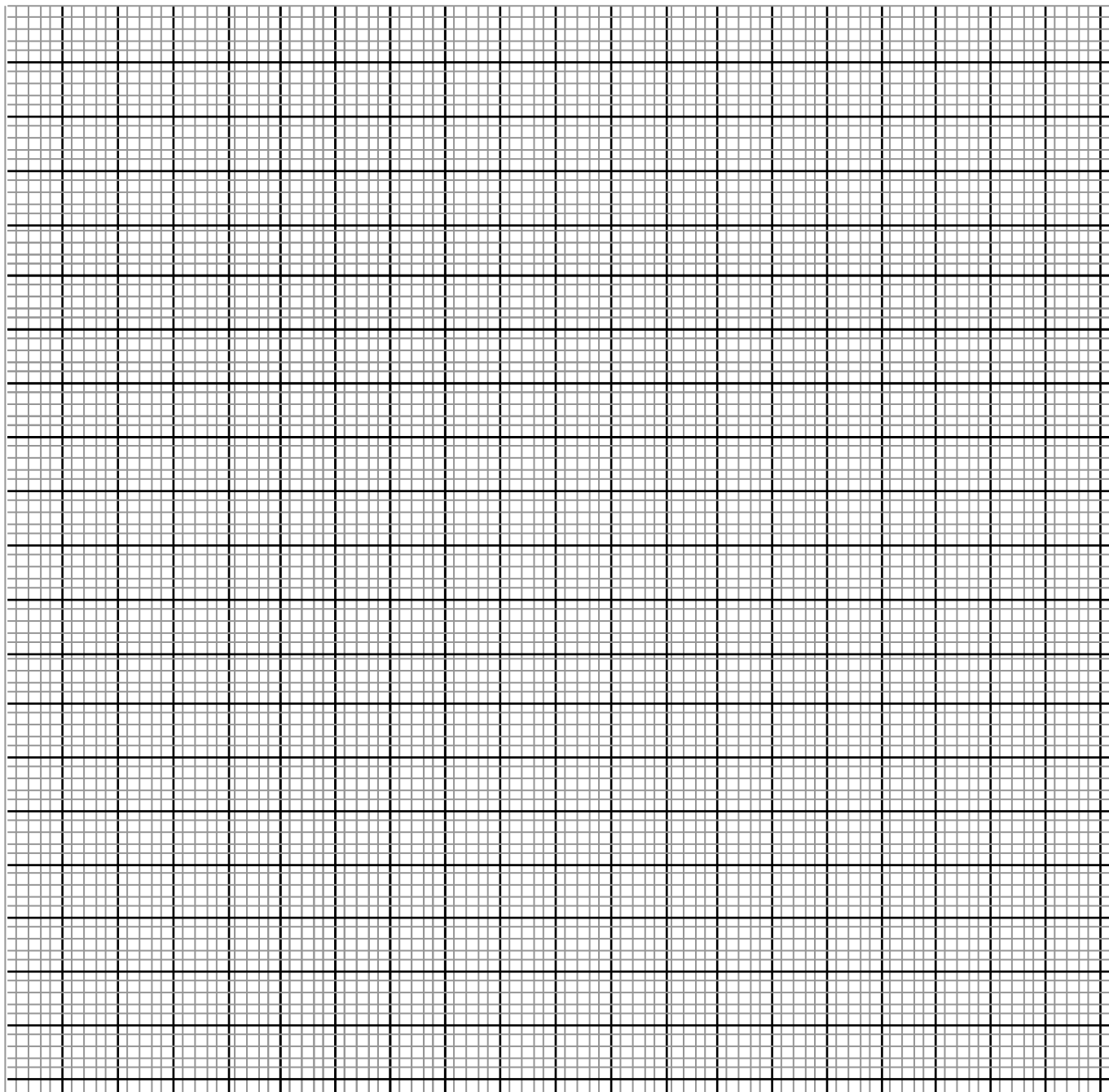
b) Find the equation of P in the form $ax + by = c$. **(3marks)**

c) Given that another line Q is parallel L and passes through point $(1, 2)$, find the x and the y intercepts of line Q. **(2marks)**

d) Find the point of intersection of lines P and Q. **(2marks)**

- 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 **(2marks)**



- (ii) Describe fully a single transformation which maps triangle PQR onto triangle $P^1Q^1R^1$. **(1mark)**

- (b) (i) On the same plane, draw triangle $P^{11}Q^{11}R^{11}$ the image of PQR, under reflection on line $y + x = 0$ **(2marks)**
- (ii) Describe fully a single transformation which maps triangle $P^{11}Q^{11}R^{11}$ onto triangle $P^1Q^1R^1$. **(1mark)**
- (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 **(2marks)**
- (d) State all pairs of triangles that are oppositely congruent **(2marks)**

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 marks)**

(ii) The price at which the businessman had bought the car **(2marks)**

b) If the businessman had sold the same car without giving a discount. Calculate the percentage profit he would have made. **(3 marks)**

c) In the month of December the businessman sold 20 vehicles without giving a discount. Determine the total profit he received from the sale. **(2 marks)**

- 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.
Using a scale of 1cm to represent 20km, make an accurate scale drawing to show the relative positions of the towns. **(4 marks)**

Find:

Determine the bearing of C from A (1mark)

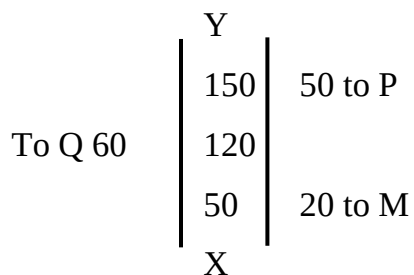
Determine the distance of C from D (2 marks)

Determine the bearing of B from D (1 mark)

Determine the distance of A from D (2 marks)

21. The measurements (in metres) of a field were given in a field note book as follows:

Base line XY = 240m



(a) Using a scale of 1 cm to represent 20 m, draw an accurate map of the farm. **(4 marks)**

(b) **Find** the area of the field in hectares. **(4marks)**

(c) If the farm is on sale at sh. 900 000 per hectare, find how much the farm costs. **(2 marks)**

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 marks)**

(b) Measure the length of:

(i) Line BC **(1 mark)**

(ii) Line BC **(1 mark)**

(c) Drop a perpendicular from C to meet line AB extended at M. **(2 marks)**

(d) Measure the length of line CM **(1 mark)**

(e) Calculate the area of triangle ABC **(2 marks)**

23. A hollow metal pipe whose internal and external and internal 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 marks)**

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 marks)**

c) Given that the density of the metal above is 4.2g/cm^3 , calculate the mass of the solid cylinder in kilograms. **(2 marks)**

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 marks)**

(b) Determine the amount of money contributed by Kamau **(2 marks)**

(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

d) Amount of money retained for running the business. **(2 marks)**

e) The amount of money set aside for emergencies. **(2 marks)**

f) The amount of received by Gachui **(2 marks)**

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 6

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION I: (40 MARKS)

Answer all questions in this section.

1. Without using a calculator, evaluate;- (3mks)

$$\frac{2\frac{1}{5} + \frac{2}{3} \text{ of } 3\frac{3}{4} - 4\frac{1}{6}}{1\frac{1}{4} - 2\frac{2}{5} \div 1\frac{1}{3} + 3\frac{3}{4}}$$

2. Given that $4.35 = 4\frac{a}{b}$ as a mixed fraction, find the difference between a and b . (3mks)

3. Point $P^1(5,6)$ is the image of point $P(-1,-4)$ under a rotation of 180° about point $Q(x,y)$. Find the co-ordinates (x,y) (2mks)

Solve the inequality, illustrate your solution on a number line and state the integral values of x.

(3mks)

$$4 - 3x < x + 12 \leq \frac{-3x + 29}{2}$$

4. A tourist arrived in Kenya with US dollars 3,000 which he exchanged into Kenya shillings. He spent Kshs. 75000 on hotel accommodation and Kshs. 42500 on travel and other expenses. He changed the remaining money into sterling pounds. Calculate how much money in sterling pounds that he remained with using the following rates. (Leave your answer to the nearest Sterling Pound.)

Buying (Kshs) Selling(Kshs)

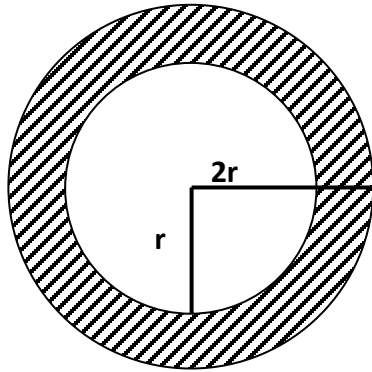
Us dollars (\$)	78.45	78.95	
Sterling Pound (£)	120.27	121.04	(3mks)

5. Solve for x in the equation:

(3mks)

$$\left(\frac{1}{2}\right)^x \times \left(\frac{1}{8}\right)^{1-x} = 32$$

6. The figure below show two concentric circles. If the ratio of their radii is 1:2 and the area of the shaded region is 75 square units, calculate the area of the inner circle. **(4mks)**



7. The length of a rectangle is $(3x+1)$ cm. its width is 3cm shorter than its length. Given that the area of a rectangle is 28cm^2 , find its length. **(4mks)**
8. Two men each working for 8 hours a day can cultivate an acre of land in 4 days. How long would 6 men each working in 4 hours a day take to cultivate 4 acres? **(3mks)**

9. A farmer has goats and chicken in his farm. The total number of heads is 20 and the total number of legs for the animals is 72. Determine the number of goats and chicken. **(4mks)**

10. Use logarithm table to evaluate;

(4mks)

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

11. $16^{x^2} = 8^{4x-3}$

(4mks)

SECTION II(30MARKS)

12. (a) Solve the equation;

(4mks)

$$\frac{x + 3}{24} = \frac{1}{x - 2}$$

(b) The length of a floor of a rectangular hall is 9m more than its width. The area of the floor is 136m².

iii) Calculate the perimeter of the floor.

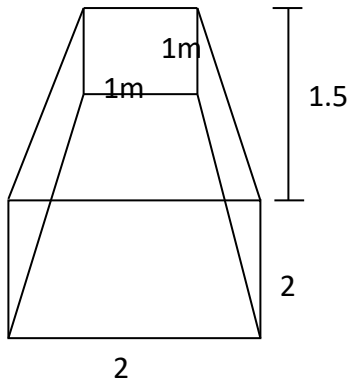
(4mks)

iv) A rectangular carpet is placed on the floor of the hall leaving an area of 64m². If the length of the carpet is twice its width, determine the width of the carpet.

(2mks)

13. Calculate the surface area of the figure below:

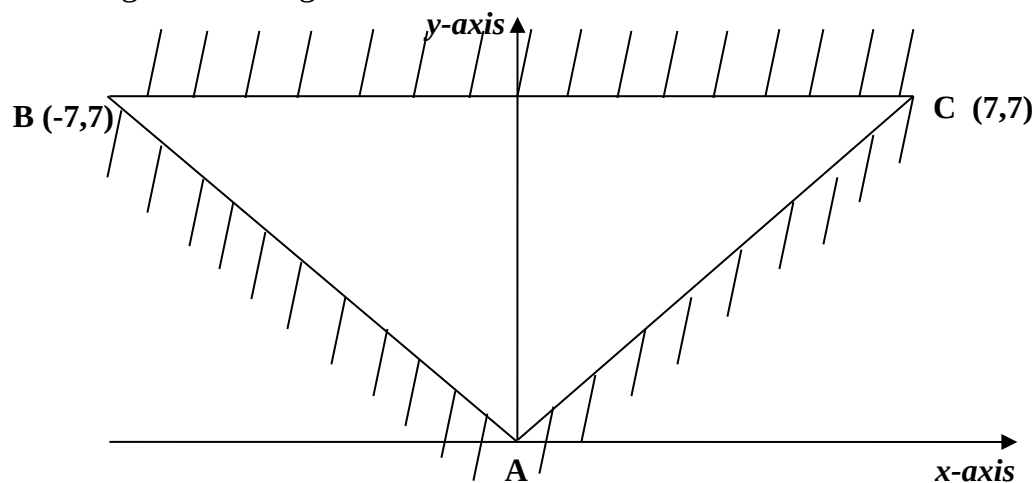
(10mks)



14. (a) A matatu travelling at 99km/h passes a checkpoint at 9.00 am. A police patrol car travelling at 132km/h in the same direction passes through the police check point at 9.15 a.m. If the matatu and the police patrol car continue at their uniform speeds, calculate at what time the police car will overtake the matatu. **(6mks)**

- (b) Two passenger trains A and B which are 240m apart and travelling at 164km/h and 88km/h respectively approach one another on a straight railway line. Train A is 150m long and train B is 100m long. Determine the time in seconds that elapses before the two trains completely pass each other. **(4mks)**

15. The unshaded region in the figure ABC is reflected in the x-axis.



Write down the co-ordinates of the image of triangle ABC after reflection. **(3mks)**

Write down the inequalities which satisfy the un-shaded region above. **(6mks)**

Find the area of the un-shaded region above. **(1mk)**

16. (a) The cost of carpeting a rectangular room is shs. 980. The carpet costs shs. 35 per square metre. Find the area of the room. **(2mks)**

(b) The owner decided to use a smaller carpet than the size of the room by leaving a margin of 0.5m all around the carpet. By so doing he saves shs. 350. Find the length of the room. **(8mks)**

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 7

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION 1(50 MARKS)

1. Evaluate $\frac{-8 \div 2 + 12 \times 9 - 4 \times 6}{56 \div 7 \times 2}$ [3 Marks]

2. A matatu travelling at 56 Km/h take $2\frac{1}{2}$ hours to move from town A to town B.
Find the distance between towns A and B. [2 Marks]

3. Determine the gradient and the co-ordinates of the x and y intercepts of the line whose equation is $2y + 3x = 1$ [3 Marks]

4. Find the correct 3s.f the value of

$$\frac{1}{6.43} + \frac{2}{3.56} + \frac{1}{8.51}$$

[2 Marks]

5. Without using mathematical tables, evaluate

[3 Marks]

$$27^{2/3} \times \left(\frac{81}{16}\right)^{-1/4}$$

6. The diagonals of a rhombus measure 9.2 cm and 7.5 cm respectively. Calculate the area of the rhombus

[2 Marks]

7. A man is three times as old as his daughter. In twelve years time he will be twice as old as his daughter. Find their present age.

[3 Marks]

8. Use logarithm tables to evaluate

[4 Marks]

$$\sqrt[4]{\frac{37^2 \times 0.0168}{75.63}}$$

9. An artisan has 63Kg of metal of density 7000Kg/m³. He intends to use it to make a rectangular pipe with external dimension 12 cm by 15 cm and internal dimension 10 cm by 12 cm. calculate the length of the pipe in metres.

[4 Marks]

10. Determine the equation of a line that passes through (-2,5) and is parallel to the line whose equation is $5y + 2x = 10$

[4 Marks]

11. Use the elimination method to solve the simultaneous equations

$$2x + 3y = 1$$

[4 Marks]

$$3x = 2y + 8$$

12. A trader sold a wrist watch for sh. 3,150 after giving a 10% discount. Find the marked price of the watch.

[2 Marks]

13. Express as a fraction in its lowest form

[3 Marks]

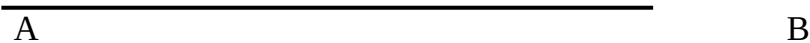
$$3.\overline{71}$$

14. Seven people can build five huts in 30 days. Find the number of people working at the same rate that will build nine similar huts in 27 days.

[3 Marks]

- 15.** The size of each interior angle of a regular polygon is five times the size of the exterior angle.
Find the number of sides of the polygon. **[3 Marks]**

- 16.** Line AB below shows a side of triangle ABC. $BC = 5\text{cm}$ and $\angle ABC = 60^\circ$



- a.** Using a ruler and compass only, complete the triangle ABC. **[2 Marks]**
- b.** From C construct a perpendicular to meet line AB at point N. Measure length CN in centimetres **[2 Marks]**
- c.** Determine the area of triangle ABC **[1 Mark]**

SECTION B [50 MARKS]

17. Complete the tables below for the equations of the lines $y = -\frac{3}{4}x + 4$ and $y = -3 + 2x$

a. $y = -\frac{3}{4}x + 4$

x	-2	0	2
y		4	

$$y = -3 + 2x$$

x	-2	0	2
y		-3	

b. using one big square to represent 1 unit on y – axis and 2 big squares to represent 1 unit on x – axis, draw the lines $y = -\frac{3}{4}x + 4$ and $y = -3 + 2x$ [5 Marks]

c. use your graphs to solve the simultaneous equations

$$3x + 2y = 8$$

$$2x - y = 3$$

[1 Mark]

18. a school hall measure 10m long, 7m wide and 4m high. All its inside walls and ceiling are painted.

Calculate,

- i.** the total surface area painted
- ii.** the cost of painting at 200/= per square metre.

[10 Marks]

- 19.** a bird flies from tree P to another tree Q which is 50m on a bearing of 030° from P. from Q the bird flies 80m due west to another tree R and finally flies due south to another tree S which is on a bearing of 120° from P.
- a.** using the scale 1cm = 10m, construct an accurate scale drawing showing the positions of P,Q,R, and S **[5 Marks]**

- b.** by measurement from your scale drawing determine;
- i.** the distance and bearing of R from Q **[2 Marks]**
 - ii.** the distance and bearing of S from R **[2 Marks]**
 - iii.** the distance of S from P **[1 Mark]**

- 20.** a. On a Cartesian plane plot and draw the triangle ABC, A(1,2), B (1,6), C (5,5) [2 Marks]
- b. Draw the image of triangle ABC after reflection on the line $y = x$
- c. Draw $\triangle A''B''C''$ the image of $\triangle ABC$ after reflection along y – axis [2 Marks]
- d. Draw $\triangle A''B''C''$ the image of $\triangle A'B'C'$ after rotation through -180° about the origin [2 Marks]
- e. Determine the mirror line that makes $\triangle A'''B'''C'''$ the image of triangle ABC [2 Marks]

21. The table shows recordings from surveyors' field book.

B

	280	
E25	200	
	160	B 80
C70	120	
	100	D 50

A

a. Draw a sketch diagram from the data in the field book

[2 Marks]

b. Given that the recordings are in metres, determine the area of the land in hectares.

[8 Marks]

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 8

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION I (50 MARKS)

Answer ALL the questions in this section in the spaces provided.

1) Evaluate

(3 Marks)

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

2) Work out the following giving your answer as a mixed number in its simplest form.

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

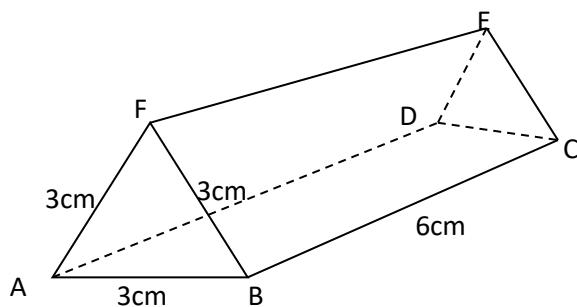
(3 Marks)

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

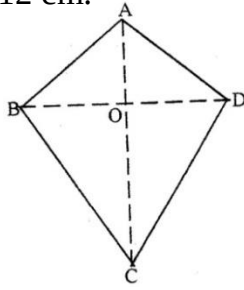
- 4) Use logarithms to evaluate. **(3 Marks)**

$$\sqrt[4]{\frac{3.521 \times 0.8921}{795.3}}$$

- 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. **(3 Marks)**



- 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.

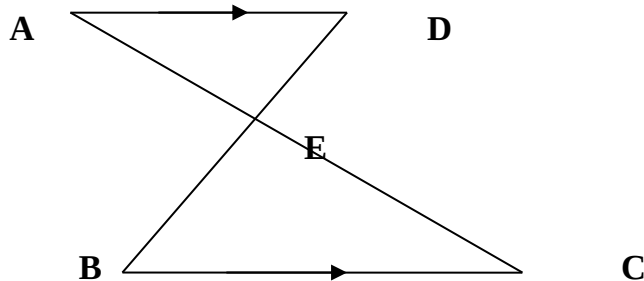


Find the area of the **kite**

(3mks)

- 7) Mrs. Kangogo 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)**

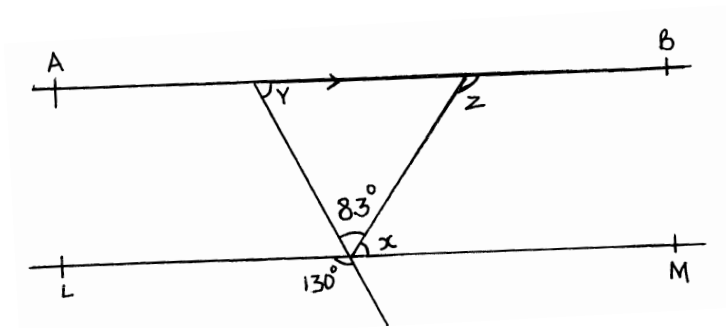
- 8) In the figure below $AD \parallel BC$. AC and BD intersect at E. Given that $AE: EC = 1:5$ and $BD = 12$ cm, calculate the length of DE. **(3 marks)**



9) Given that $\sin (x + 60)^{\circ} = \cos (2x)$, find $\tan (x + 60)^{\circ}$ **(3marks)**

10) A salesman gets a commission of 2.4% on sales up to Sh. 100,000. He gets additional commission of 1.5% on sales above this. Calculate the commission he gets for sales worth Sh. 280,000. **(3 Marks)**

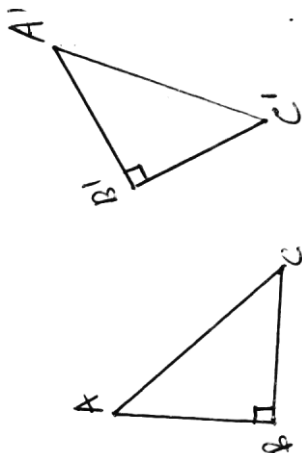
11) In the figure below, lines AB and LM are parallel.



Find the values of the angles marked x, y and z. **(3mks)**

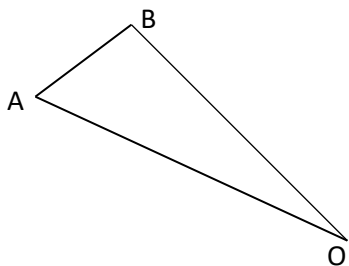
12) The surface areas of two similar bottles are 12cm^2 and 108cm^2 respectively. If the bigger one has a volume of 810cm^3 . Find the volume of the smaller one. **(3 Marks)**

- 13) In the figure below, triangle $A'B'C'$ is the image of triangle ABC under a rotation, centre O .



By construction, find and label the centre O of the rotation. Hence, determine the angle of the rotation. **(3mks)**

14. 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)**



15. A rectangular tank of base 2.4 m by 2.8 m and a height of 3 m contain 3,600 liters of water initially. Water flows into the tank at the rate of 0.5 litres per second. Calculate the time in hours and minutes, required to fill the tank **(4 marks)**
16. The exterior angle of a regular polygon is equal to one-third of the interior angle. Calculate the number of sides of the polygon and give its name. **(4mks)**

SECTION II (50MKS)

Answer 5 questions only in this section

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).

(i) On the grid provided, draw OPQR and its image O'P'Q'R' (2marks)

(ii) By construction, determine the centre and angle of rotation. (3marks)

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 $y = x$ (3marks)

From the quadrilaterals drawn, state the pairs that are:

Directly congruent; (1marks)

Oppositely congruent (1marks)

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) Find the number of each type of animals bought.

(6 Marks)

(b) The slaughter house sold all the animals at a profit of 25% per goat and 30% per bull. Determine the total profit they made.

(4 Marks)

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)

Determine

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

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

(iii) The distance and bearing of A from D. **(3mks)**

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

The following month, the saleswoman's monthly salary was increased by 10%. Her total earnings that month were Ksh 17,600.

Calculate:

a. The total amount of money received from the sales of handbags that month. **(5mks)**

b. 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° . Length AB = 6.0cm and BC = 4.0cm from point D, drop a perpendicular to meet line AB at N.
- (7 Marks)**

(i) Measure length DN. **(1 Mark)**

(ii) Find the area of the parallelogram. **(2 Marks)**

22. United Millers imports wheat from U.S.A at initial cost of 350 dollar per tone. The shipping costs and customs duty are then charged as 25% and 15% respectively. When the wheat reached Mombasa, an 8% of the initial cost is incurred to transport it to Kisumu.

(a) Given that 1US dollar = Ksh82.40, calculate the total cost of importing 5 tonnes of wheat in Ksh.

(5 marks)

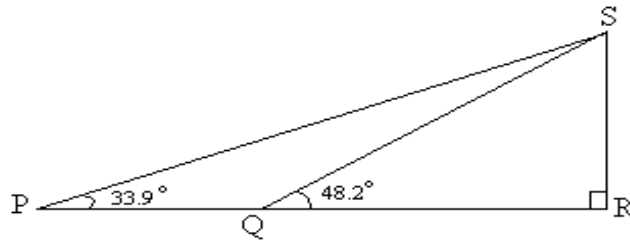
(b) The united millers intend to make a profit of 25%. Giving your answer to the nearest ten cents, calculate the price at which a 2 kg packet of wheat should be sold.

(3 marks)

c. How much profit shall the company realize from the sale of 1 tonne of wheat?

(2 marks)

23. The diagram 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 $PR = 5$ m, calculate:



The distance QR

(4 marks)

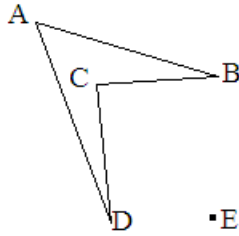
The length of the wires SP and SQ

(4 marks)

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 marks)

- 24. a)** Construct the image of quadrilateral ABCD under enlargement scale factor -2 center of enlargement E. **(4mks)**



A model of a freezer has a rectangular shutter measuring 4cm by 2cm. The area of the actual shutter of the freezer is 0.72m^2 .

- i) Given that the actual freezer is 2.7m long, calculate the length of the model in centimeters.

(3mks)

- ii) Calculate the volume in m^3 of the actual freezer if the models volume is 12cm^3

(3mks)

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 9

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION I (50 MARKS)

Answer ALL the questions in this section in the spaces provided.

1. Evaluate

(3 Marks)

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

2. Evaluate without using a calculator.

(3 Marks)

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

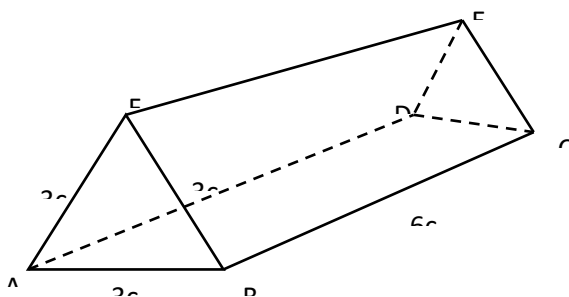
3. Use logarithms to evaluate.

(4 Marks)

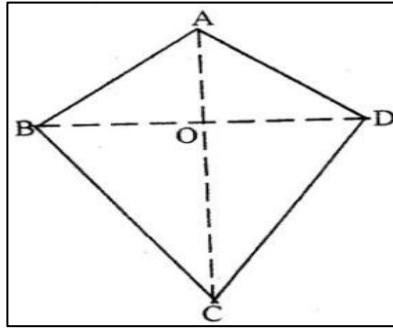
$$\sqrt[4]{\frac{43.52 \times 0.08792}{785.3}}$$

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. (3 Marks)

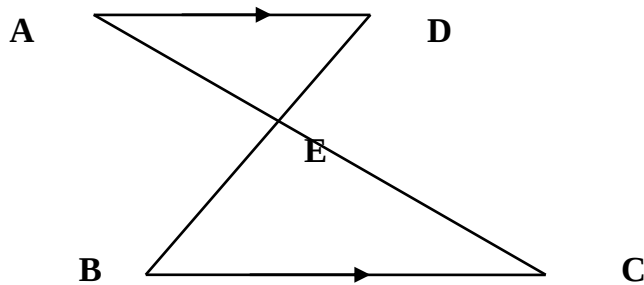


6. The figure below represents a kite ABCD, $AB = AD = 15$ cm. The diagonals BD and AC intersect at O. $AC = 30$ cm and $AO = 12$ cm. Find the area of the kite **(3mks)**



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 marks)**



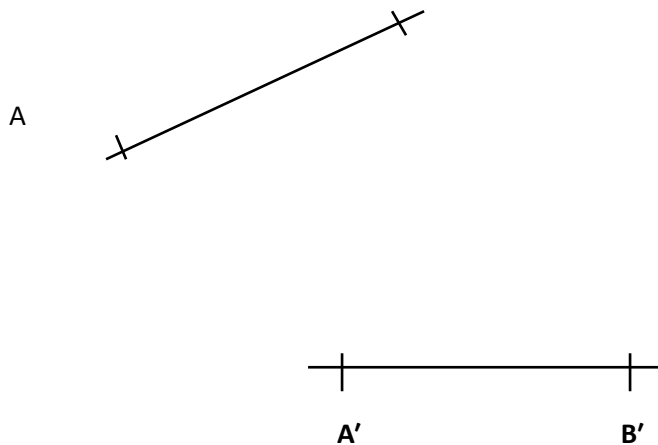
9. Given that $(3x - 35) = \cos \cos (x + 20)$. Find $x + 10$ (3mks)

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. (3 Marks)

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. (3 Marks)

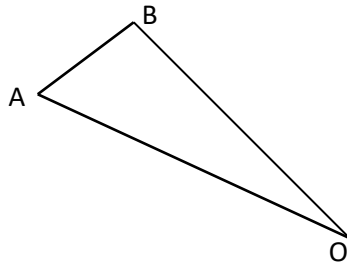
- 13.** In the figure below $A'B'$ is the image of AB under rotation. By construction, find and label the centre O of the rotation. Hence, determine the angle of the rotation. **(4mks)**



- 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 **(3 Marks)**

- 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)

Answer 5 questions only in this section

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).

(i) On the grid provided, draw OPQR and its image O'P'Q'R' (2marks)

(ii) By construction, determine the centre and angle of rotation. (3marks)

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 $y = x$ (3marks)

From the quadrilaterals drawn, state the pairs that are:

Directly congruent; (1marks)

Oppositely congruent (1marks)

- 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.

If the number of goats and bulls bought were x and y respectively, write down two simplified equations involving the above information. **(2mks)**

Solve the two equations above and hence find the number of each type of animals bought.

(4mks)

- d)** The slaughter house sold all the animals at a profit of 25% per goat and 30% per bull. Determine the total profit they made. **(4 Marks)**

- 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)**

Determine

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

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

- (iii) The bearing of A from D. **(1mks)**

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

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. **(5 mks)**

The number of handbags sold that month.

(2 mks)

22. Using a ruler and a pair of compasses only, draw a parallelogram ABCD, such that angle DAB = 75° . Length AB = 6.0cm and BC = 4.0cm.

From point D, drop a perpendicular to meet line AB at N.

(7 Marks)

(i) Measure length DN.

(1 Mark)

(ii) Find the area of the parallelogram.

(2 Marks)

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

Determine the:

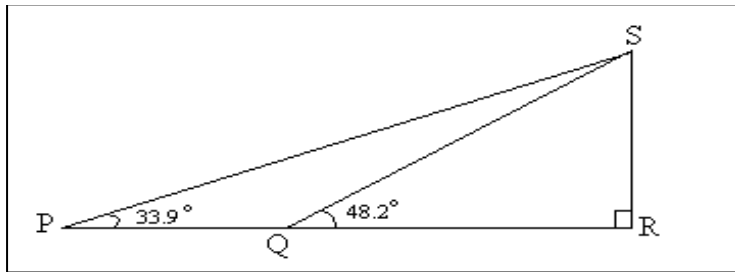
Volume of the new cube (3mks)

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

Surface area of the new cube (2mks)

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)

24. 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 $PR = 5$ m, calculate:



The distance QR

(4 marks)

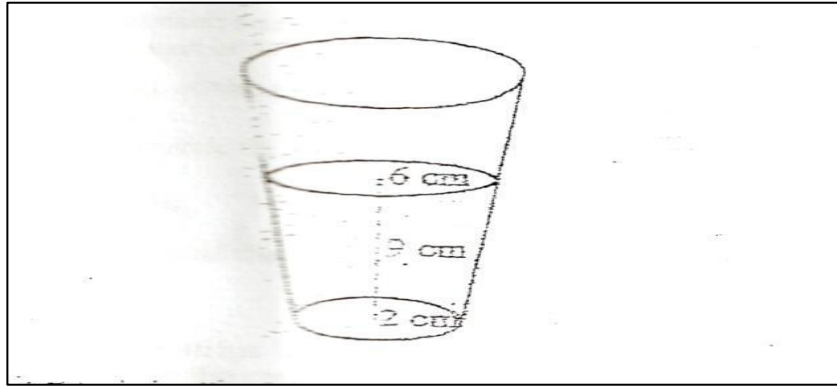
The length of the wires SP and SQ

(4 marks)

- d) 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 marks)

25. 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 marks)

- (ii) the radius of the marble (3 marks)

FORM 2 EXAMINATION TRIALS

MATHEMATICS

PRACTICE TEST 10

TIME: 2 HOURS

NAME..... ADM NO.....

SIGN..... DATE;.....

SECTION A (Answer all questions in the spaces provided)

- 1. Arrange the following sets of numbers in descending order. [2 Marks]**

404,044 440,440 440,404 404,444 444,044

- 2. Prove that 581,526 is divisible by both 9 and 11. [2 Marks]**

- 3. When a number u is divided by either 36, 24 or 45, the remainder is always 5. Find the least value of u . [3 Marks]**

4. Using mathematical tables, find the cubes of each of the following numbers. Leave your answer in standard form.

a) 2341

[2 Marks]

b) 0.00472

(2mks)

5. Use logarithms tables to evaluate;

$$\frac{743.1 \times 34.8}{15.6 \times 102.7}$$

[4 Marks]

6. Find the equation of a line that passes through (3, -5) and is perpendicular to a line whose equation is $4x - 5y - 6 = 0$

[3 Marks]

7. Two similar vases have their heights in the ratio 3:2. What is the ratio of

Their surface areas

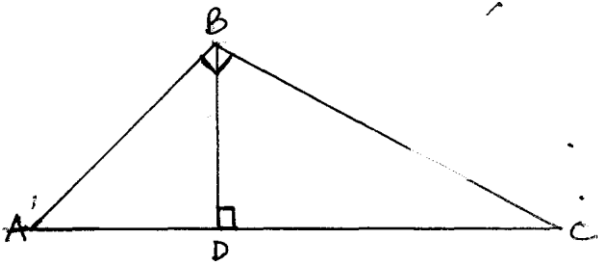
[1 Mark]

Their volumes

[1 Mark]

8. A rectangular container measuring 1.2m long, 70 cm wide and 55 cm high is half full of water. All this water is poured into an empty cylindrical tank of diameter 1.4 metres. Find the height to which the water rises. (4 mks)

9. In the triangle below, $AB=12\text{cm}$ $AC=13\text{cm}$ and $\angle ABC=\angle BDC=90^\circ$.



Calculate;

The length of BC

[2 Marks]

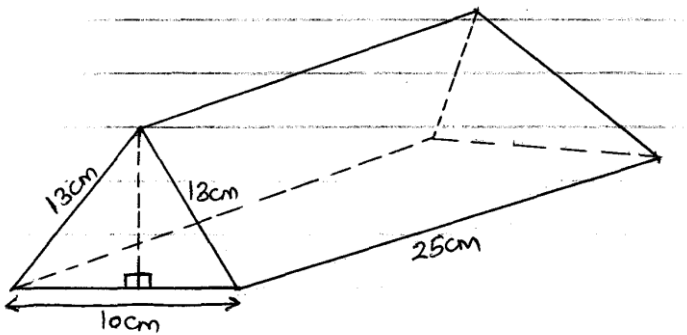
The length of BD

[2 Marks]

10. Express as a single fraction in the simplest form; $\frac{x-3}{5} + \frac{2x-5}{4}$ [3 Marks]

11. The ratio of boys to girls is 3:2. When $\frac{1}{3}$ of the boys and 6 girls are absent, the ratio remains the same. Find the number of students in the class. [4 Marks]

12. The diagram below shows a triangular prism. Determine its total surface area. [3 Marks]



13. The size of the interior angle of a regular polygon is x° and the exterior angle is

$$\left(\frac{x-36}{3}\right)^0$$

Calculate the value of x

[2 Marks]

How many sides does the polygon have?

[2 Marks]

14. Solve for the value of θ if

[2 Marks]

$$\sin(2\theta + 30) = \cos(2\theta + 20)$$

15. A triangle measures 16cm by 20cm by 24cm. calculate its area using the Hero's formula.

[3 Marks]

16. If $a = 8$ and $b = 36$, calculate the value of;

[3 Marks]

$$\left(a^{-\frac{2}{3}} + b^{\frac{1}{2}}\right)^{\frac{1}{2}}$$

SECTION B (Answer any 5 questions)

17. The table below is a bus timetable for journeys between towns E and J via towns FGH and I. Use it to answer the questions that follow.

Town	Arrival	Departure
E		0500
F	0630	0645
G	0710	0720
H	0820	0830
I	1145	1230
J	1345	

At what time does the bus leave town G in 12hr system. **[1 Mark]**

How long does it take between town E and G. **[1 Mark]**

In which town does the bus stop the longest and for how long? **[2 Marks]**

If the bus does not stop anywhere;

How long would it take to travel from town E to town J. **[2 Marks]**

At what time would it arrive at town J. **[1 Mark]**

If the distance between town G and J is 400km, calculate the average speed between G and J. **[3 Marks]**

- 18.** In a certain day secondary school in Vihiga County. There were 500 students. The ratio of boys to girls is 3:2.

How many more boys than girls are there in the school?

[2 Marks]

One day 10% of the girls and two fifth of the boys went for music and drama festivals. How many students were left in the school?

[3 Marks]

- ii During the Festivals each student was given 100/= and the two accompanying teachers were given 1000/= each for lunch. What was the total expenditure?

[2 Marks]

On a certain morning, $\frac{1}{2}$ of the boys and 0.75 of the girls were sent home for fees. Given that each student brought 2500/= the following day, calculate the total amount of money that was collected.

[3 Marks]

19. A line L_1 passes through (3, -2) and (5,4).

Determine the gradient of line L_1

[1 Mark]

The equation of line L_1

[2 Marks]

Line L_1 cuts $x - axis$ at point P and the $y - axis$ at point Q. determine the co-ordinates of P and Q.

[4 Marks]

Another line L_2 passes through (-3,7) and is perpendicular to L_1 . Determine its equation.

[3 Marks]

20. a. Given that the ratio of the areas of two similar solids is 9:25

What is the linear scale factor between the two solids?

[2 Marks]

If the length of the smaller solid is 1.2m, what is the length of the bigger solid? **[2 Marks]**

b. The linear dimensions of a model car are $\frac{1}{16}$ of the dimensions of the actual car.

What is the area of the windscreen of the actual car if the windscreen of the model car is 3cm^2 ?

[2 Marks]

If the capacity of the boot of the model car is 15cm^3 , find the capacity of the boot of the model car.

[2 Marks]

c. The volume of two similar jugs are in the ratio 8:125. What is the ratio of their surface areas?

[2 Marks]

21. A triangle PQR has co-ordinates P(1,1) Q (1,3) R (3,1)

Plot the triangle in the graph paper provided. **[1 Mark]**

P'Q'R' is the image of PQR under an enlargement scale factor 2 about origin.

Plot P'Q'R' in the graph provided. **[3 Marks]**

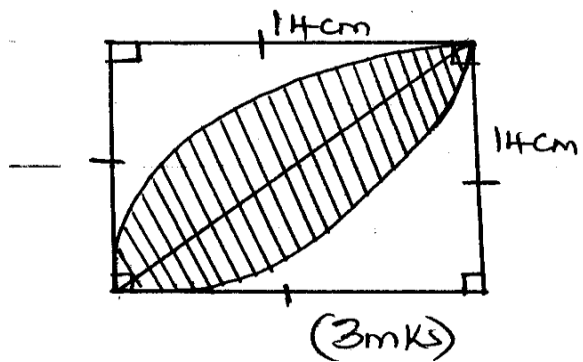
State the co-ordinates of P'Q'R'. **[1 Mark]**

P''Q''R'' is the image of P'Q'R' under reflection in the $y - axis$. Plot P''Q''R'' in the graph paper and state its co-ordinates. **[4 Marks]**

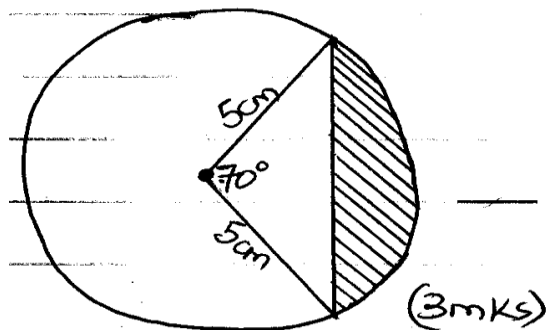
Calculate the area of triangle P''Q''R'' **[1 Mark]**

22. In each of the following figures, calculate the area of the shaded regions.

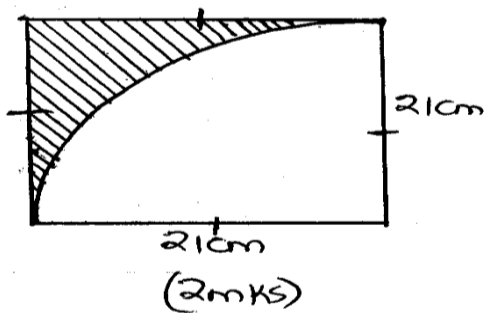
a)



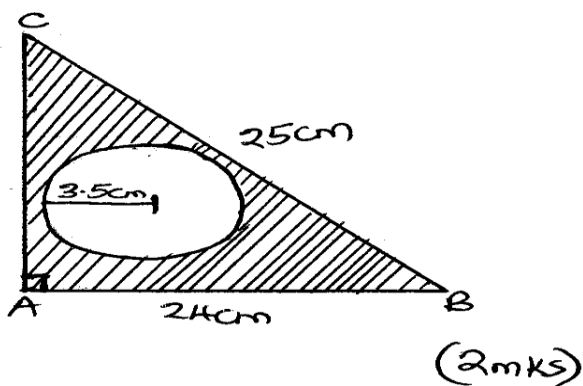
b)



c)



d)



23. Amina bought 3 pens and 2 pencils for shs. 13. Njoki bought 2 similar pens and 1 pencil and spent shs. 5 less than Amina.

(i) Form 2 simultaneous equations to represent the above information **[2 Marks]**

(ii) Using substitution method, determine the price of each item. **[3 Marks]**

(iii) Migwi bought 100 pencils and 150 pens from the same shop.

a) What was the total cost? **[2 Marks]**

b) He later sold all the pencils at a profit of 30% and all the pens at a profit of 50%. Determine the total profit. **[3 Marks]**

24. A bus has a carrying capacity of 52 passengers and a Nissan 14 passengers. Both vehicles were used to ferry people from a village to a church for a wedding function. The distance from the village to church is 80km and the fuel consumption of the bus is 1 litre for every 8km and the Nissan is 1 Litre for every 15 km. Fuel costs shs. 15 per litre. The bus made 5 complete round trips and the Nissan made 8 complete round trips with full capacity. If each passenger was paying shs. 100 to be ferried to the function; Find

- i.** The total collection made by each vehicle. **[3 Marks]**
- ii.** The total cost of fuel used by each vehicle. **[2 Marks]**
- iii.** The net profit made by each vehicle. **[3 Marks]**
- iv.** The total number of people who were ferried to the function. **[2 Marks]**