FIRST EDITION

Multimedia Skola MATHEMATICS

KCSE REVISION KIT
PAPER 1 (121/1)

ALEX O. ODHONG'

- FIVE PREPARATORY EXAMS WITH COMPREHENSIVE ANSWERS
- ONE MOCK EXAM WITH COMPREHENSIVE ANSWERS

Multimedia Skola
Outstand

LETTER FROM The Editor

Dear Learner,

Welcome to this First Edition of Multimedia Skola Revision Magazine, we have created this to enable you excel in your examinations.

In this edition, we have compiled examinations from various sources and partnered with teachers from schools across the country to combine their vast knowledge and expertise into this incisive magazine.

We plan to dedicate our lives to building a future in which, through technology and other means, every student and every teacher across the country has access to unlimited empathy-driven insightful learning and teaching opportunities respectively and the best quality of education.

To achieve such a dynamic learning ecosystem that extends beyond the school compound, we want to create a community of students, parents and teachers able to share knowledge and insights remotely at any time.

Multimedia Skola, LLC. is the platform for building that future and we are just getting started.

Enjoy.

The Editor

Chris Adongo

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We are on course to rolling out the second Edition of this Revision Kit, for enquiries on how to contribute, please contact us via email on info@mskola.online or call/WhatsApp us on +254 725 121 436.

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PREPARATORY EXAM 001

Kenya Certificate of Secondary Education (KCSE) Revision Kit

Mathematics Paper 1 (121/1)

SECTION I (50 MARKS)

Answer ALL questions in the section in the space provided.

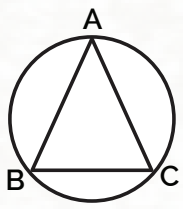
1. Evaluate $\frac{-2\ (-3) \times 4 - (-12)}{-5 \times 4 + (-2)}$ (2 Marks)

2. Mr. Owino spends ¼ of his salary on school fees. He spends ⅔ of the remainder on food and a fifth of what is left on transport. He saves the balance. In certain month he saved Sh. 3400. What was his salary? (3 marks)

3. Simplify: (3 Marks)
$$\frac{2y^2 - 2x^2 - 3xy}{4y^2 - x^2}$$

4. Find x if $3^{2x+3} + 1 = 28$. (2 Marks)

5. The circle below whose area is 18.05cm^2 circumscribes triangle ABC where AB = 6.3cm, BC = 5.7cm and AC = 4.2cm. Find the area of the part of the circle that lies outside the triangle. (4 Marks)



6. 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)

7. A rectangle whose area is 96m^2 is such that its length is 4 metres longer than its width.

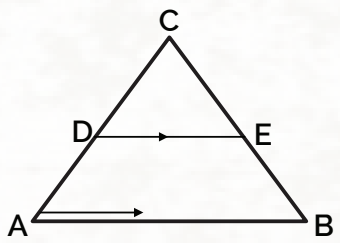
Find

a) It dimensions (2 Marks)

b) Its perimeter (1 Mark)

8. Give sin (90 – a) = ½ find without using trigonometric tables the value of cos a. (2 Marks)

9. In triangle ABC below, AC = BC, AB is parallel to DE, AB = 15cm, DE = 7.5cm and BE = 6cm.



Calculate;

(a) Length CE. (2 Marks)

(b) Area of quadrilateral ABED. (2 Marks)

10. A measuring cylinder of base radius 5cm contains water whose level reads 6cm high. A spherical object is immersed in the water and the new level reads 10cm. Calculate the radius of the spherical object. (3 Marks)

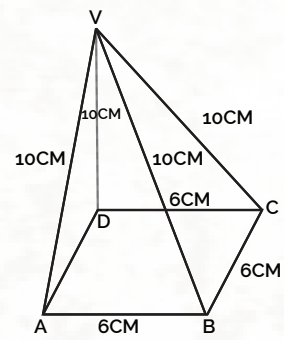
11. Using a ruler and pair of compasses only, construct triangle ABC in which AB = 6cm, BC = 8cm and angle ABC = 45°. Drop a perpendicular from A to BC to meet line BC at M. Measure AM and AC. (4 Marks)

12. In a book store, books packed in cartons are arranged in rows such that there are 50 cartons in the first row, 48 cartons in the next row, 46 in the next and so on.

(a) How many cartons will there be in the 8th row? (2 Marks)

(b) If there are 20 rows in total, find the total number of cartons in the book store. (2 Marks)

13. Draw the net of the solid below and calculate the total surface area of its faces. (3 Marks)



14. Town X is 20km in a bearing of 060° from Y, and Z is 30km in the direction 150° from Y. Using the scale 1cm represents 5km, find by scale drawing:

a). The bearing of Y from Z. (2 Marks)

b). The distance of X from Z. (2 Marks)

15. Solve for x in $2^{2x} - 18 \times 2^x = 40$ (3 Marks)

16. Oketch sells his car to Jane and makes a profit of 20%. Jane sells the same to Issa at Sh.180,000, making a loss of 10%. Determine the price at which Oketch bought the car. (3 Marks)

SECTION II (50 MARKS)

Answer ANY five questions in this section in the spaces provided.

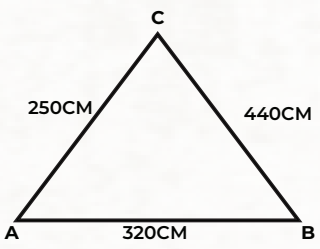
17. The distance between towns A and B is 360km. A minibus left town A at 8.15 a.m. and traveled towards town B at an average speed of 90km/hr. A matatu left town B two and a third hours later on the same day and travelled towards A at average speed of 110km/hr.

(a) (i) At what time did the two vehicles meet? (4 Marks)

(ii) How far from A did the two vehicles meet? (2 Marks)

(b) A motorist started from his home at 10.30 a.m. on the same day as the matatu and travelled at an average speed of 100km/h. He arrives at B at the same time as the minibus. Calculate the distance from A to his house. (4 Marks)

18. Karis owns a farm that is triangular in shape as shown below.



(a) Calculate the size of angle BAC (2 Marks)

(b) Find the area of the farm in hectares. (3 Marks)

(c) Karis wishes to irrigate his farm using a sprinkler machine situated in the farm such that it is equidistant from points A, B and C.

(i) Calculate the distance of the sprinkler from point C. (2 Marks)

(ii) The sprinkler rotates in a circular motion so that the maximum point reached by the water jets is the vertices A, B and C. Calculate the area outside his farm that will be irrigated. (3 Marks)

19. A ship leaves port M and sails on a bearing of 050° heading towards island L. Two Navy destroyers sail from a naval base N to intercept the ship. Destroyer A sails such that it covers the shortest distance possible. Destroyer B sails on a bearing of 20° to L. The bearing of N from M is 100° and distance NM = 300km. Using a scale of 1cm to represent 50km, determine:-

(i) the positions of M, N and L. (3 Marks)

(ii) the distance travelled by destroyer A. (3 Marks)

(iii) the distance travelled by destroyer B. (2 Marks)

(iv) the bearing of N from L. (2 Marks)

20. A number of people agreed to contribute equally to buy books worth KSh. 1200 for a school library. Five people pulled out and so the others agreed to

contribute an extra Shs. 10 each. Their contributions enabled them to buy books worth Shs. 200 more than they originally expected.

(a) If the original numbers of people was x, write an expression of how much each was originally supposed to contribute. (1 Mark)

(b) Write down two expressions of how much each contributed after the five people pulled out. (2 Marks)

(c) Calculate the number of people who made the contribution. (5 Marks)

(d) Calculate how much each contributed. (2 Marks)

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. The following measurements were recorded in a field book of a farm in metres (xy = 400m)

	Y	
	400	
C60	340	
	300	120D
	240	100E
	220	160F
B100	140	
A120	80	
	x	

(a) Using a scale of 1cm representing 4000cm, draw an accurate map of the farm. (3 Marks)

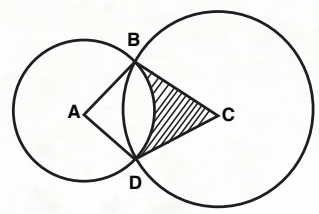
(b) If the farm is on sale at Kshs. 80,000.00 per hectare, find how much it costs. (7 Marks)

23. The table shows marks obtained by 100 candidates at Goseta Secondary School in Biology examination

Marks	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94
Frequency	6	14	24	14	x	10	6	4

(a) Determine the value of x (2 Marks)
(b) State the modal class (1 Mark)
(c) Calculate the median mark (2 Marks)
(d) Calculate the mean mark. (5 Marks)

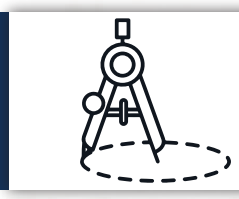
24. In the diagram below, two circles, centres A and C and radii 7cm and 24cm respectively intersect at B and D. AC = 25cm.



(a) Show that angle ABC = 90°. (3 Marks)

(b) Calculate
(i) the size of obtuse angle BAD. (3 Marks)
(ii) the area of the shaded part. (4 Marks)

Adapted from the Kenya High School Mock Examinations.



PREPARATORY EXAM 002

Kenya Certificate of Secondary Education (KCSE) Revision Kit
Mathematics Paper 1 (121/1)

SECTION I (50 MARKS)
Answer ALL questions in the section in the space provided.

1. Without using a calculator evaluate (3 marks)

$$\frac{-2(-5+8)-9\div 3-5}{-3\times -5+-2\times 4}$$

2. (a) use mathematical tables to find the:
(i) The square of 86.46 (1 mark)
(ii) The reciprocal of 27.56 (1 mark)

(b) Hence or otherwise calculate the value of; (2 marks)

$$\frac{86.46^2}{27.56}$$

3. The sum of the interior angles of an n – sided polygon is 1440°. Find the value of n and hence deduce the name of the polygon. (3 marks)

4. Two containers have base areas of 750cm^2 and 120cm^2 respectively. Calculate the volume of the larger container in litres given that the volume of the smaller container is 400cm^3. (3 marks)

5. Given that the column vectors $a = \begin{pmatrix}-1\\4\end{pmatrix}$, $b = \begin{pmatrix}-3\\2\end{pmatrix}$ and $c = \begin{pmatrix}-2\\-1\end{pmatrix}$ and that P = 2a- 4b + 3c. Express P as a column vector. (3 marks)

6. Solve the following inequalities and represent the range of values of x on a single number line.
$-7 < 5 - 3x$ and $x + 4 > 5 - 3x$ (3 marks)

7. The cost of a car outside Kenya is US $ 4800. You intend to buy one such car through an agent who deals with Japanese Yen. The agent will charge 15% commission on the price of the car and further 72,220 Japanese Yens for shipment of the car. How many Kenya shillings will you need to send to the agent to obtain the car given that:
1 US $ = 117.20 Japanese Yens
1US $ = Kshs 72.34 (3 marks)

8. Two numbers p and q are such that $p^3 \times q = 189$. Find p and q (3 marks)

9. Evaluate without using mathematical tables. (3 marks)

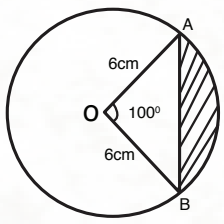
$$\frac{1000\sqrt{0.0128}}{200}$$

10. Simplify the following expression by reducing it to a single fraction. (3 marks)

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

11. Thirty men working at a rate of 10 hours a day can complete a job in 14 days. Find how long it would take 40 men working at the rate of 7 hours a day to complete the same job. (3 marks)

12. The figure below shows a circle centre O and radius 6cm. Sector OAB subtends an angle of 100° at the centre of the circle as shown.



Calculate to 2 decimal places the area of the shaded region.
(Take π = 22/7) (3marks)

13. Use the prime factors of 1764 and 2744 to evaluate (3 marks)

$$\frac{\sqrt{1764}}{\sqrt[3]{2744}}$$

14. A rectangular block is 50cm long and 15 cm wide. If its mass is 18kg and its density is 2.4g/cm^3, find its height. (3 marks)

15. A triangle ABC is such that AB = 12cm, and AC = 17cm. If its area is 51cm^2, find the size of angle BAC. (3 marks)

16. (a) Find the greatest common divisor of the terms $9x^3y^2$ and $4xy^4$. (1 mark)