

EDUZEDCO
121/2 MATHEMATICS
Paper 2
Form 1 End Term Examination

Time: 2 ½ Hours

Name: Adm No:
 School: Class:
 Signature: Date:

INSTRUCTIONS TO CANDIDATES

- (a) Write your name and index number in the spaces provided at the top of this page.
- (b) Write your school name, sign and write the date of the examination in the spaces provided above.
- (c) This paper consists of **Two** sections: **Section I** and **Section II**.
- (d) Answer **ALL** questions in Section I and any **five questions** from Section II.
- (e) Marks may be given for correct working, relevant points, and clear presentation.
- (f) Non-programmable silent electronic calculators may be used where necessary.
- (g) KNEC Mathematical Tables may be used.
- (h) This paper consists of **7 printed pages**.
- (i) Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing.
- (j) Candidates should answer the questions in English.

For Examiner's Use Only

SECTION I

1	2	3	4	5	6	7	8	9	10	11	12	Total

SECTION II

17	18	19	20	21	22	23	24	Total	Grand Total

SECTION I

1. Without using a calculator, find the reciprocal of 1.25×10^4 . Give your answer in standard form.

2. Evaluate $\frac{1}{0.0025}$ without using a calculator, and give your answer in standard form.

3. Write 0.00032 in standard form.

4. A piece of land has an area of 5.6×10^4 square metres.

(a) Write the area as an ordinary number.

(b) Find the reciprocal of the area and express it in standard form.

5. A rectangular field measures 200 m by 150 m.

(a) Find the area of the field in square metres. Write your answer in standard form.

(b) Find the reciprocal of the area and write it in standard form.

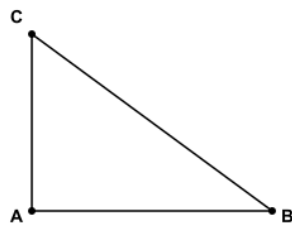
6. Simplify $\frac{2}{3} + \frac{1}{2} \div \frac{3}{4}$.

7. In a school, the ratio of boys to girls is 3:2. If there are 240 boys, find:

(a) the number of girls.

(b) the total number of students.

8. In triangle ABC, angle A = 50° , angle B = 70° .



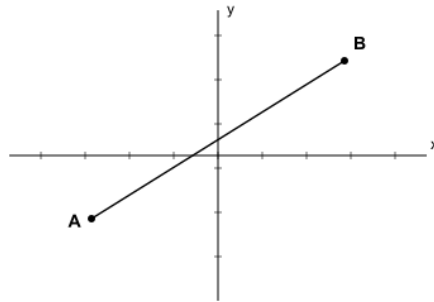
(a) Find angle C.

(b) Classify the triangle by its angles.

9. The sum of three consecutive odd numbers is 63. Find the smallest number.

10. On a map with scale 1 : 50000, two towns are 8 cm apart. Calculate the actual distance between the towns in kilometres.

- 11.** A rectangular plot measures 20 m by 15 m. A path of width 2 m runs around it on the inside. Find the area of the path.



- 12.** Solve for x : $x - 1 = \frac{2x+3}{5}$.

SECTION II

Answer any five questions from this section.

17. A school has 240 boys and 180 girls. The principal wants to divide them into groups for a sports day such that each group has the same number of boys and the same number of girls, and no one is left out. [10 marks]

Find the greatest number of groups that can be formed.

Find the number of boys and girls in each group.

Determine the sum of all integers from -5 to 5 inclusive.

Evaluate $(-3) \times (+2) - (-4) \div (+2)$.

18. A farmer has a mixture of maize and beans. The ratio of maize to beans is 5:3. [10 marks]

Find the mass of maize and beans separately.

Calculate total money from selling the mixture.

Find the profit of the matatu driver.

Convert $\frac{5}{8}$ to a decimal.

Express 0.375 as a fraction in simplest form.

19. [10 marks]

Simplify $3x + 2y - x + 4y$.

Solve $2x + 5 = 13$.

Evaluate $a^2 - 2ab + b^2$ for $a = 3$, $b = -2$.

Write an expression for the perimeter of the rectangle.

20. A rectangular garden measures 12 m by 8 m. [10 marks]

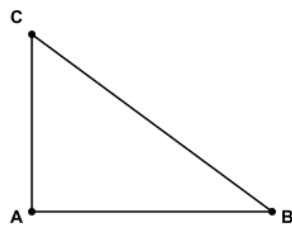
Calculate the area of the garden.

Find the area of the path.

Find the capacity of the tank in litres.

Convert 3.5 hours to minutes.

21. Using a ruler and a pair of compasses only, [10 marks]



Construct triangle ABC with given measurements.

Measure AC.

Construct the perpendicular bisector of AB.

Locate point P equidistant from A, B, C.

22. A map has a scale of 1:50000. [10 marks]

Find actual distance for 8 cm on map.

Find actual area of rectangular farm.

Find scale of map given actual distance 10 km and map distance 12.5 cm.

23. A cylindrical water tank has a radius of 7 m and height of 10 m. (Use $\pi = 22/7$) [10 marks]

Calculate volume of cylindrical tank.

Find capacity in litres.

Find time to empty at 154 L/min.

Find depth in rectangular tank with base area 50 m^2 .

24. In a school, the ratio of boys to girls is 7:5. [10 marks]

Find number of boys and girls.

Find number in drama club.

Express drama club members as fraction of total, simplified.

Find three consecutive integers summing to 27.

121/2 MATHEMATICS MARKING SCHEME

Form 1 Paper 2

SECTION I (50 marks)

1. Without using a calculator, find the reciprocal of 1.25×10^4 . Give your answer in standard form. (3 marks)

■ M1: Express 1.25×10^4 as ordinary number or recognize reciprocal concept (1)

■ A1: Correct reciprocal value: 0.00008 or 8×10^{-5} (1)

■ A1: Final answer in standard form: 8.0×10^{-5} (1)

Alt:

— Directly compute reciprocal of $1.25 \times 10^4 = (1/1.25) \times 10^{-4} = 0.8 \times 10^{-4} = 8 \times 10^{-5}$ accepted

2. Evaluate $(1)/(0.0025)$ without using a calculator, and give your answer in standard form. (3 marks)

■ M1: Convert 0.0025 to standard form or fraction: 2.5×10^{-3} or $1/400$ (1)

■ M1: Compute reciprocal correctly: $1/(2.5 \times 10^{-3}) = 0.4 \times 10^3 = 400$ (1)

■ A1: Final answer in standard form: 4.0×10^2 (1)

Alt:

— $1/0.0025 = 10000/25 = 400$, then standard form

3. Write 0.00032 in standard form. (2 marks)

■ M1: Correct movement of decimal point or determine power of 10 (1)

■ A1: Standard form: 3.2×10^{-4} (1)

4. A piece of land has an area of 5.6×10^4 square metres. (3 marks)

■ (a) B1: Write 5.6×10^4 as 56000 (1)

■ (b) M1: Find reciprocal of 56000: $1/56000$ (1)

■ (b) A1: Express in standard form: 1.79×10^{-5} (accept 1.786×10^{-5}) (1)

Alt:

— $1/(5.6 \times 10^4) = (1/5.6) \times 10^{-4} = 0.1786 \times 10^{-4} = 1.786 \times 10^{-5}$

5. A rectangular field measures 200 m by 150 m. (4 marks)

■ (a) M1: Calculate area: $200 \times 150 = 30000$ (1)

■ (a) A1: Express in standard form: $3.0 \times 10^4 \text{ m}^2$ (1)

■ (b) M1: Find reciprocal: $1/30000 = 1/(3.0 \times 10^4)$ (1)

■ (b) A1: Standard form: $3.33 \times 10^{-5} \text{ m}^{-2}$ (1)

Alt:

— Accept 3.333×10^{-5} or 3.3×10^{-5}

6. Simplify $(2)/(3) + (1)/(2) / (3)/(4)$. (2 marks)

■ M1: Correct order of operations: division before addition; $1/2 \div 3/4 = 1/2 \times 4/3$
 $= 2/3$ (1)

■ A1: Final answer: $4/3$ (1)

Alt:

— $1\frac{1}{3}$ or 1.333... accepted

7. In a school, the ratio of boys to girls is 3:2. If there are 240 boys, find:

(4 marks)

■ (a) M1: Set up ratio: $3/2 = 240/g$ or equivalent (1)

■ (a) A1: Number of girls = 160 (1)

■ (b) M1: Total = $240 + 160$ (1)

■ (b) A1: Total students = 400 (1)