

STUDENT'S NAMES:

CLASS: S3.....

DATE: 17/03/2026

TIME: 09H00-12H00

TERMII, 2025-2026

ORDINARY LEVEL RUTSIRO DISTRICT EXAMINATIONS, 2025-2026

SUBJECT: MATHEMATICS I

DURATION: 3HOURS

MARKS:

/100MARKS

INSTRUCTIONS:

1. This paper consists of TWO Sections **A** and **B**

SECTION A: Attempt all questions: **choose the correct answer (55 marks)**

SECTION B: Attempt any **three** questions of your choice. **(45marks)**

2. Use only a **blue** or **black** pen.
3. Respect the **order** of questions in section **A**.
4. You may use mathematical instruments and calculators where necessary.
5. Use only a blue ink pen to write your answers and a pencil to draw diagrams
6. Show clearly all the working steps in **SECTION B**, Marks will not awarded for the answer without all working steps

SECTION A Attempt all questions: choose the correct answer (55 marks)

1. $y = x^2 + 1$ is an example of an equation of the straight line [2marks]

a) True

b) False

2. Circle the correct answer: the domain of definition of [2marks]

$$q: \mathbb{R} \rightarrow \mathbb{R}; q(x) = \frac{9x^2 + 4 - 12x}{36x^2 - 24x} \quad \text{is:}$$

A: $\mathbb{R} - \left\{ \frac{2}{3} \right\}$

B: $\mathbb{R} - \{0\}$

C: $\mathbb{R} - \left\{ 0, \frac{2}{3} \right\}$

D: $\mathbb{R} - \left\{ 0, \frac{3}{2} \right\}$

3. Work out in base eight: $657_8 + 106_8$. Choose the correct answer: / [3marks]

a) 765

b) 763

c) 1001

d) None of the above

4. Simplify the following $\frac{2x^2 - 8x + 6}{x - 1}$ [3marks]

a) $-2(x + 3)$

b) $2(x - 3)$

c) $-2(x + 2)$

d) $2(x + 3)$

5. Given that x is the base, solve the equation: $32_x + 24_x = 100_x$. Find the value of x

[3marks]

a) $x = 5$

b) $x = 3$

c) $x = 6$

d) $x = 10$

6. Find the value of x in the following expression: $\frac{x+3}{4} - \frac{x-3}{5} = 2$ [3marks]

- a) $x = 37$
- b) $x = 13$
- c) $x = -1$
- d) $x = -3$

7. solve the simultaneous equations: $\begin{cases} 3x-5y=23 \\ x-4y=3 \end{cases}$ [4marks]

- a) $(x, y) = (3, -4)$
- b) $(x, y) = (11, -3)$
- c) $(x, y) = (11, 2)$
- d) $(x, y) = (3, -11)$

8. The product of two consecutive odd numbers is 143. Find those two odd numbers. [4marks]

- a) -14 and 10 or -13 and -11
- b) 13 and -11 or 11 and -11
- c) 11 and 13 or -13 and -11
- d) all above

9. Find the equation of the line that is parallel to another line whose equation is $4y + 5x = 6$ and passes through the point $(8, 5)$ [4marks]

- a) $4y - 5x = 60$
- b) $4y + 5x = 60$
- c) $y = -5x + 14$
- d) $y = \frac{5x + 60}{4}$

10. A businesswoman invested 4 500 FRW for 2 years in a savings account. She was paid 4% per annual compound interest. How much did she have in her savings

account after 2 years?

[4marks]

- a) 3,600 FRW
- b) 4,867.2 FRW
- c) 4,860 FRW
- d) none of the above

11. In a right-angled triangle EFG, the hypotenuse is $(3x + 8)$ cm long. The median to the hypotenuse is $(5x - 10)$ long. Find the value of x ; hence, find the length of the median [4marks]

- a) $x = 5$ and median = 15 cm
- b) $x = 3$ and median = 5 cm
- c) $x = 6$ and median = 20 cm
- d) $x = 4$ and median = 10 cm

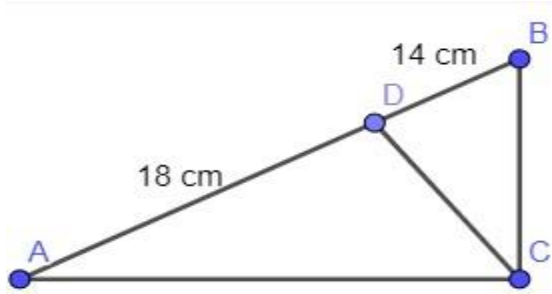
12. a) The perimeter of a rectangle is 46cm, If the diagonal is 17cm, find the width of the rectangle. [2marks]

- a) $w = -15$
- b) $w = 15$
- c) $w = 8$
- d) $w = -8$

b) the sum of Jame's and David's ages is 34 years. the sum of twice Jame's age and three times David's age was 86 years. Using an appropriate variable for each age, form a pair of simultaneous equations and solve them to find the respective ages of the two boys. **their age are, select the best answer.** [2marks]

- a) {15,16}
- b) {16,18}
- c) {14,18}
- d) {6,8}

13. ABC is a right-angled triangle and CD is the altitude to the hypotenuse, find the length of CD. **[5marks]**



- a) 16 cm
b) 15.87 cm
c) 6.9 cm
d) 14 cm
14. Solve the following pair of simultaneous inequalities:
 $2(3 - x) < 10$, $3(2x - 5) < 21$ **[5marks]**
- a) $1 < x < 3$
b) $-2 > x < -6$
c) $-2 < x > 6$
d) None of the above
15. 40 people consume 200kg of rice in 30 days.in how many days wii 30 people consume 500kg of rice? **[5marks]**
- a) 16days
b) 100days

- d) 50days

SECTION B: Attempt any three questions of your choice.(45marks)

16. A school has a teaching staff of 22 teachers. 8 of them teach Mathematics, 7 teach Physics and 4 teach Chemistry. 3 teach both Mathematics and Physics, and none teaches Mathematics and Chemistry. No teacher teaches all three subjects. The number of teachers who teach Physics and Chemistry is equal to the number of teachers who teach Chemistry but not Physics.

- (a) Draw a Venn diagram to represent the data **[9marks]**

- (b) Calculate the number of teachers who teach;

- (i) Mathematics only. [2marks]

- A.2 B.8 C.5 D.None of above

- (ii) Physics only. **[2marks]**

- A.8 B.5 C.2 D.14**

- (iii) None of the three subjects. **[2marks]**

- A.5 B.8 C.14 D.2

[illegible]

17. Given that $f(x) = 6x^4 + 34x^3 + 42x^2 - 18x$

- [10marks]**
[5marks]

iv) None of the above

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[2marks

I. True ii. False

[4marks]

i.vertex(1,-4);x-intercept(-1,0)and(-3,0);y-intercept(0,-3)

ii. vertex(1,-4); x-intercept(-1,0) and (3,0); y-intercept(0,-3)

iii. vertex(1,-4); x-intercept(1,0) and (3,0); y-intercept(0,3)

c) Sketch the curve on a Cartesian plane

[9marks]

[illegible]

ii) State the coordinates of the vertices of the region in ;a)i. **[3marks]**

A. (4,3); (0,5); (0,8)

B. $(-4, 3)$; $(0, -5)$; $(0, 8)$

C. $(-4,3)$; $(0,-5)$; $(0,-8)$

b) Show that the equation of the straight line passing through $(0, k)$ and $(k, 0)$ is $y + x = k$
[3marks]

c) A line through the points $(-2, 4)$ and $(3, 5)$ is parallel to the line passing through the points $(a, 6)$ and $(-4, 1)$. Find a . **[5marks]**

i. $a = \frac{1}{5}$ ii. $a = 21$ iii. $a = 5$ iv. None of the above

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