



education

Department of
Education
FREE STATE PROVINCE

GRADE 9

**MATHEMATICS MOCK PAPER
JUNE 2025**

MARKS: 100

TIME: 2 HOURS

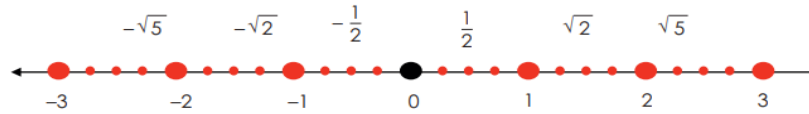
This paper consists of 10 pages excluding the cover page.

INSTRUCTION AND INFORMATION TO LEARNERS

1. Read all the instructions and questions carefully.
2. Answer all the questions.
3. Leave a space between each answer.
4. Question 1 consists of Multiple-Choice Questions (MCQ).
5. In Question 1, do your calculations before choosing the correct option.
6. Show all the necessary calculations.
7. Non- programmable scientific calculator may be used, unless otherwise stated.
8. Diagrams are not necessarily drawn to scale; all lines are regarded as straight lines unless stated otherwise.
9. Show all your calculations and it is in your own interest to work neatly.
10. Good Luck!

QUESTION 1

- 1 The number line below defined which example of a real number system? (1)



- A Rational (Q)
- B Irrational (Q^1)
- C Fraction
- D Integers
2. Simplify: $(-5m^2n^3)^3$ (1)
- A $25m^6n^9$
- B $-25m^6n^9$
- C $-25m^5n^6$
- D $25m^5n^6$
- 3 Calculate: $[-6 - (-2)]^2 + (14 \div 2 \times -4)$ (1)
- A 12
- B -12
- C 36
- D -36

4 Simplify: $\frac{5x^8 + 5x^8}{5x^8 \cdot 5x^8}$ (1)

A $\frac{2}{5x^8}$

B $\frac{1}{10x^8}$

C $\frac{x}{x^{16}}$

D $\frac{1}{x^8}$

5 Calculate: $\frac{(-\sqrt{16})^2 \times (\sqrt[3]{-1})^2}{-3(-2)^2 - 2^2}$ (1)

A 4

B -4

C 1

D -1

6 What is the additive inverse and multiplicative inverse of $-\frac{1}{2}$? (1)

A $-\frac{1}{2}$ and -2

B $-\frac{1}{2}$ and 2

C $\frac{1}{2}$ and -2

D $\frac{1}{2}$ and 2

7 Which of the following are the like terms? (1)

A $5rtu^2$ and $7r^2tu$

B $-9rt^2$ and $-9rs^2$

C $10st^2y$ and $5tsy^2$

D $-3pq^2r$ and $-5pq^2r$

8 Factorise fully: $16b^2 - 25c^2$ (1)

A $(4b - 5c)(4b + 5c)$

B $(4b + 25c)(4b - 25c)$

C $(25c - 4b)(25c + 4b)$

D $(25c + 16b)(25c - 16b)$

9 $8^x = 4^{x+3}$ (1)

What is the value of x ?

A 6

B $\frac{6}{5}$

C 1

D 5

10 The product of two consecutive even numbers are 120. Determine the two numbers. (1)

A -10 and 12

B 10 and 12 or -10 and -12

C 30 and 4 or -4 and -30

D -30 and 4

[10]

QUESTION 2

2.1 Study the number line below



Determine between which two integers is an irrational number $\sqrt{5}$ lie? Indicate with a letter A on the number line above. (1)

2.2 State whether $\frac{22}{7}$ a rational or irrational number. (1)

2.3 Calculate the HCF and LCM using Prime factorization of 840 and 1 500. (4)

2.4 Find equivalent ratio of 27:45 (1)

2.5 Decrease 240 in the ratio 8 : 5 (2)

2.6 Michael wants to cycle to a nearby beach which is 46 km from his holiday home. Assuming that his average speed for cycling is 20 km/h. How long, in minutes, will it take him to cycle to the beach? (3)

2.7 Study the products of the variable below. (2)

$$xy = 2 \times 120 = 3 \times 80 = 4 \times 60 = 8 \times 30 = 240$$

Is the variable a direct proportion or indirect proportion? Motivate your answer.

[14]

QUESTION 3

Simplify the following WITHOUT THE USE OF A CALCULATOR

3.1 $\frac{8(-7) + 4(-4)}{8 - (-7) + (-6)}$ (2)

3.2 $25 \times -64 \times -4 \times 10$ (2)

3.3 In the Gobi Desert, the temperature in summer is 42°C . The minimum temperature in winter is -38°C . What is the difference between these two temperatures? (3)

3.4 Calculate: $-2^2 - 2(4 - 7) + \sqrt{11 - (5)}$ (3)

[10]

QUESTION 4

Simplify the following

4.1 $\frac{8x^4 + x(2x)^3}{(-8x^4)(-8x^4)}$ (2)

4.2 $\frac{(x^5) \cdot y^2 \cdot y^7}{2(xy)^8}$ (2)

4.3 Simplify the following and express your answers with positive exponents.

4.3.1 $5b^{-5} + b^7 \div b^1$ (2)

4.3.2 $(t^{-2})^3 + 4t^{-6}$ (2)

4.3.3 $(2b^5 \div b^6) + 3b^{-1} + (b^{-4} \div b^{-3})$ (3)

[11]

QUESTION 5

5.1 Given algebraic expression: $-2xy - 4 + \frac{3x}{2} + 7x^7 + 6x^2y$

5.1.1 Arrange the expression in descending order of x . (2)

5.1.2 What is the constant term in the expression? (1)

5.1.3 What is the degree of the expression? (1)

5.1.4 What is the highest exponent of the variable x in the expression? (1)

5.1.5 Write down the numeric co-efficient of the fourth term. (1)

5.2 Simplify each of the following expressions:

5.2.1 $(-a^2b)(6ab^5)(abc)$ (4)

5.2.2 $4r^2(6\pi + 9\pi r^2 - 4)$ (3)

5.2.3 $(4y - 3)(y + 4)$ (3)

5.2.4 $(3p + 5)(2p + 1)$ (4)

5.3 Factorise the following fully

5.3.1 $16y^2$ (1)

5.3.2 $4n^2 - 16$ (2)

5.3.3 $m(3m + 2) - (3m + 2)$ (2)

5.3.4 $x^2 - x - 6$ (2)

[27]

QUESTION 6

6.1 Solve the following algebraic equation

6.1.1 $-\frac{x}{3} = 2$ (1)

6.1.2 $x^2 - 82 = -1$ (2)

6.1.3 $7^{-x} = \frac{1}{343}$ (2)

6.2 Solve for x

6.2.1 $4x(x - 8) = 0$ (2)

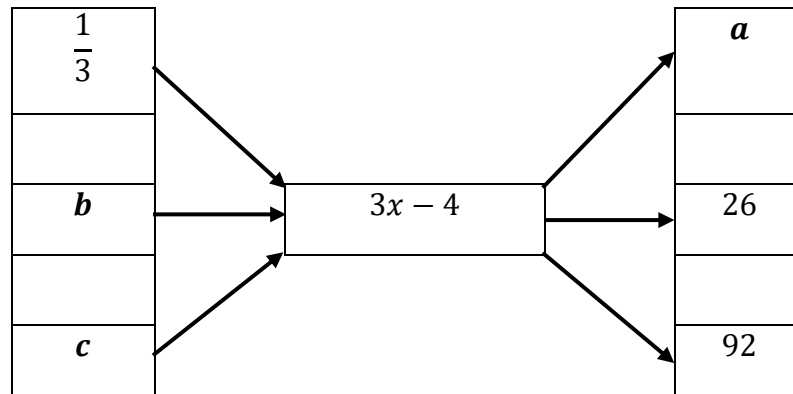
6.2.2 $(x + 3)(x - 2) = 0$ (2)

6.2.3 $x^2 - 5x + 6 = 0$ (3)

[12]

QUESTION 7

7. Refer to the flow diagram below, and determine the value of:



7.1 a (2)

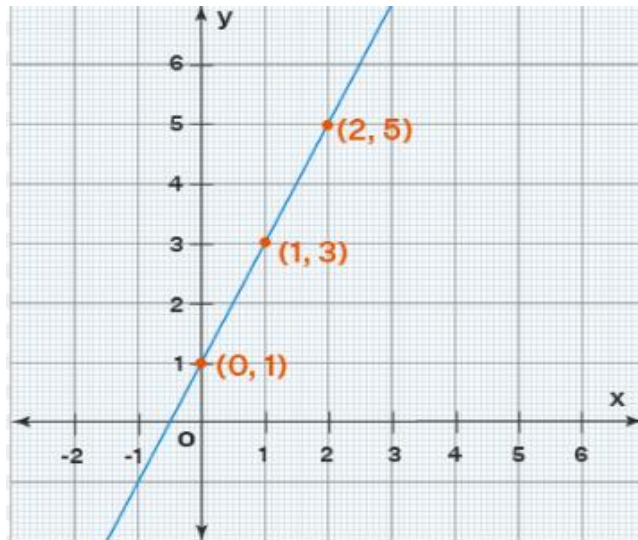
7.2 b (2)

7.3 c (2)

[6]

QUESTION 8

8.1 Study the linear graph below, and answer the questions that follows:



- 8.1.1 Is the graph increasing or decreasing? (1)
- 8.1.2 Give the gradient of the graph. (1)
- 8.1.3 What is the y - value at $x = -1$ (1)
- 8.1.4 Find the x - intercept and the y - intercept of the graph. (3)

- 8.2 Sketch the graph define by $y = 2x - 4$ showing all points (4)

