education

Department of Education
FREE STATE PROVINCE

GRADE 8

MATHEMATICS PAPER 1

MOCK EXAM

NOVEMBER 2025

MARKS: 60

TIME: 90 minutes

This question paper consists of 7 pages including cover page.

INSTRUCTIONS AND INFORMATION

- Read the all the instructions carefully before answering the questions.
- This question paper consists of 6 questions.
- Write legibly and present your work neatly.
- Answer ALL the questions.
- Clearly show ALL steps that you have used in determining your answers.
- Answers only will not necessarily be awarded full marks.
- You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
- Number the answers correctly according to the numbering system used in this question paper.

QUESTION 1

1.1 From which set of numbers does $15, -8$ *and* 100 belongs? (1)

A Natural numbers

B Whole numbers

C Integers

D Irrational numbers

1.2 Which of the following demonstrates the **associative property of addition**? (1)

A $5 + 0 = 5$

B $3 + (4 + 5) = (3 + 4) + 5$

C $7 + 2 = 2 + 7$

D $6 \times 1 = 6$

1.3 The highest common factor of 12 *and* 16 is: (1)

A 8

B 2

C 4

D 6

1.4 What is the Lowest Common Multiple of 4 *and* 5? (1)

A 8

B 60

C 15

D 20

1.5 Musa buys a new radio for $R125{,}00$ excluding VAT. He pays cash and get 5% discount. How much will he pay in total including VAT? (1)

A $R118,75$

B $R136,56$

C $R131,25$

D $R143,75$

1.6 What is the next term if the pattern 16; 25; 36; 49; ...continues the same way? (1)

A 50

B 62

C 81

D 64

1.7 What is the value of $\frac{\sqrt{81}}{9}$? (1)

A $\frac{1}{3}$

B 1

C $\frac{2}{3}$

D 3

1.8 What is $20\%\ of\ 36$? (1)

A 8

B 8.2

C 7.2

D 7.2 %

1.9 Calculate the value of $(2^3)^2$ without using the calculator? (1)

A 2^6

B 2^5

C 2^{32}

D 2^{23}

1.10 $3x + 5x^2 - 6x^3 - 4$ is a polynomial of which degree? (1)

A $2nd$

B $4th$

C $3rd$

D $5th$

[10]

QUESTION 2

2.1 Complete the following:

2.1.1 $\frac{0}{12} =$ (1)

2.1.2 $\left(\frac{1}{2}\right)^3 =$ (1)

2.2 Write 212 0000 in scientific notation. (2)

2.3 Use prime factorisation to determine LCM and HCF of 180 and 240 (4)

2.4 Calculate the average speed of a car travelling 1280 kilometres in 16 hours. (2)

[10]

QUESTION 3

3.1 Calculate each of the following **without the use of a calculator**:

3.1.1 $-3\times(8+(-2))$ (2)

3.1.2 $4\frac{2}{3} - \frac{7}{12}$ (3)

3.1.3 $\sqrt{25 - 16} + \sqrt[3]{-81} + (-3)^2$ (4)

3.2 Simplify the following expression:

$$\frac{(ab^3)^2(a^2c^3)^3}{a^8b^7c^{10}}$$ (3)

[12]

QUESTION 4

4.1 Mandla has \$4 USD. The computer game he wants to buy costs \$10 AUD.
\$1 USD = \$1.48 AUD
Does he have enough money to buy the game? (2)

4.2 Given the table below. Answer the following questions using this table:

x	2	4	6	8
y	4	8	a	16

4.2.1 Calculate the value of a. (1)

4.2.2 Determine the rule for the given table in terms of y and x. (3)
[06]

QUESTION 5

5.1 Given the expression $4x^3 - 3x^4 + 7x^2 - 5x + 13$, answer the following questions:

5.1.1 How many terms are in the given expression? (1)

5.1.2 What is the coefficient of x^2? (1)

5.1.3 Write down the constant value. (1)

5.1.4 Write the expression in an descending order form of x. (1)

5.1.5 Determine the value of the expression if $x = 2$ (2)

5.2 Simplify the following expressions.

5.2.1 $3x(4x^2 + 2y) - 13x^3 - xy$ (3)

5.2.2 $\frac{6x^3+12x^2}{3x}$ (2)

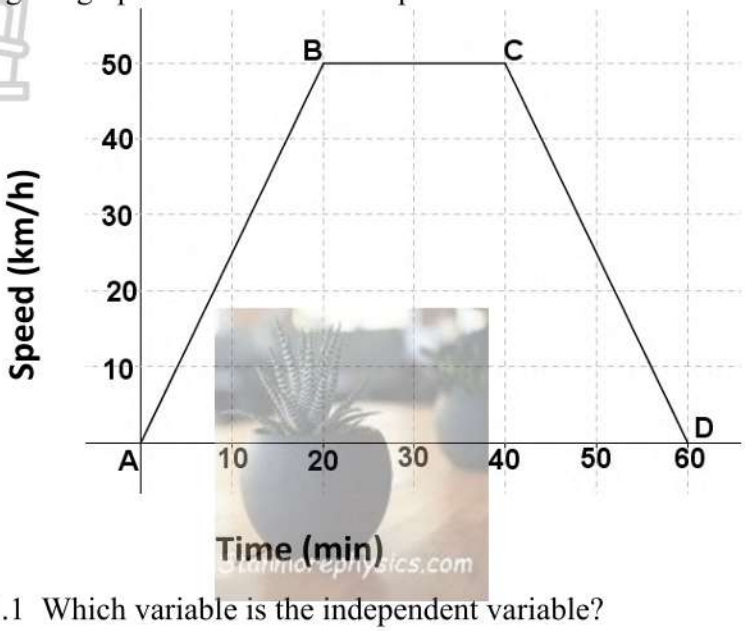
5.3 Solve for x:

5.3.1 $3x - 4 = 11$ (2)

5.3.2 $4(x + 2) = 3(x - 5)$ (3)
[16]

QUESTION 6

6.1 Using the graph below answer the questions that follow:



6.1.1 Which variable is the independent variable? (1)

6.1.2 Is the graph discrete or continuous? (1)

6.1.3 What is the maximum speed? (1)

6.1.4 Between which two point is the speed increasing? (1)

6.1.5 Between which two points is the speed decreasing? (1)

[5]

Total: 60

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GRADE 8

MATHEMATICS PAPER 1

MOCK EXAM MARKING GUIDELINE

NOVEMBER 2025

MARKS: 60

TIME: 72 MINUTES

This question paper consists of 7 pages including cover page.

Important Information

- This is a marking guideline. In instances where learners have used different but mathematically sound strategies to solve the problem they (learners) should be credited.
- Unless stated otherwise, learners who give a correct answer only, should be awarded full marks.
- Underline errors committed by learners and apply Consistent Accuracy (CA) marking.
- Do not penalise learners if units of measurement are omitted.

	KEY
M	Method mark
CA	Consistent Accuracy mark
A	Accuracy mark

	QUESTION 1	
		(1)
1.1	C	(1)
1.2	B	(1)
1.3	C	(1)
1.4	D	(1)
1.5	B	(1)
1.6	D	(1)
1.7	B	(1)
1.8	C	(1)
1.9	A	(1)
1.10	C	(1)
		[10]

	QUESTION 2	
2.1	Complete the following	
2.1.1	$\frac{0}{12} = 0$ ✓A	(1)
2.1.2	$\left(\frac{1}{2}\right)^3 = \frac{1}{8}$ ✓A	(1)
2.2	Write 2.12×10^6 in scientific notation. ✓✓A	(2)
2.3	Use prime factorization to determine LCM and HCF of 160 and 240	(4)

2	160
2	80
2	40
2	20 ✓
2	10
5	5
	1

2	240
2	120
2	60 ✓M
2	30
3	15
5	5
	1

LCM: $2^5 \times 3 \times 5 = 480$ ✓A
HCF: $2^4 \times 5 = 80$ ✓A

2.4	Calculate the average speed of a car travelling 1280 kilometers in 16hours.	(2)
	$s = \frac{d}{t}$ $s = \frac{1280\ km}{16hrs}$ ✓M $s = 80\ km/hr$ ✓A	

	QUESTION 3	
3.1	Calculate each of the following **without the use of a calculator**:	
3.1.1	$-3 \times (8 + 9(-2))$ $\mathbf{-3\,(8 - 18)}$✓ 30 ✓	(2)
3.1.2	$4\frac{2}{3} - \frac{7}{12}$ $\frac{14}{3}$✓ $\times \frac{4}{4} - \frac{7}{12}$ **OR** $\frac{11}{3}$✓ $- \frac{7}{12}$ $\frac{49}{12}$ ✓M $4\frac{1}{12}$ ✓A $\frac{4\,(14) - 7\,(1)}{LCM\ 12}$ ✓M $\frac{49}{12}$ $4\frac{1}{12}$ ✓A	(3)
3.1.3	$\sqrt{25 - 16} + \sqrt[3]{-8} + (-3)^2$ $\sqrt{9}$✓M $+ \sqrt[3]{-8} + 9$✓ $3 - 2$✓ $+ 9$ **10**✓A	(4)
3.2	Simplify the following expressions:	
3.2.1	$\frac{(ab^3)^2(a^2c^3)^3}{a^8b^7c^{10}}$ $\frac{a^2b^6 \times a^6c^9}{a^8b^7c^{10}}$✓ $\frac{a^8b^6c^9}{a^8b^7c^{10}}$✓M $\frac{1}{bc}$✓A	(3)
	QUESTION 4	
4.1	Mandla has \$4 USD. The computer game he wants to buy costs \$10 AUD. \$1 USD = \$1,48 AUD	
	x = \$4 USD \$1,48 AUD = \$1 USD	(2)

	$x = \$5.92$ AUD✓A No, Mandla does have enough money to buy the game. ✓	
4.2	Given the table below. Answer the following questions using this table: x | 2 | 4 | 6 | 8 y | 4 | 8 | a | 16	
4.2.1	Calculate the values of a and b $(in\ any\ order)$. $\frac{4}{8} = \frac{6}{a}$ $4a = 48$ $a = 12$✓A	(1)
4.2.2	Determine the rule for the given table in terms of y and x. 4; 8; 12; 16; .... ✓ Constant difference is 4✓M $y = 4x$✓A	(3)
	QUESTION 5	
5.1	Given the expression $4x^3 - 3x^4 + 7x^2 - 5x + 13$, answer the following questions:	
5.1.1	How many terms are in the given expression?	
	5 terms ✓A	(1)
5.1.2	What is the coefficient of x^2?	
	+7 ✓A	(1)
5.1.3	Write down the constant value.	
	+13 ✓A	(1)
5.1.4	Write the expression in an descending order form of x.	
	$-3x^4 + 4x^3 + 7x^2 - 5x + 13$ ✓A	
5.1.5	Determine the value of the expression if $x = 3$ $4(2)^3 - 3(2)^4 + 7(2)^2 - 5(2) + 13$ ✓M $32 - 48 + 28 - 10 + 13$ **15**✓A	(2)
5.2	Simplify the following expressions.	
5.2.1	$3x(4x^2 + 2y) - 13x^3 + xy$ $12x^3 + 6xy - 13x^3 + xy$✓M $-x^3$✓A $+ 7xy$✓A	(3)
5.2.2	$\frac{6x^3 + 12x^2}{3x}$ $\frac{6x^3}{3x} + \frac{12x^2}{3x}$ ✓M $2x^2 + 4x$✓A	(2)

5.3	Solve for x:	
5.3.1	$3x - 4 = 11$ $3x - 4 + 4 = 11 + 4$ $3x = 15$✓M $x = 5$✓A	(2)
5.3.2	$4(x + 2) = 3(x - 5)$ $4x + 8$✓M $= 3x - 15$✓M $4x - 3x = -15 - 8$✓M $x = -23$✓A	(4)
	QUESTION 6	
6.1		
		
6.1.1	Which variable is the independent variable?	
	Time✓A	(1)
6.1.2	Is the graph discrete or continuous?	
	Continuous✓A	(1)
6.1.3	What is the maximum speed?	
	50 km/hr.✓A	(1)
6.1.4	Between which two point is the speed constant?	
	A to B/AB✓A	(1)
6.1.5	Between which two points is the speed decreasing?	
	CD/ C to D✓A	(1)
		[5]
	Grand Total: 60	