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education

Department of Education
FREE STATE PROVINCE

GRADE 9

MATHEMATICS

2026 TERM 1

CLASS ASSIGNMENT

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MARKS: 50

TIME: 120 MINUTES

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INSTRUCTIONS AND INFORMATION

1. It must be aministered in **class** under supervision of **class teacher**.
2. Learners must have **access to any resources** that may help in answering the assignment including their class activity books.
3. **ALL** the questions must be answered.
4. **Scientific calculator** (**non – programmable and non – graphical**) may be used.

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QUESTION 1

Consider the options and write down the letter of the correct option in your answer sheet

1.1 Which of the following numbers is an irrational number? (1)

A $\sqrt{16}$ B $\sqrt{-17}$ C $\sqrt{9}$ D $\sqrt{19}$

1.2 $3(-2+6)-2(5-4+1) = \cdots$ (1)

A 16 B 8 C 11 D 7

1.3 0, 0000125 in scientific notation is written as: (1)

A $12{,}5 \times 10^{-5}$ B $1{,}25 \times 10^{-5}$

C 125×10^{-5} D $1{,}25 \times 10^{-4}$

1.4 Simplify: $a^3 \times a^2 c$ (1)

A $a^5 c$ B $a^6 c$ C $2a^5 c$ D $2a^6 c$

1.5 Simplify: $\frac{4^{x+1}}{2^x}$ (1)

A 2^{x+1} B 2^{3x+1} C 2^{x+2} D 2^{3x+2}

1.6 Evaluate: $2^{-2} \times 6^3 \times 3^{-2}$ (1)

A 6 B $\frac{1}{36}$ C $\frac{1}{11}$ D 5

[6]

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QUESTION 2

Complete the table below by ticking the correct column. All the numbers are real. (5)

		Natural number	Whole number	Integers	Rational number	Irrational number
2.1	$\sqrt{49}$					
2.2	$\sqrt[3]{-64}$					
2.3	$\frac{22}{7}$					
2.4	$-2,\dot{4}$					
2.5	$0 \times \pi$					

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[5]

QUESTION 3

3.1 Use prime factorisation to determine LCM and HCF of 540 and 1800. (4)

3.2 Alex and Thomas share 30 sweets. They divide them in the ratio 3:2. How many sweets does Thomas have? (3)

3.3 The number of the mechanics versus the number of fixed cars in a day is shown in the table below.

Number of mechanics	24	12	6
Number of cars	36	18	9

3.3.1 Is this an example of direct or inverse proportion? (1)

3.3.2 Find the number of mechanics required to fix 108 cars. (3)

[11]

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QUESTION 4

4.1 By using the commutative and associative properties, calculate:
$-33 + 103 - 102 + 3$ (3)

4.2 Without using a calculator, calculate the following using the correct order of operations:

4.2.1 $(8)(-4) \div (34 - 2)$ (3)

4.2.2 $\frac{\sqrt{64} + \sqrt{16}}{\sqrt[3]{27} - \sqrt[3]{125}}$ (4)

[10]

QUESTION 5

Simplify

5.1 $9y^0 + (9y)^0 \times (-1)^9$ (2)

5.2 $(-2ab^2)^3$ (2)

5.3 $\frac{-30x^{10}y^3}{3x^5y^2}$ (2)

5.4 $\frac{3ab^6 \times -(-3ab)^4}{3^3a^5b^{10}}$ (4)

5.5 $\frac{(-2x^2y^4)^2 \times 5xy^2}{\sqrt{100x^4y^{10}}}$ (3)

5.6 $\left(\frac{y^2 + \frac{1}{y^{-2}}}{y^2 \times y^2}\right)^{-2}$ (5)

[18]

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GRADE 9

MATHEMATICS

2026 ASSIGNMENT TEST

MARKING GUIDELINES

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GENERAL MARKING NOTE:

1. **Give full marks for answers only, unless otherwise stated.**

2. **Accept any alternative correct solution that is not included in the memorandum.**

3.

SYMBOL	KEY
M	Method mark
CA	Consistency Accuracy Mark
A	Accuracy Marking

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QUESTION 1		
1.1	Which of the following numbers is an irrational number?	(1)
Option	**Possible answers**	**Errors and Misconceptions**
A	$\sqrt[3]{-8}$	
B	$\sqrt{-17}$	
C	$\sqrt{9}$	
D	$\sqrt{19}$	✓ **Correct response**
1.2	$3(-2+6)-2(5-4+1) = \cdots$	(1)
Option	**Possible answers**	**Errors and Misconceptions**
A	**16**	
B	**8**	✓ **Correct response**
C	11	
D	7	
1.3	0, 0000125 in scientific notation is written as:	(1)
Option	**Possible answers**	**Errors and Misconceptions**
A	$12{,}5 \times 10^{-5}$	
B	$\mathbf{1{,}25 \times 10^{-5}}$	✓ **Correct response**
C	125×10^{-5}	
D	$1{,}25 \times 10^{-4}$	
1.4	Simplify: $a^3 \times a^2c$	(1)
Option	**Possible answers**	**Errors and Misconceptions**
A	a^5c	✓ **Correct response**
B	a^6c	
C	$2a^5c$	
D	$2a^6c$	
1.5	Simplify: $\frac{4^{x+1}}{2^x}$	(1)
Option	**Possible answers**	**Errors and Misconceptions**
A	2^{x+1}	✓ **Correct response**
B	2^{3x+1}	
C	2^{x+2}	
D	2^{3x+2}	

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1.6	Evaluate: $2^{-2} \times 6^3 \times 3^{-2}$	(1)
Option	**Possible answers**	**Errors and Misconceptions**
A	**6**	✓**Correct response**
B	$\frac{1}{36}$	
C	$\frac{1}{11}$	
D	5	

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QUESTION 2

2.1 Complete the table below by ticking the correct column. All the numbers are real.

✓ mark for each row (5)

		Natural number	Whole number	Integers	Rational number	Irrational number
2.1	$\sqrt{49}$	✓	✓	✓	✓	
2.2	$\sqrt[3]{-64}$			✓	✓	
2.3	$\frac{22}{7}$				✓	
2.4	$-2,\dot{4}$				✓	
2.5	$0 \times \pi$				✓	

[5]

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QUESTION 3

3.1 Use prime factorisation to determine LCM and HCF of 156 and 264.

2	156
2	78
3	39
13	13
	1

2	264
2	132
2	66
3	33
11	11
	1

$156 = 2^2 \times 3 \times 13$ $264 = 2^5 \times 3 \times 11$

$\therefore HCF = 2^2 \times 3 = 12$

$\therefore LCM = 2^3 \times 3 \times 11 \times 13 = 3432$

✓✓ prime factorisation
✓ 12
✓ 3432 (4)

3.2

$2 + 1 = 3$

$\frac{1}{3} \times R750 = R250$

or

$\frac{R750}{3} = R250$

$1 \times R250 = R250$

Busi will have to pay R250

✓ 3
✓ $\frac{1}{3} \times R750$
✓ $R250$ (3)

✓ 3
✓ $\frac{R750}{3}$
✓ $R250$ (3)

3.3 The number of the mechanics versus the number of fixed cars in a day is shown in the table below.

Number of mechanics	24	12	6
Number of cars	36	18	9

3.3.1 Is this an example of direct or inverse proportion?

Direct proportion

✓ answer (1)

3.3.2 Find the number of mechanics required to fix 108 cars.

$\frac{x}{108} = \frac{6}{9}$

$x = \frac{6 \times 108}{9}$

$x = 72$ mechanics

✓✓ Method
✓ 72 (3)

[11]

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QUESTION 4		
4.1	By using the commutative and associative properties, calculate: $-33 + 103 - 102 + 3$ $= -33 + 3 + 103 - 102$ $= -30 + 1$ $= -29$	✓$-33 + 3 + 103 - 102$ ✓$-30 + 1$ ✓-29 (3)
4.2	Without using a calculator, calculate the following using the correct order of operations:	
4.2.1	$(8)(-4) \div (34 - 2)$ $= -32 \div 32$ $= -1$	✓-32 ✓32 ✓-1 (3)
4.2.2	$\frac{\sqrt{64}+\sqrt{16}}{\sqrt[3]{27}-\sqrt[3]{125}}$ $= \frac{8+4}{3-5}$ $= \frac{12}{-2}$ $= -6$	✓$8 + 4$ ✓$3 - 5$ ✓$\frac{12}{-2}$ ✓-6 (4)
		[10]

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QUESTION 5		
Calculate		
5.1	$9y^0 + (9y)^0 \times (-1)^9$ $= 9 + 1 \times (-1)$ $= 9 + (-1)$ $= 8$	✓$9 + 1 \times (-1)$ ✓8 (2)
5.2	$(-2ab^2)^3$ $= -8a^3b^6$	✓-8 ✓a^3b^6 (2)
5.3	$\frac{-30x^{10}y^3}{3x^5y^2}$ $= -10x^5y$	✓-10 ✓x^5y (2)
5.4	$\frac{3ab^6 \times -(-3ab)^4}{3^3a^5b^{10}}$ $= \frac{3ab^6 \times -3^4a^4b^4}{3^3a^5b^{10}}$ $= \frac{3^5a^5b^{10}}{3^3a^5b^{10}}$ $= 3^2$ $= 9$	✓$-3^4a^4b^4$ ✓$3^5a^5b^{10}$ ✓3^2 ✓9 (4)
5.5	$\frac{(-2x^2y^4)^2 \times 5xy^2}{\sqrt{100x^4y^{10}}}$ $= \frac{4x^4y^8 \times 5xy^2}{10x^2y^5}$ $= \frac{20x^5y^{10}}{10x^2y^5}$ $= 2x^3y^5$	✓$4x^4y^8$ ✓$20x^5y^{10}$ ✓$2x^3y^5$ (3)
5.6	$\left(\frac{y^2 + \frac{1}{y^{-2}}}{y^2 \times y^2}\right)^{-2}$ $= \left(\frac{y^2 + y^2}{y^4}\right)^{-2}$ $= \left(\frac{2y^2}{y^4}\right)^{-2}$ $= \left(\frac{2}{y^2}\right)^{-2}$ $= \left(\frac{y^2}{2}\right)^2$ $= \frac{y^4}{4}$	✓y^2 ✓$2y^2$ ✓$\frac{2}{y^2}$ ✓$\left(\frac{y^2}{2}\right)^2$ ✓$\frac{y^4}{4}$ (5)
		[18]

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