Hillcrest High School

Grade 9

MATHEMATICS P1

NOVEMBER 2023

NAME: _____

GRADE: _____

MARKS: 120

TIME: 2 Hours

EXAMINER: Mrs A. Jugmohan

MODERATOR: Mr M. Alborough

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	TOTAL
	10	6	24	11	25	20	24	120
Mark								
Sign								
Moderate								
Sign								

Instructions:

1. This exam consists of 7 questions and 12 pages including the cover page. Answer ALL the questions.
2. Clearly show ALL calculations. Answers ONLY will not necessarily be awarded full marks.
3. If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
4. Approved scientific calculators (non-programmable and non-graphical) may be used, unless otherwise stated.
5. Write neatly and legibly.

1.	**QUESTION 1 – Multiple Choice Question**	
1.1.	**Circle** the correct answer	
1.1.1.	Which one of the following numbers is rational? A) 2,3333333 B) $\sqrt{-16}$ C) π D) $\sqrt{15}$	(1)
1.1.2.	Mr Smith travelled 260km at an average speed of 120km/h. How long did it take him? A) 2 hours 17 mins B) 2 hours 10 mins C) 2 hours 11 minutes D) 3 hours	(1)
1.1.3.	Complete: The degree of expression is given by the highest…. A) Coefficient B) Constant C) Exponent D) Variable	(1)
1.1.4.	The value of $-x^2 - 2(2x - 1)$ when $x = -2$ A) 6 B) 1 C) -6 D) -1	(1)
1.1.5.	$(a + b)^0 =$ A) $a + b$ B) 2 C) 1 D) 0	(1)

1.1.6.	If $(x-1)(x+2) = 0$ then x = …. A) $-1\ or\ 0$ B) $1\ or\ -2$ C) 1 D) -2	(1)
1.1.7.	$10kg:\ 20g$ as a simplified ratio is: A) 1 : 2 B) 500 : 1 C) 5 : 4 D) 2 : 4	(1)
1.1.8.	How many terms in the expression $-(3x-1)^2 + x - 4x \div x^2$ A) 2 B) 3 C) 4 D) 5	(1)
1.1.9.	Complete: $\sqrt{13^2 - 5^2}$ A) 8 B) $\sqrt{8}$ C) 12 D) $\sqrt{16}$	(1)
1.1.10.	Lwazi has 19 out of 35 for his Maths test. What is his mark to the nearest percentage? A) 54% B) 45% C) 0,54% D) 19%	(1)

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2.	**QUESTION 2 – True or False**	
2.1.	Indicate next to the statement whether it is true or false. **If false, give a reason.**	
2.1.1.	$x^2 + 9 = (x + 3)(x - 3)$ _____ _____	(2)
2.1.2.	11 is a prime number _____ _____	(2)
2.1.3.	0,000568 converted to scientific notation is $5{,}68 \times 10^4$ _____ _____	(2)

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3.	**QUESTION 3**	
3.1.	Determine the HCF of 420 and 100 _____ _____ _____ _____ _____	(4)
3.2.	Determine the LCM of 420 and 100 _____ _____ _____ _____	(2)
3.3.	Express the below ratio in its simplest form: $2{,}4 : 0{,}16$ _____ _____	(2)

<table>
<tr><td>3.4.</td><td>Calculate:

$\sqrt{16x^{16}}$

_____

_____</td><td>(2)</td></tr>
<tr><td>3.5.</td><td>R600 is shared amongst Tumi, Kabelo and Ryan in the ratio 3: 2: 1. Calculate how much each person will receive

_____

_____

_____

_____

_____</td><td>(4)</td></tr>
<tr><td>3.6.</td><td>Choose the correct term in the bracket to complete the sentence:

Zero is _____(an irrational or a rational) number</td><td>(1)</td></tr>
<tr><td>3.7.</td><td>Complete the table by filling in the missing values:

<table><tr><th>Decimal Fraction</th><th>Percentage</th></tr><tr><td>0,7333…..</td><td>3.4.1) _____</td></tr><tr><td>3.4.2) _____</td><td>105%</td></tr></table></td><td>(2)</td></tr>
<tr><td>3.8.</td><td>At your local store, you get 3 stickers for every R60 spent.</td><td></td></tr>
<tr><td>3.8.1.</td><td>If you spend R480, how many stickers would you have?

_____

_____

_____

_____</td><td>(2)</td></tr>
<tr><td>3.8.2.</td><td>Is the amount spent and number of stickers earned an example of a direct proportion or indirect proportion?

_____</td><td>(1)</td></tr>
</table>

3.9.	Karabo and Jon are at the same rest stop alongside a highway. Karabo started driving along the highway at a constant speed of 80km/h. An hour later, Jon started driving along the same highway in the same direction as Karabo at a constant speed of 100km/h. How long will it take Jon to catch up with Karabo? _____ _____ _____ _____ _____ _____	(4)

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4.	**QUESTION 4**	
4.1.	The following algebraic expression is given: $2x^2 + 3xy^2 - 7x^6y^2 + \frac{6x+3y}{3} + (a+b)(2a-b) - 13 + xy^2$	
4.1.1.	Write down the number of terms in the expression _____	(1)
4.1.2.	Write down the exponent of *y* in the third term _____	(1)
4.1.3.	Write down the coefficient of the x^6y^2 _____	(2)
4.1.4.	Write down the value of the constant in the expression _____	(1)
4.1.5.	Write down a pair of like terms in the expression _____	(2)

4.2	Given the expression $-5y^2 + 7y - 6 - y^3$	
4.2.1	What is the degree of expression? _____	(1)
4.2.2	If y = 3, find the value of the above expression _____ _____ _____ _____	(3)

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5.	**QUESTION 5**	
	Simplify the following expressions fully. Write all answers in positive exponents, where necessary.	
5.1.	$2a^3b \times 3a^2b^5 \times 4ab^4$ _____ _____	(3)
5.2.	$(2^3x^2y)^3$ _____ _____ _____	(3)
5.3.	$4(-a)^2 - (-2a)^2$ _____ _____ _____	(2)

5.4.	$\frac{ab(-2a^2b^3)^3}{-56b^2}$	(4)
5.5.	$\frac{x^{-3}}{y^{-4}}$	(2)
5.6.	$\frac{a.b^{-2}}{a^0.b}$	(2)
5.7.	$(x-5)(x+4)$	(3)
5.8.	$3(2x+1)(x+5)$	(3)
5.9.	$(x-7)^2$	(3)

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6.	**QUESTION 6**	
	Fully factorize the following expressions:	
6.1.	$7p - 28pq$ _____ _____	(2)
6.2.	$25xy^2 + 10x^2y + 35x^2y^2$ _____	(2)
6.3.	$4x(x - 2) - 8(x - 2)$ _____ _____	(3)
6.4.	$16x^2 - 9$ _____ _____	(2)
6.5.	$x^4 - 1$ _____ _____ _____	(3)
6.6.	$x^2 + 2x - 8$ _____ _____	(2)
6.7.	$\frac{x + 3}{x^2 + x - 6}$ _____ _____ _____	(2)

6.8.	$\frac{x^2-49}{7x+49} \div \frac{2(x-7)}{21x}$ _____ _____ _____ _____ _____ _____	(4)

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7.	**QUESTION 7**	
	Solve for the variable in each of the following equations:	
7.1.	$35 + x = 75$ _____	(1)
7.2.	$(x-1)(x+3) = 0$ _____ _____	(2)
7.3.	$x^2 = 16$ _____ _____ _____ _____	(3)
7.4.	$3c - 6 = c - 4$ _____ _____ _____	(2)
7.5.	$12a - 10 = 6a + 32$ _____ _____ _____ _____	(2)

7.6.	$6y - 4 + y - 9y = 4y + 5$	(3)
7.7.	$4(x - 2) - 2(2 - 5x) = 9x - 2$	(3)
7.8.	$\frac{x+3}{2} + 2 = \frac{x-2}{3} + x$	(4)
7.9.	A basketball team played 32 games and won three times as many as it lost. How many games did they win?	(4)

[24]

TOTAL **[120]**