HILLCREST HIGH SCHOOL

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INTERNAL EXAMINATION

GRADE 9

MATHEMATICS P1

TERM 4

November Examination 2022

Time: 2 Hours **Marks: 120**

Examiner: Mrs A J Chonnoolal **Moderator: Mr D Reuben**

Name: _____ **Class: ____**

Maths Educator: _____ **Date:**

QUESTION	1	2	3	4	5	6	7	8	9	10	TOTAL
MARK	10	10	10	13	12	24	12	12	7	12	122
LEARNER'S MARK											
SIGN											

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This exam consists of 15 pages (including the cover page) and 10 questions.

2. Answer ALL the questions in the space provided.

3. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.

4. If necessary, round off answers correct to TWO decimal places, unless stated otherwise. Marks will be deducted for incorrect rounding and not stating units.

5. Write neat and legibly.

QUESTION 1: Multiple Choice Question

1.	**Circle** the correct answer	
1.1	Which one of the following numbers is rational a) $\sqrt{3}$ b) $\sqrt{16}$ c) $\sqrt{-9}$ d) $\sqrt{13}$	(1)
1.2	There are 120 learners in Grade 9 at Spellview High School. If the ratio of girls to boys is 3 : 5, how many boys are there in Grade 9? a) 75 b) 55 c) 15 d) 8	(1)
1.3	Calculate: $4 + 4 \div 2 - 4 \times (-3)$ a) 21 b) 18 c) 12 d) 0	(1)
1.4	The following table shows the number of days a certain number of men will take to complete a task: Number of men: 1, 5, 10, 15 Time taken in hours: 20, 4, x, $\frac{4}{3}$ The value of *x:* a) 200 b) 2 c) $\frac{4}{5}$ d) 8	(1)

1.5	The square root of $\sqrt{16x^{16}}$ a) $8x^8$ b) $8x^4$ c) $4x^4$ d) $4x^8$	(1)
1.6	144 as a product of its prime factors is: a) $4^2 \times 2^3$ b) $4 \times 2 \times 2 \times 3$ c) $2^4 \times 3^2$ d) $2 \times 2 \times 2 \times 3 \times 3$	(1)
1.7	What will a 20kg bag weigh if its mass is increased by 40%? a) 60kg b) 32kg c) 28kg d) 24kg	(1)
1.8	Convert the following number to scientific notation: $0{,}00000000089123$ a) $0,00000000089123 \times 10^{10}$ b) $8{,}9123 \times 10^{10}$ c) $8{,}9123 \times 10^{-10}$ d) $89{,}123 \times 10^{-10}$	(1)
1.9	If $(x-1)(x+2)=0$, then x = a) -1 *or* 0 b) 1 *or* -2 c) 1 d) -2	(1)
1.10	The product of a number and 6, decreased by 4 is equal to 20. Which of the following equations matches the statement? a) $6x+4=20$ b) $6x-4=20$ c) $6(x+4)=20$ d) $6-4x=20$	(1)
		[10]

QUESTION 2: True or False

2.	Indicate next to the statement whether it is true or false. **If false, give a reason.**	
2.1	$\frac{12m^2n-12mn^2}{3mn}$ $= \frac{2m-n}{3}$	(2)
2.2	The general rule (T_n) for the pattern 3 ; 7 ; 11 ; 15 is : $T_n = 4n-1$	(2)
2.3	If two straight lines are perpendicular, the product of the gradients are 1	(2)
2.4	The value of the constant term in $2x^3 - 5x^2 + 3x - 9$ *is*: 9	(2)
2.5	23 is a prime number	(2)
		[10]

QUESTION 3: Matching

3.1 Match Column 1 with Column 2. **Write only the Letter** in the space provided**.**

	Column 1		**Column 2**
3.1.1	Natural number		A) -6
3.1.2	Undefined		B) $\sqrt{10}$
3.1.3	Integer		C) 0
3.1.4	Whole number that is not a Natural number		D) $\frac{3}{0}$
3.1.5	Irrational number		E) 5
			[5]

3.2	What is the HCF of 36 and 78	(3)
3.3	Sally wrote a maths test. There were 40 questions and she answered 85% of the test. How many questions did she answer?	(2)
		[5]

QUESTION 4:

4.1	Josiah is a sales person at Cars Unlimited. He sold 12 cars for the month of October. He sold 8 Toyotas and 4 Hyundais	
4.1.1	Write the number of Toyotas to the number of Hyundais as a simplified ratio	(2)
4.1.2	Josiah decided to split his commission with his colleague in the ratio 4 : 2. If he received a total of R42 000 for the month of October, how much did he give his colleague?	(3)
4.1.3	If Josiah lives 53km away from his work and it takes him an average of 45 minutes to get to his work. What speed is he travelling at?	(4)
4.2	Josiah lives in KZN and his area is experiencing a drought (less water). He installed an electric pump to pump out water from an underground Borehole into a 20 000 litre water storage tank. If the water is pumped out at a rate of 50 litres per minute, how long does it take to fill the tank? Give your answer in hours and minutes	(4)
		[13]

QUESTION 5:

5.1	The polynomial $3a^2 - 4a^3 + 6a + 10a^5 - 14 + a^7$	
5.1.1	How many terms does the above polynomial have?	(1)
5.1.2	What is the numerical coefficient of a^5	(1)
5.1.3	Write down the degree of polynomial	(1)
5.1.4	Arrange the polynonomial in decending powers of *a*	(2)
5.2	Calculate the value of $3x^3 - 2x^2 - 9x + 2$ if $x = -2$	(3)
5.3	Simplify: $\frac{xy}{z} \times \frac{2x}{yz} \div \frac{4}{xyz}$. Leave answer in positive exponents	(4)
		[12]

QUESTION 6:

6.1	Simplify the following expressions fully. Write all answers in positive exponents, where necessary.	
6.1.1	$(6x)^0$	(1)
6.1.2	$7x^3 \ . \ 2x^5$	(2)
6.1.3	$\frac{a^4 \ . \ a^4}{a}$	(2)
6.1.4	$\frac{b^{-3} \ c^3}{b^{-2} \ c^{-4}}$	(3)
6.1.5	$\frac{(4x^2 y)^2}{12x^2 y^3}$	(3)
6.1.6	$13a^3 y - 5a^3 y + 2a^4$	(2)

6.1.7	$(2a)(3a)(4b)$	(2)
6.1.8	$5y(2y^2 - 3y + 4)$	(3)
6.1.9	$(t - 4)(t + 2)$	(3)
6.1.10	$(a - 5)^2$	(3)
		[24]

QUESTION 7:

7.	Fully factorize the following	
7.1	$12ad + 10ab$	(2)
7.2	$x^2 - 25$	(2)
7.3	$x^2 - 15x + 36$	(2)
7.4	$3x^2 - 9x - 30$	(3)
7.5	$\frac{x^2 - 16}{x - 4}$	(3)
		[12]

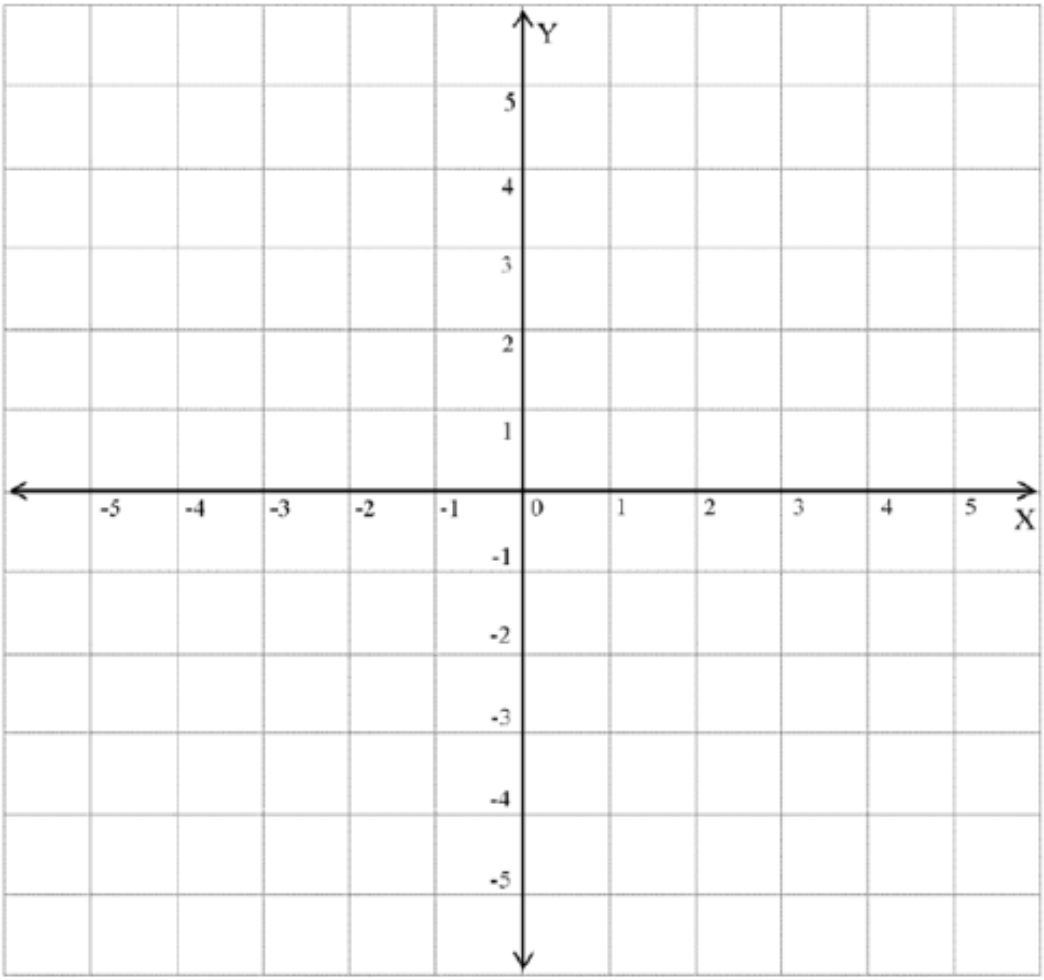
QUESTION 8:

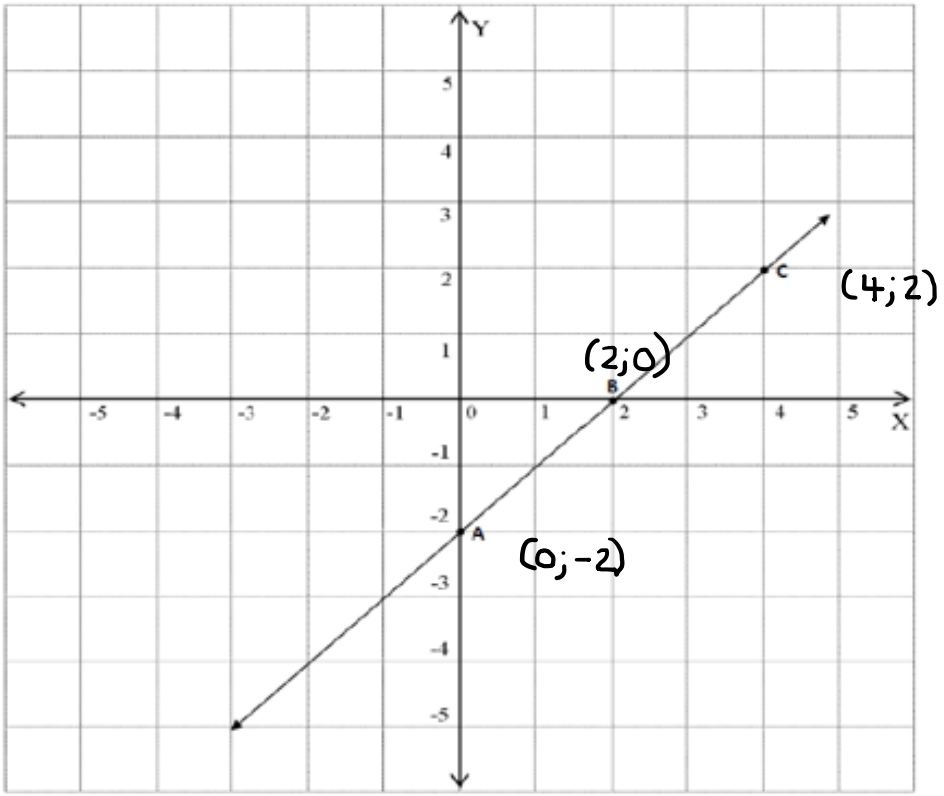
8.	Solve for the variable in each of the following equations.	
8.1	$3x - 7 = 2x + 4$	(2)
8.2	$5(a - 1) - (1 - 2a) = 8$	(3)
8.3	$(2x - 3)(2x + 3) = 0$	(3)
8.4	$\frac{3m - 10}{2} = \frac{2m - 5}{3}$	(4)
		[12]

QUESTION 9:

9.	In the number sequence $-1\ ;\ -4\ ;\ -7\ ;\ -10$	
9.1	Write the formula in terms of T_n of the above sequence	(2)
9.2	Calculate the 23rd term	(2)
9.3	Show by calculation whether -167 is a number in the sequence or not	(3)
		[7]

QUESTION 10:

10.1	Given the formula $y = -2x + 1$	
10.1.1	Use the above formula to complete the table x | -1 | 0 | 1 y | | |	(3)
10.1.2	Plot the points from the table in 10.1.1 on the cartesian plane below and join the points using a ruler to form a straight line graph.  	(3)

10.2.	Points A(0 ; -2) B(2 ; 0) and C(4 ; 2) are drawn on the straight line graph below. Use the graph and the given points to answer the following questions. 	
10.2.1	Write down the y intercept	(1)
10.2.2	Use the given points to calculate the gradient of the straight line graph	(3)
10.2.3	What is the equation of the graph above	(2)
		[12]

Total: 122

End