HILLCREST HIGH SCHOOL

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INTERNAL EXAM

GRADE 9

MATHEMATICS P1

TERM 4

November Examination

MARKS: 125 **TIME: 2 HOURS**
EXAMINER: MRS OOSTHUYZEN **MODERATOR: MRS CHONNOOLAL**
NAME: _____ **CLASS:** _____

This question paper consists of 12 pages.

QUESTION	1	2	3	4	5	6	7	8	TOTAL
MARK	10	16	18	17	21	15	16	12	125
MARKS									
SIGN									

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This examination consists of 8 questions.
2. Answer ALL the questions in the space provided.
3. Clearly show ALL calculations which you have used in determining your answers.
4. Answers only will NOT necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
7. Write neatly and legibly.

Formulas :

$y = mx + c$ $\qquad$ $m = \frac{y_2 - y_1}{x_2 - x_1}$

$A = P(1 + in)$ $\qquad$ $A = P(1 + i)^n$

*** Good Luck ***

QUESTION 1

	Various options are given below. **Circle** the correct answer:	
1.1	Which one of the following numbers is irrational? a) $3\frac{1}{2}$ b) $\sqrt{5}$ c) $-\sqrt{4}$ d) $\sqrt{9}$	(1)
1.2	1,5 : 0,03 written as a simplified ratio is: a) $50:1$ b) $150:3$ c) $15:3$ d) $15:30$	(1)
1.3	**In the local co-ed softball league, the male to female ratio is 4:5. If there are 126 players in the league, how many are female?** a) 56 b) 63 c) 14 d) 70	(1)
1.4	Factorise $(81x^2 - 16)$ a) $(9x - 4)(9x - 4)$ b) $(x - 1)(81x + 16)$ c) $(9x + 4)(9x - 4)$ d) $(x + 1)(81x - 16)$	(1)
1.5	If Shae drove 636 km at a constant speed of 120km/h hours. How long did she travel for? a) $5h\ 50m$ b) $5h\ 18m$ c) $5h\ 3m$ d) $5h\ 30m$	(1)
1.6	The general rule (Tn) for the pattern 10, 18, 26, 34, 42….. is: a) $8n + 2$ b) $n + 8$ c) $n - 2$ d) $2n - 2$	(1)
1.7	Calculate: $\left(1\frac{1}{8} + 3\frac{3}{8}\right) \div 1\frac{1}{2}$ a) $3\frac{1}{2}$ b) $\frac{38}{9}$ c) 3 d) 2	(1)

1.8	Convert to scientific notation: 7892000000 a) 7.892×10^{10} b) 7.892×10^{9} c) 7.892×10^{-9} d) 0.7892×10^{11}	(1)
1.9	Which of the following has been written as a product of prime factors for 252? a) $2^2 \times 3^2 \times 7$ b) $2^3 \times 3^2 \times 9$ c) $2 \times 3^2 \times 9$ d) $2^2 \times 3^3 \times 7$	(1)
1.10	Solve for x, if: $3x + 7 = 19$ a) $x = 9$ b) $x = 5$ c) $x = 4$ d) $x = 6$	(1)
		[10]

QUESTION 2

2.1	Study the following expression and answer the questions that follow: $4a^2 - 3a^4 + 7a + 9a^5 - 13 + a^6$	
2.1.1	How many terms are there in this expression?	(1)
2.1.2	What is the numerical coefficient of a^5 in the expression above?	(1)
2.2	If $a = 2$ and $b = -3$, then $a^2 - b^3$ is	(3)
2.3	Expand and simplify :-	
2.3.1	$2(3a - 2b)$	(2)
2.3.2	$(2x - 3)(x + 1)$	(3)

2.3.3	$x(x-3)-2x(x-5)$	(3)
2.3.4	$(x^4+2y^3)^2$	(3)
		[16]

QUESTION 3

3.	Simplify, leaving in positive exponential form (show all working) :-	
3.1	$2^4 \times 2^3$	(1)
3.2	$(3m^2)^3$	(2)
3.3	$(7x^5)^\circ$	(1)
3.4	$-f^4g^4 \times fg^\circ$	(2)
3.5	$\frac{6a^2b^2c^4}{18a^2bc^3}$	(3)

3.6	$\frac{xy}{z} \times \frac{2x}{yz} \div \frac{4}{xyz}$	(4)
3.7	$2^{-1} \times 6^2 \times 3^{-2}$	(2)
3.8	$\sqrt{225x^4} - \sqrt[3]{125x^6}$	(3)
		[18]

QUESTION 4

4.	Factorize fully (if possible):	
4.1	$10a + 5b$	(2)
4.2	$4b + c$	(1)
4.3	$3mx + 3nx + m + n$	(3)
4.4	$a^2 - 8a + 15$	(2)

4.5	$x^2 - \frac{4}{9}y^2z^2$	(2)
4.6	$2x(3 - y) + y(y - 3)$	(3)
4.7	$5x^2 - 25x - 30$	(4)
		[17]

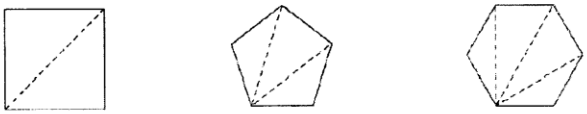
QUESTION 5

5.1	Solve for the variable in the following equations:	
5.1.1	$5a + 8 = 18$	(2)
5.1.2	$2a + 8 = 3a - 4$	(2)
5.1.3	$(x - 2)(x + 8) = 0$	(2)
5.1.4	$6 + 3(x - 2) = 4(x + 1)$	(4)

5.1.5	$5(a - 1) - (1 - 2a) = 8$	(3)
5.1.6	$\frac{2}{3}a + 5 = 9$	(3)
5.1.7	$\frac{x + 3}{2} - \frac{x - 2}{3} = 2$	(5)
		[21]

QUESTION 6

6.1	What is the next number in the following sequences:	
6.1.1	12 ; 17 ; 22 ; 27;	(1)
6.1.2	$x + 1$; $x + 2$; $x + 3$;	(1)
6.1.3	1 ; 4 ; 9 ; 16 ;	(1)
6.2	Consider the following number pattern	
	9 ; 7 ; 5 ; 3 ;	
6.2.1	Determine the general rule of the above pattern in the form $Tn = ...$	(2)

6.2.2	What is the value of the 27^{th} term?	(2)
6.2.3	Which term has the value of – 173?	(4)
6.3	In the figures below all shapes can be divided into triangles to determine the sum of all the interior angles. Eg Term 2 a 5 sided shape has 3 triangles therefore 540° etc.	
	 Term 1 Term 2 Term 3	
6.3.1	If $\boldsymbol{n}$ is the number of sides of a shape, determine a formula to calculate the angles for any closed shape.	(2)
6.3.2	Determine what the sum of the angles will be in a eight sided shape.	(2)
		[15]

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	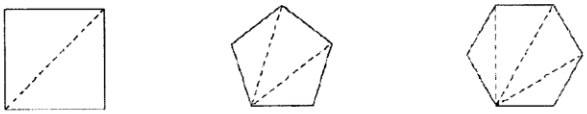 Term 1 Term 2 Term 3	
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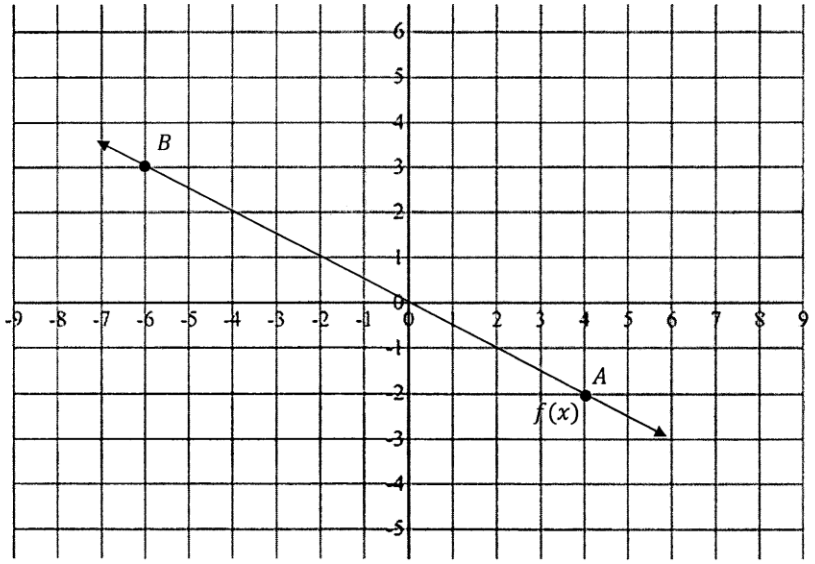
		[15]

QUESTION 7

7.1	Amber earns R42 480 per month. She splits her earnings in the ratio 7 : 5 and saves the lesser amount. How much does she save?	(3)
7.2	Calculate the total amount that Yandisa will have to pay for her car if she borrows R90 000 from Nedbank over a 5 year period at a rate of 11% simple interest.	(3)
7.3	R8000 is invested for 6 years and grows to R13 500. Find the interest rate if interest is compounded annually?	(4)
7.4.1	Ayabonga wants to purchase a camera. The cash price is R4999. He agrees to buy it on Hire Purchase. The terms are as follows: A deposit of 5% of the cash price, thereafter R320 per month for 2 years. What is the total amount that he will pay for the camera on HP?	(3)
7.4.2	A friend from England comes to visit Ayabonga and wants to pay cash for the same camera. If the exchange rate is £1 = $R19{,}50$. How many pounds will he need to exchange to pay cash for it?	(3)
		[16]

QUESTION 8



8.1	Write down the coordinates for A and B: A B	(2)
8.2	Calculate the gradient of line $f(x)$	(2)
8.3	Hence, what is the equation of $f(x)$ in the form $y = mx + c$	(1)
8.4	Given the general form of an equation: $-2y + 4 = 3x$ Re-arrange it to standard form.	(2)
8.5	Determine the gradient of a line perpendicular to the line in question 8.4 above.	(1)

8.6	Sketch on the same set axes over the page, the graph $g(x) = 4x - 4$, showing all intercepts and labelling on the graph. Show all working	(4)
		[12]

Total: 125

End