# HILLCREST HIGH SCHOOL

**GRADE 9** **JUNE EXAMINATION 2018**

**MATHS**

**TIME : 2 HOURS** **MARKS : 160**

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**EXAMINER** : **MRS WOODROW**

**MODERATOR** : **MRS COLE**

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| Gr9 MATHEMATICS JUNE EXAM 2018 | | | | | | | | | | | |
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| Name : | | | | | | | | | | | |
| Teacher : | | | | | | Date : | | | | | Total |
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | |
| 20 | 7 | 18 | 7 | 13 | 14 | 21 | 26 | 8 | 9 | 17 | 160 |
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**INSTRUCTIONS TO CANDIDATES**

1. This paper consists of 11 questions and 13 pages.
2. **Answer the multiple choice questions (Question 1)** in the **grid supplied** at the **top** of the question.
3. Answer all questions on this **QUESTION PAPER**, **NO** additional paper will be provided.
4. **ALL CALCULATIONS MUST BE SHOWN CLEARLY**.
5. An approved calculator (non-programmable and non-graphical) may be used unless stated otherwise.
6. All final answers must be rounded off correct to **TWO decimal places** unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.
9. Write neatly and legibly.

****GOOD LUCK****

1 **QUESTION 1** **[20]**

| 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 1.10 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

1.1 The next number in the sequence 1, 5, 11, 19, … is::

A) 28 B) 29 C) 27 D) 32

1.2 Give the equivalent fraction of $\frac{3}{5}$

A) 0,6 B) $\frac{21}{28}$ C) 0,06 D) 0,006

1.3 Given the expression $-7x^2 + \frac{c}{5} + 4x - 9$ What is the coefficient of $x^2$

A) 7 B) -7 C) 4 D) -9

1.4 If you expand $(x-4)^2$ your answer would be :-

A) $x^2 - 8$ B) $x^2 - 16$ C) $x^2 - 4x + 16$ D) $x^2 - 8x + 16$

1.5 If $a = -2$, $b = 3$ and $c = -5$, then the value of $a^3(b^2 - c) =$

A) -32 B) 56 C) -112 D) 84

1.6 Calculate the answer for the following $\sqrt{16x^{16}}$ :-

A) $8x^4$ B) $4x^4$ C) $16x^8$ D) $4x^8$

1.7 In the following equation $x + 3y = 6$ the y-intercept will be :-

A) 2 B) 6 C) 3 D) 1

1.8 From the following list name 2 like terms : $4t^2$ ; $-2t^3$ ; 3 ; $-2t^2$

A) $4t^2$ ; $-2t^3$ B) $4t^2$ ; $-2t^2$ C) $-2t^2$ ; $-2t^3$ D) $-2t^3$ ; 3

1.9 Line c has a gradient of $\frac{5}{4}$. If line d is parallel to c. What is the gradient of line d?

A) $\frac{4}{5}$ B) $-\frac{4}{5}$ C) $\frac{5}{4}$ D) $-\frac{5}{4}$

1.10 What is the correct rule for the following sequence : 23 ; 16 ; 9

A) $T_n = 7n + 2$ B) $T_n = 7n - 30$ C) $T_n = -7n + 30$ D) $T_n = -7n + 2$

2 **QUESTION 2**

$$-9\ ;\ \sqrt{25}\ ;\ 7\ ;\ \frac{2}{3}\ ;\ \sqrt{2}\ ;\ 0\ ;\ \pi\ ;\ -3\frac{1}{4}$$

2.1 From the list above , write down **all** the :

2.1.1 Whole numbers (1)

2.1.2 Integers (2)

2.1.3 Irrational numbers (1)

2.1.4 Rational numbers (3)

**[7]**

3 **QUESTION 3**

3.1 Calculate the following :-

3.1.1 Write down 252 as the product of its prime factors. (1)

3.1.2 Find the lowest common multiple of 47 and 61, using the products of prime numbers. (2)

3.2 Write the following ratio's in their simplest form (Example 1 : 2) :-

3.2.1 2,25 hrs : 75 min (2)

3.2.2 0,32 : 2,56 (2)

3.2.3 In the local High School the Grade 9 learners are split male to female in the ratio of 7:5. If there are 168 learners, how many are male? (3)

3.2.4 If it takes 20 men 35 hours to complete a job. How long will it take 25 men to complete the same job? (Show all working) (3)

3.2.5 Convert the following quantities :-

3.2.5.1 2534 cm to m. (1)

3.2.5.2 28800 minutes to days. (3)

3.2.5.3 0,000476 kl to millilitres. (1)

**[18]**

4 **QUESTION 4**

4.1 Calculate the following (you may use your calculator, but show all working).

4.1.1 $\left(2\frac{1}{3} - 1\frac{1}{4}\right) \div 7\frac{1}{2}$ (4)

4.1.2 $\frac{2str}{p} \times \frac{p}{r^2} \div \frac{ts}{p}$ (3)

**[7]**

5 **QUESTION 5**

5.1 Simplify the following :-

5.1.1 $\sqrt{25 + 16}$ (2)

5.1.2 $\sqrt[3]{-27x^6y^9}$ (3)

5.2 Simplify, leaving in positive exponential form (show all working) :-

5.2.1 $2^4 \times 2^5$ (1)

5.2.2 $\frac{p^5}{p^8}$ (2)

5.2.3 $(7x^5)^0$ (1)

5.2.4 $(3m^2)^3$ (2)

5.2.5 $2^{-1} \times 6^2 \times 3^{-2}$ (2)

**[13]**

6 **QUESTION 6**

6.1 Expand and simplify :-

6.1.1 $2a^2b(3a^2 - 4b - c)$ (2)

6.1.2 $x(x-3)-2x(x-5)$ (4)

6.1.3 $\left(k+\frac{1}{2}\right)(k-\frac{1}{2})$ (2)

6.1.4 $(2x-3)(x+1)$ (3)

6.1.5 $(3x-4)^2$ (3)

**[14]**

7 **QUESTION 7**

7.1 Factorise the following fully :-

7.1.1 $27ab-3b$ (2)

7.1.2 $x^2+9x+8$ (3)

7.1.3 $36p^2-q^2$ (3)

7.1.4 $3a^3 + 12a^2b^2$ (2)

7.1.5 $2(x - y) - p(y - x)$ (3)

7.1.6 $3x^2 - 24x + 45$ (3)

7.1.7 Determine the following :-

7.1.7.1 Factorise $x^2 - 16$ (2)

7.1.7.2 And hence factorise $(96)^2 - 16$ without the use of a calculator (3)

**[21]**

8 **QUESTION 8**

8.1 Solve the following equations :-

8.1.1 $3x - 8 = 7$ (2)

8.1.2 $x(x+3)=0$ (2)

8.1.3 $x(2x-3)=2x^2-4(2x+5)$ (4)

8.1.4 $x^2+3x=18$ (4)

8.1.5 $2(9y+6)=3(7y-2)$ (4)

8.1.6 $\frac{2y-1}{5}+\frac{y+2}{2}=\frac{3y-8}{10}+y$ (5)

8.1.7 John is 5 years older than Mary. In 7 years' time the sum of their ages will be 55. How old are John and Mary now? (5)

**[26]**

9 **QUESTION 9**

9.1 Sibongile goes on a business trip and leaves home at 6am. She returns home at 9pm. During her trip, Sibongile spends 40% of her time travelling. Calculate the number of hours Sibongile spent travelling. (3)

9.2 Sibongile's company uses the following formulae to calculate allowances for travel and meals :- $Allowance\ (R) = 15d + \frac{k-5d}{3}$ where d represents the number of days away from home and k represents the distance (in km) travelled.

9.2.1 What would Sibongile's allowance be if she spent four days on a business trip and travelled 740km? (2)

9.2.2 Determine how many kilometres Sibongile would have travelled if she received an allowance of R195 for three days travel? (3)

**[8]**

10 **QUESTION 10**

10.1 In the number sequence -10 ; -13 ; -16 ; -19 ; .... :-

10.1.1 Determine the next 2 terms in the number pattern. (2)

10.1.2 Determine the general term Tn, of the pattern shown in question 9.1. (2)

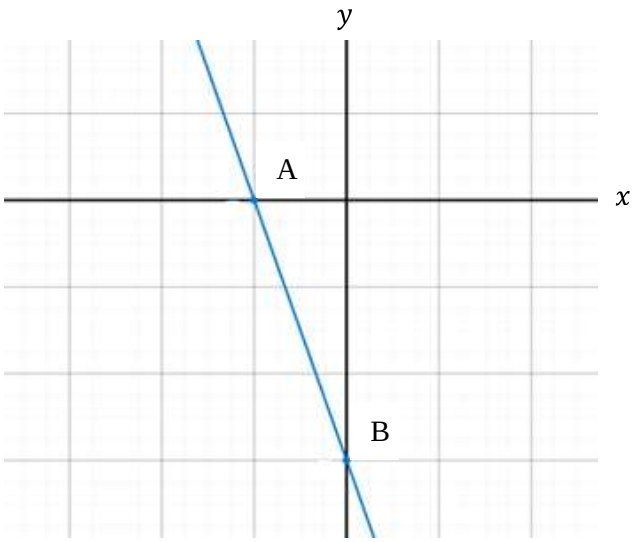
10.1.3 Find the 29th term? (2)

10.1.4 Show by calculations whether -304 is a number in the sequence. (3)

**[9]**

11 **QUESTION 11**

In the following graph A(-3;0) and B(0;-9) :-




11.1 Calculate the gradient of the straight line. (2)

11.2 Determine the equation of the straight line. (2)

11.3 What would the gradient of the line be that is perpendicular to the given graph. (1)

11.4 Plot the following graphs on the same set of Axis. (plot the graphs on Annexure 1)

$f(x) = 2x - 8$ and $g(x) = -x + 2$ (6)

11.5 Reading off the graph what are the coordinates where the two graphs above are equal to each other?

(2)

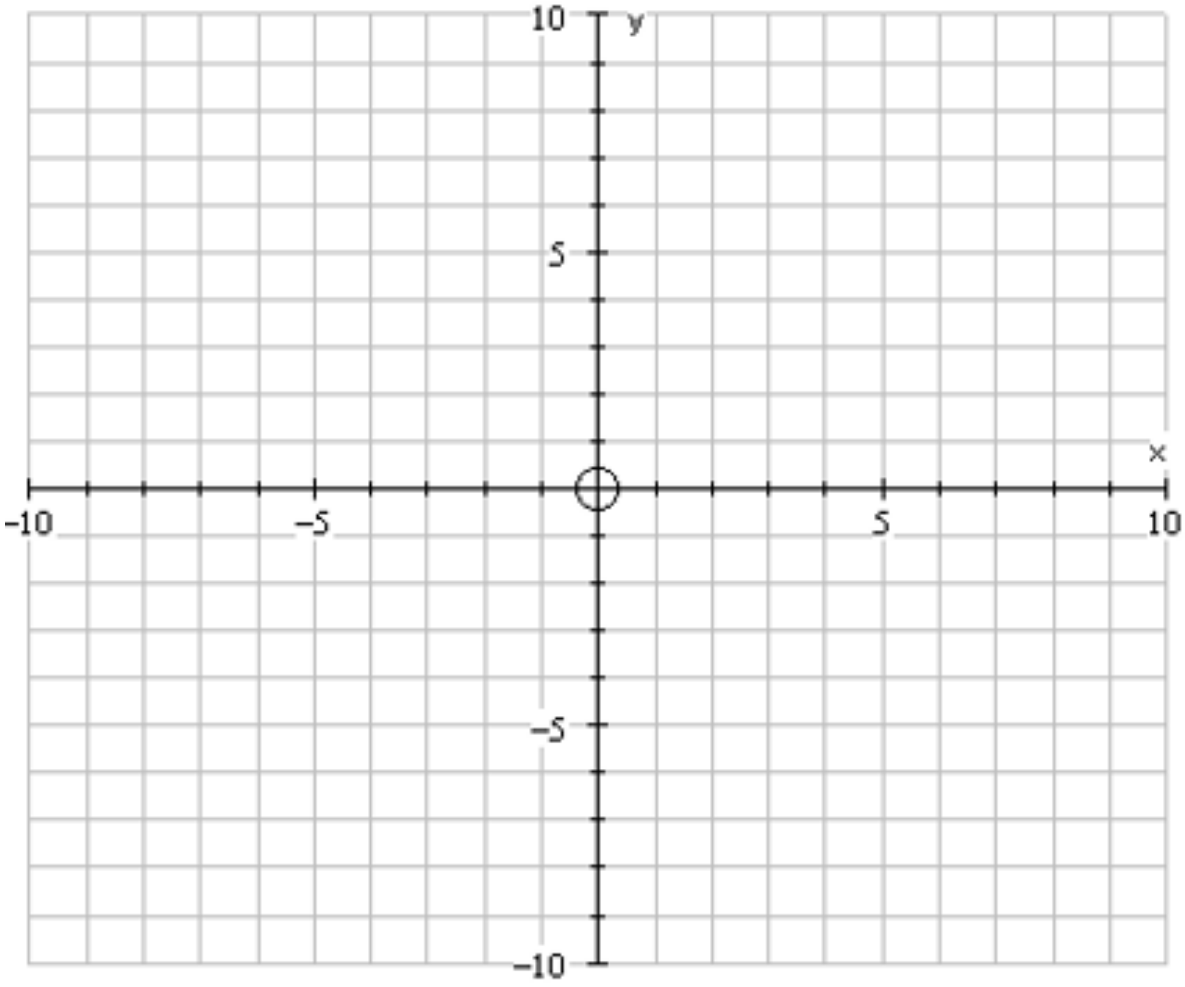
11.6 Determine the equation of a line that passes through the point $(-1; 4)$ and is parallel to $y + 2x = 3$. (4)

**[17]**

**GRAND TOTAL** **[160]**

**** HAVE YOU ANSWERED ALL THE QUESTIONS??**

**ANNEXURE 1**




Calculations :-

**Exam Breakdown Gr9 June**

| | |
|---|---|
| Multiple Choice | 20 |
| Numbers, conversions, ratios | 25 |
| Order of operation | 15 |
| Exponents | 13 |
| Algebra | 14 |
| Factorising | 22 |
| Solving for x | 25 |
| No. patterns | 9 |
| Functions | 17 |
| **TOTAL** | **160** |