HILLCREST HIGH SCHOOL

GRADE 9 **JUNE EXAMINATION 2016**

MATHS CALCULATOR
PAPER 1

TIME : 2 HOURS **MARKS : 110**

EXAMINER : **MR REUBEN**
MODERATOR : **MRS WOODROW**

INSTRUCTIONS TO CANDIDATES

1. This paper consists of 8 questions.
2. Answer ALL questions.
3. **ALL CALCULATIONS MUST BE SHOWN CLEARLY.**
4. An approved calculator (non-programmable and non-graphical) may be used unless stated otherwise.
5. All final answers must be rounded off correct to **TWO decimal places** unless stated otherwise.
6. Indicate units of measurement, where applicable.
7. Start each question on a **NEW PAGE**.
8. Write neatly and legibly.

Question 1

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

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

1.1 Whole numbers (1)
1.2 Integers (2)
1.3 Irrational numbers (1)
1.4 Rational numbers (3)
[7]

Question 2

2.1 Find the LCM of 72 and 120 either by listing their multiples or prime factors. (3)

2.2 Write 2 hours : 180 seconds as a ratio in its simplest form. (3)

2.3 Joe earns R25 per hour working at a pizza shop. How much will he earn over a weekend of two shifts, each six hours long ? (3)

2.4. 25 men complete a job in 60 hours.
2.4.1 How long will it take 20 men to complete the same job? (3)
2.4.2 Is the above relationship in 2.4.1 direct or indirect proportion? (1)
[13]

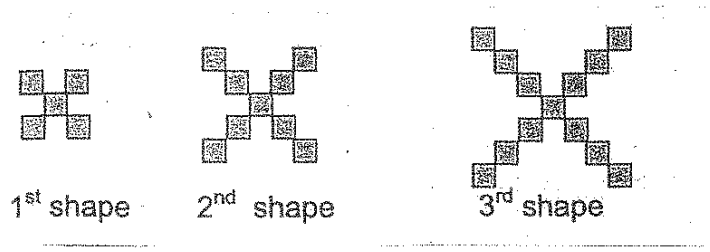
Question 3

3.1 Write down the missing term in the following patterns :

3.1.1. 1 ; 3 ; 6 ; 10 ; 15 ; ____ (1)

3.1.2 19 ; 14 ; 9 ; 4 ; - 1 ; ____ (1)

3.2 Study the pattern below and answer the questions that follow :



3.2.1 Write the rule for finding the number of squares in any shape in words. (2)

3.2.2 Write the rule for the pattern in terms of n, where n represents the position of the shape. (2)

3.2.3 How many squares will the 10^{th} shape have ? (2)

3.2.4 Which shape will have 61 squares ? (2)

[10]

Question 4

Simplify :

4.1 $3a^2b(3a^2 - 4b - c)$ (3)

4.2 $x(x - 5) - (x - 3)2x$ (3)

4.3 $(2x - 3)(x + 1)$ (3)

4.4 $\left(k + \frac{1}{2}\right)(k - \frac{1}{2})$ (2)

4.5 $(3x - 5)^2$ (3)

4.6 $(a + b)^2 - (a - b)(a + b)$ (4)

[18]

Question 5

Factorise fully :

5.1 $3a^2 + 12ab^2$ (2)

5.2 $x^2 + 7x + 6$ (2)

5.3 $36s^2 - t^2$ (2)

5.4 $27a^2b - 3b$ (3)

5.5 $p^4 - 81$ (3)

5.6 $3x^2 - 24x + 45$ (3)

[15]

Question 6

Simplify the following :

6.1 $-\frac{5x^2y}{3} \times \frac{15y}{xy}$ (2)

6.2 $\frac{4y^2 + 2y}{2y}$ (2)

6.3 $\frac{3}{4x^2} - \frac{1}{6xy} - \frac{3}{2xy^2}$ (4)

6.4 $\frac{x^2 + 2x}{x^3 - 2x} \div \frac{x^2 - 4}{x - 2}$ (5)

[13]

Question 7

Solve for x

7.1 $5x + 16 = 2x - 5$ (3)

7.2 $x(2x - 3) = 2x^2 - 4(2x + 5)$ (4)

7.3 $x^2 + 3x = 18$ (4)

7.4 $\frac{x - 4}{3} - \frac{x + 3}{2} = 1$ (4)

[15]

Question 8

8.1 Given $y = -3x + 2$

Complete the following table : (4)

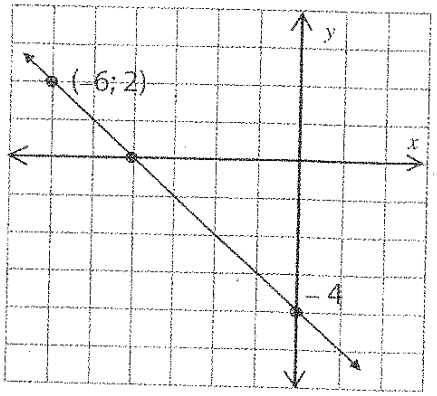
8.1.1

x	-1	0	1	2
y				

8.1.2 Draw the graph of $y = -3x + 2$ on the set of axes provided on Annexure 1. (3)

8.1.3 Find the x-intercept of the graph through calculation. (3)

8.2 Given the graph below:



8.2.1 Determine the gradient of the line. (3)

8.2.2 Write down the equation of the graph. (3)

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

[19]

TOTAL [110]