HILLCREST HIGH SCHOOL

GRADE 9 **JUNE EXAMINATION 2015**

MATHS CALCULATOR
PAPER 1

TIME : 2 HOURS **MARKS : 110**

EXAMINER : **MRS WOODROW**
MODERATOR : **MRS COLE**

INSTRUCTIONS TO CANDIDATES

1. This paper consists of 6 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.

1 QUESTION 1

1.1 Show the following as a product of Prime Factors :-

1.1.1 Number 2430. (2)

1.1.2 Number 450. (2)

1.1.3 Show the HCF for the numbers 2430 and 450. (2)

1.1.4 Show the LCM for the numbers 2430 and 450. (2)

1.2 Given three numbers. $\sqrt{81}$; $\sqrt{25+9}$; $-\sqrt{-7}$

1.2.1 Which of these number is Natural? (1)

1.2.2 Which of these numbers is Rational? (1)

1.2.3 Which, if any are Non-Real (1)

1.3 Convert $\frac{8}{11}$ to the following :-

1.3.1 a decimal fraction (1)

1.3.2 a percentage (2)

1.4 Write the following ratios in their simplest form :-

1.4.1 0,8kl : 2,4kl (2)

1.4.2 325kg : 500g (2)

[18]

2 QUESTION 2

2.1 Simplify the following expressions fully :-

2.1.1 $c(9c-2d)$ (2)

2.1.2 $g^2+2(3g^3+3g^2+6g)$ (3)

2.1.3 $(x-2)4x-x(x-4)$ (3)

2.1.4 $(x-5)(x+5)$ (2)

2.1.5 $(x^2-2)(x^2+3)$ (3)

2.1.6 $(x-4)^2$ (2)

[15]

3 QUESTION 3

3.1 Factorise the following expressions fully :-

3.1.1 $4m^4 - 6m^3 - 2m^2$ (2)

3.1.2 $x^2 - 9$ (2)

3.1.3 $x^2 - \frac{1}{16}$ (2)

3.1.4 $x^2 + 10x + 25$ (2)

3.1.5 $x^2 - 15x + 36$ (2)

3.1.6 $3x^2 - 9x - 30$ (3)

3.1.7 $\frac{x^2 - 16}{x - 4}$ (3)

[16]

4 QUESTION 4

4.1 Solve the following equations fully :-

4.1.1 $3x + 5 = 11$ (2)

4.1.2 $2x + 8 = 6x - 1$ (3)

4.1.3 $3x + 2 = 3x + 6 - 4x$ (3)

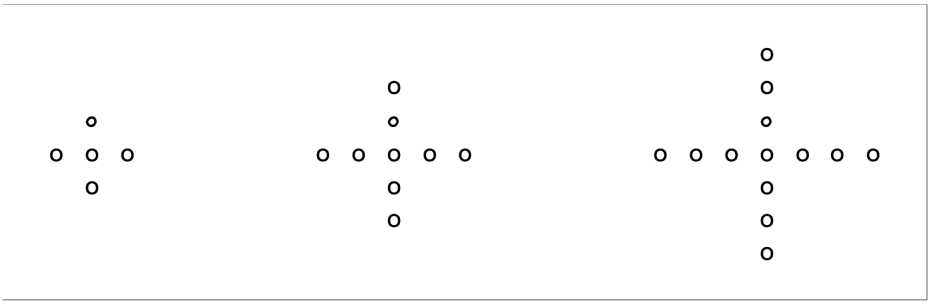
4.1.4 $2(3x - 1) + 2 = 5x + 3$ (3)

4.1.5 $\frac{x}{2} + \frac{2}{3} = \frac{1}{2} + x + \frac{7}{6}$ (5)

[16]

5 QUESTION 5

5.1 Coins are placed in the following sequence, answer the questions that follow :-



5.1.1 Identify how many coins are in the 4th term. (1)

5.1.2 Identify the pattern in words. (1)

5.1.3 Give the general rule. (2)

5.1.4 How many coins would there be in the 67th term (2)

5.1.5 Can a term in this sequence have 45 coins? If so, which term? (3)

5.2 Identify the following sequence and then answer the questions that follow :-

3 ; 9 ; 27 ; 81 ; .....

5.2.1 What is the 5th term? (1)

5.2.2 What is the general term for the sequence? (2)

5.2.3 What term in the sequence has a value of 2187? (3)

[15]

6 QUESTION 6

6.1 Given the following two tables of Graph f(x) and g(x), plot each of the graphs on the same set of axis Annexure 1.

6.1.1 Graph f(x) (3)

x	-2	0	1	2
y	-3	1	3	5

6.1.2 Graph g(x) (3)

x	-2	0	1	2
y	-2	-3	-3.5	-4

6.1.3 What do you notice concerning the graphs plotted for 6.1.1 and 6.1.2? (1)

6.2 Use Annexure 2 to draw the following graphs on the same set of axis :-

Do all your working out on your answer sheet but draw the graph on Annexure 2.

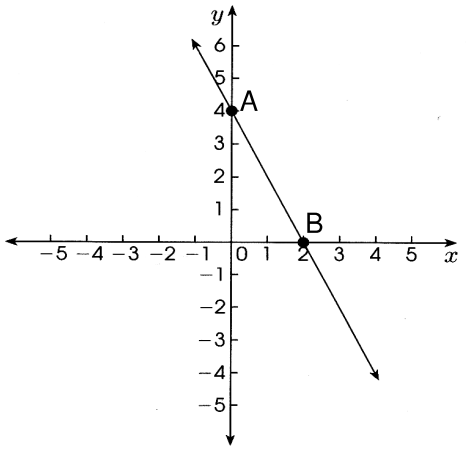
6.2.1 Rewrite $2x+3y=6$ in the form $y=mx+c$ (1)

6.2.2 Using the table method to plot $2x+3y=6$ (See Table in Annexure 2) (3)

6.2.3 and the dual intercept method to plot $3x+2=y$
(Show all your working on your answer sheet) (4)

6.3 Using the graph plotted in Annexure 2, determine the point of intersection of the 2 graphs. (2)

6.4 Refer to the diagram below and answer the questions that follow :-



6.4.1 Determine the length AB (if $x^2+y^2=r^2$). (3)

6.4.2 Find the equation of the graph. (4)

6.4.3 What would the equation of the graph be that is parallel to the above mentioned graph but that passes through the point $y=-1$ (2)

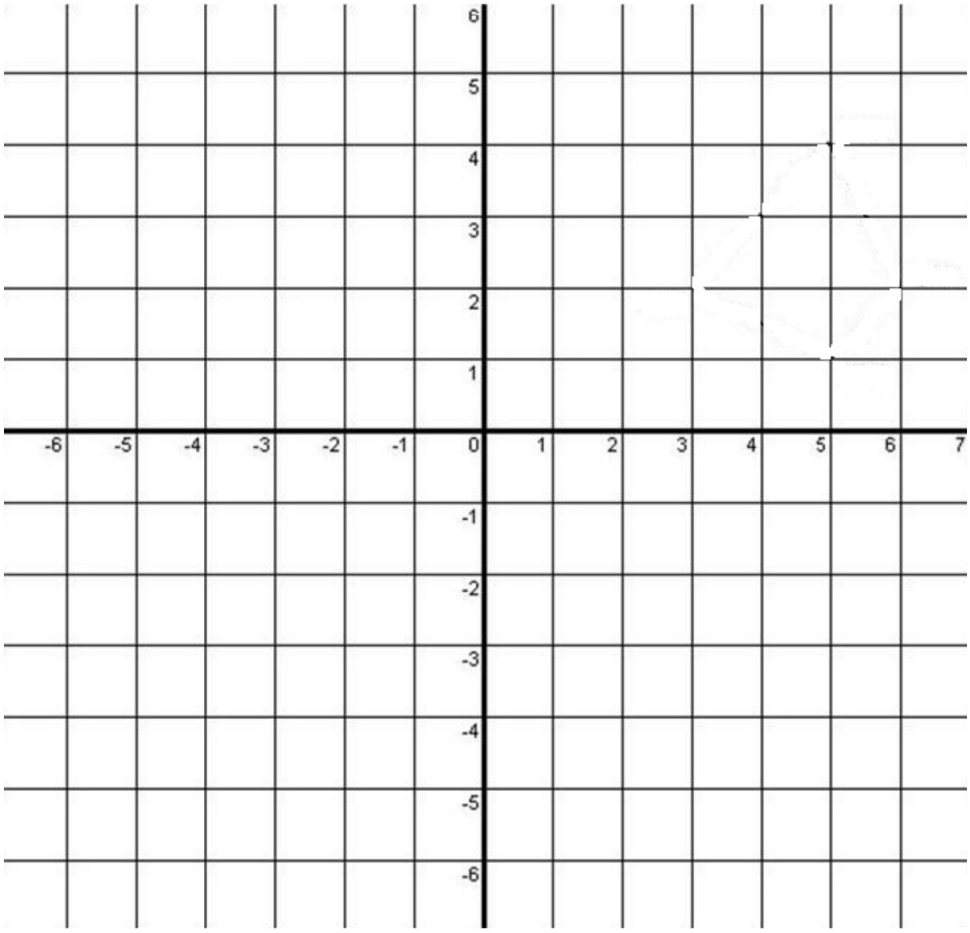
6.4.4 What would the equation of the graph be that is perpendicular to the graph mentioned in 6.4.2 but that passes through the point B. (4)

[30]

GRAND TOTAL **[110]**

ANNEXURE 1

Grid for graph f(x) and g(x)



ANNEXURE 2

6.2.2

x						
y						

Grid for graph for 6.2.2 and 6.2.3