**F.3 Mathematics – Supplementary Worksheet for NCM 3A Chapter 4**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class: 3\_\_\_\_\_\_ ( )**

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Level 1**

1. Represent the solutions of each of the following inequalities graphically.

 (a) *x*  −2 (b) *x* < 4

 (c) *x*  0 (d) *x* > −1

 (e) *x* < −3 (f) *x*  5

(12 marks)

2. Use an inequality to represent each of the following statements.

 (a) *x* is greater than or equal to −7.

 (b) The sum of two times of *y* and 5 is less than −2.

 (c) The smallest value of *p* is −3.

 (d) *q* is not less than −1.

(8 marks)

3. Fill in each of the following blanks with ‘>’ or ‘<’.

 If *a* > *b* > 0, then

 (a) −4*a* \_\_\_\_\_ −4*b* (b) −7 + *b* \_\_\_\_\_ −7 + *a*

 (c)  \_\_\_\_\_  (d)  \_\_\_\_\_ 

 (e)  \_\_\_\_\_  (f)  \_\_\_\_\_ 

(18 marks)

4. Consider the inequality .

 (a) Represent the solutions of the inequality graphically.

 (b) Is  a solution of the inequality?

 (c) Is 25.3 a solution of the inequality?

 (d) Is  a solution of the inequality?

(8 marks)

5. Solve the following linear inequalities in one unknown.

 (a)  (b) 

 (c)  (d) 

 (e)  (f) 

(18 marks)

6. It is given that *x* + *y* = 8.

 (a) Express *y* in term of *x*.

 (b) If *y* > 20, find the range of values for *x*.

 (c) If *y* > 5, can *x* be the number π?

(12 marks)

7. Samson is now *x* years old. Samson’s sister is three years elder than him. If the sum of their ages is not greater than 31, find the greatest value of *x*.

(12 marks)

8. Two cars travelling in opposite directions at speeds 50 km/h and 70 km/h respectively meet on a road. After at least how many minutes is their minimum distance 3 km apart?

(12 marks)

**Level 2**

1. Use an inequality to represent each of the following statements.

 (a) The sum of four times of *p* and −3 is less than 8.

 (b) The maximum value of *q* is −4.

 (c) *x* is not greater than −2.

 (d) The product of *y* and 7 is not less than −5.

(8 marks)

2. Given that the algebraic expression  is less than 6, find all non- negative integers that satisfy such condition.

(10 marks)

3. It is given that  and 3*x* + *y* = 1.

 (a) Express *x* in term of *y*.

 (b) Represent the range of values of *y* by an inequality.

 (c) Represent the solutions of the inequality obtained in (b) graphically.

(8 marks)

4. Solve the following linear inequalities in one unknown.

 (a)  (b) 

 (c)  (d) 

(16 marks)

5. In each of the following,

 (i) solve the linear inequality,

 (ii) represent the solutions graphically on the number line,

 (iii) find the largest integer that satisfies the given inequality.

 (a) 

 (b) 

(12 marks)

6. The bus fare for one adult is $*a*. The fare for each child is half that of an adult. If the total fare of three adults and two children is not more than $76, at most how much is the bus fare for one adult?

(14 marks)

7. In a fitness course, a student will get a pass if his average score in the five tests is not less than 40. If Raymond’s scores in the first four tests are 38, 46, 29 and 57, what is the minimum score he must get in the fifth test in order to get a pass?

(14 marks)

8. The sum of the digits of a two-digit number is 8 and this two-digit number is less than 40.

 (a) Let *x* be the units digit of the two-digit number. Represent the range of values of *x* by an inequality.

 (b) Find all the possible values of this two-digit number.

(18 marks)