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 ལུ་ཏིག་ཐང་འབྲིང་རིམ་སློབ་གྲྭ་གོང་མ།



**MOTITHANG HIGHER SECONDARY SCHOOL
 THIMPHU THROMDE**

“Every child is **inspired** to learn and **empowered** with **wisdom** to excel in life”

Mid-Term: 2019

Class: IX Mathematics
Date: Monday 25th June 2019

Writing Time: 3hour
Full marks: 100

Name: Class & Sec. Roll No.:

Invigilator's initial

Questions	For Teacher's Use Only																	
	Section A	Section B											Section C					
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q1	Q2	Q3	Q4	Q5	Q6
Marks	20	3	4	4	3	3	4	2	4	4	3	4	7	7	7	7	7	7
Award																		
Teacher's initial																		
Total Marks Awarded																		
Grand Total																		

Section-A (2x10=20 marks)

Direction: Read the following questions carefully. For each question, there are four alternatives. Choose the correct alternative and circle it.

1. Following exponents are true EXCEPT:

a) $a^r \times a^s = a^{r+s}$

b) $a^r \div a^s = a^{r-s}$

c) $(a^r)^s = a^{rs}$

d) $(ab)^r = a^r b$

2. The product of $3^7 \times 3^2$ is

a) 3^7

b) 3^8

c) 3^9

d) 3^{10}

- a) Strong negative correlation
- b) weak negative correlation
- c) Strong positive correlation
- d) Weak positive correlation

Section –B (38 marks)

Direction: Attempt all questions

1. Complete the statements by filling in the missing values. (3)

a) $2^3 \times 2^7 = 2^?$

b) $11^{13} \div 11^? = 11^{-7}$

2. Solve for n in each equation. (3)

a) $7^{10} = (7^2)^n$

b) $(5^b)^3 = 5^{18}$

3. Write each number in scientific notation. (4)

a) 36,416 =

b) 0.27 =

c) 0.0026 =

d) 16 thousandths =

4. Model with tiles to add. (3)

$$(3x + 2x^2 - 4) + (5x^2 - 8x)$$

5. Model each with tiles by taking away. (3)

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

6. Multiply. (4)

a) $(6y - 2)(4y + 5)$

b) $(2y - 4)(2y + 4)$

7. Divide.

(2)

$$(6x^3 - 16x^2 - 6x) \div (6x + 2)$$

8. For each table of values, state whether the relation is linear, quadratic or exponential. (4)

a)

x	y
-2	-3
-1	-1
0	1
1	3
2	5
3	7

b)

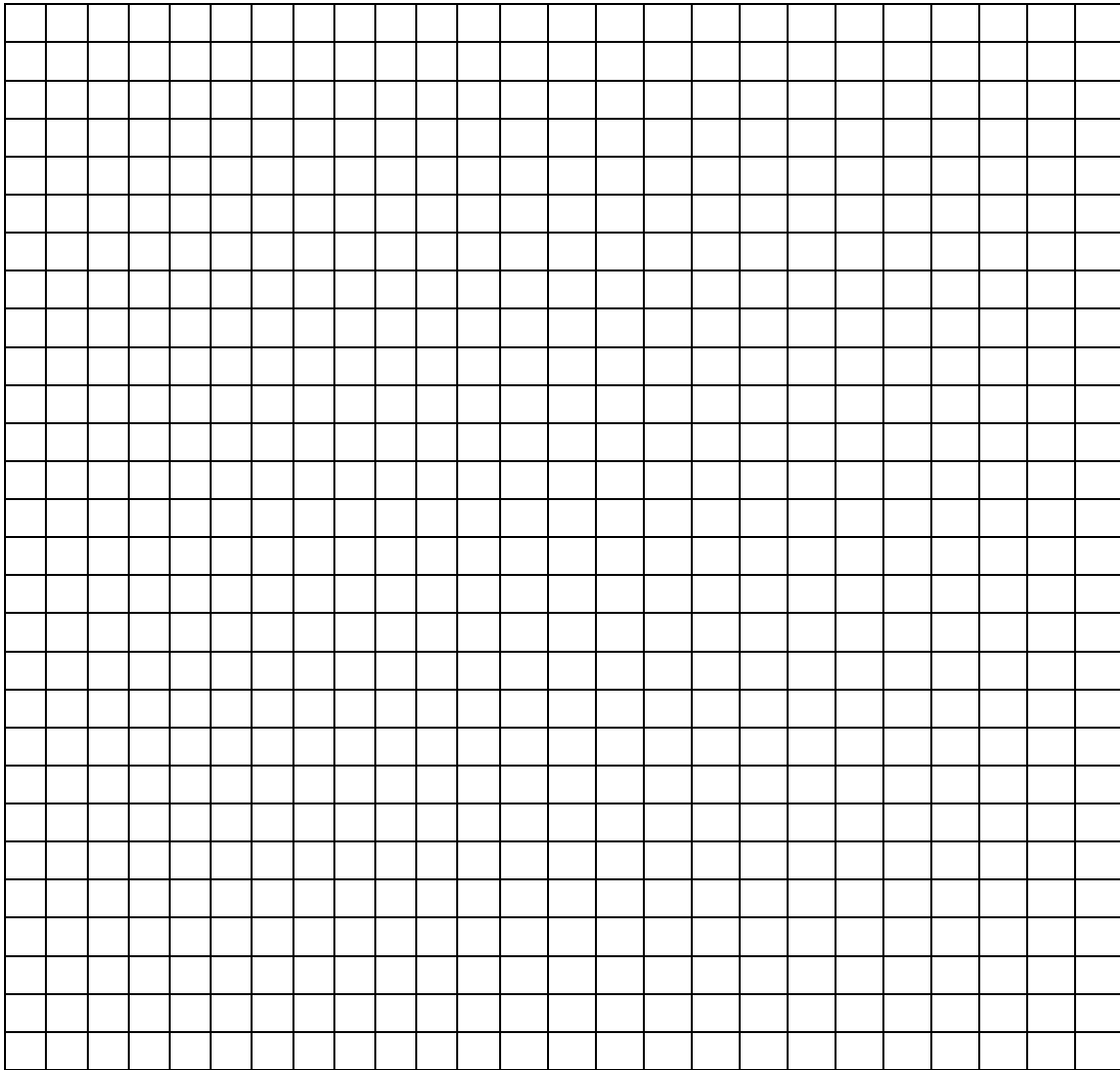
x	y
1	1
2	4
3	9
4	16
5	25
6	36

9. Graph these equations on the same graph.

(4)

a) $y = \frac{2}{3}x + 1$

b) $y = -2x - 1$



10. Write the following equation in slope and y-intercept form.

(3)

$$5x + 2y = 10$$

11. Solve.

(4)

a) $-2 = 2y + 4$

b) $3x - 2 \leq 2x + 1$

Section – C (42 marks)

Direction: *Attempt either I or II from each question.*

Question: 1

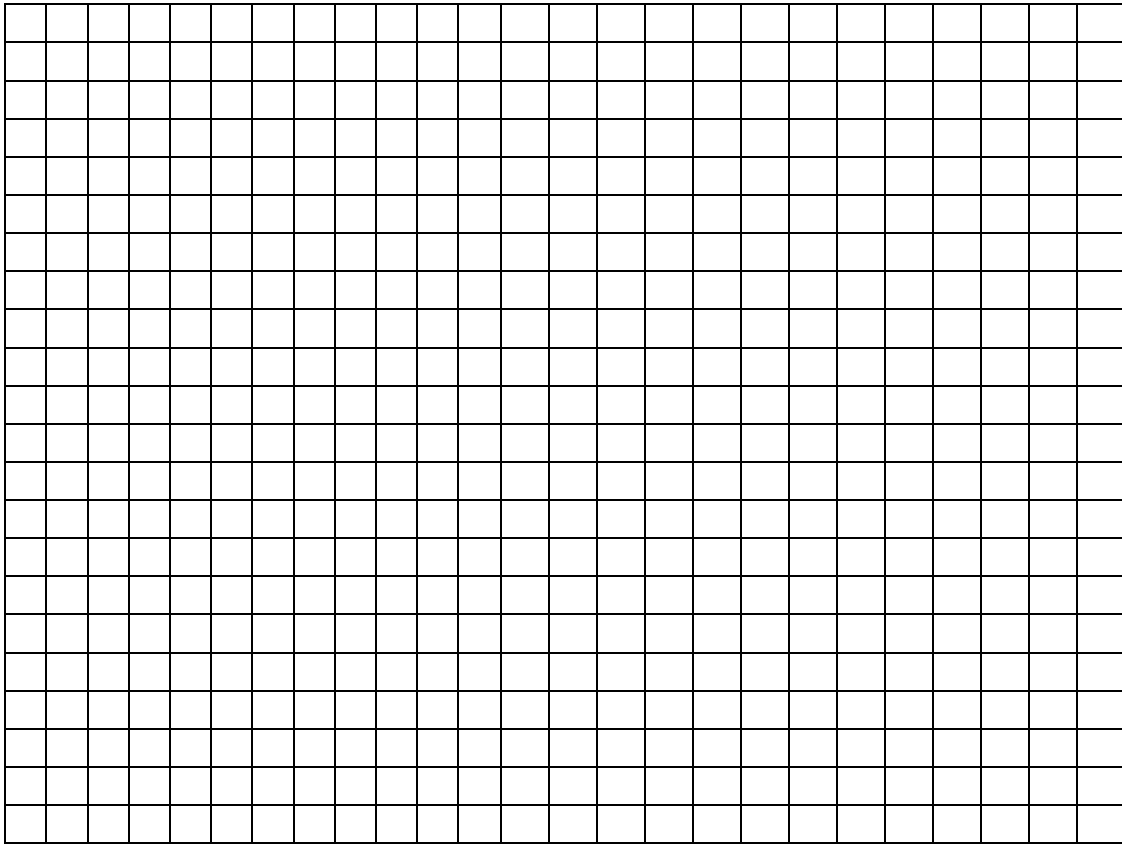
Part I

a) Calculate.

(3)

$$5^3 \times 5^{-5} \div 5^2$$

- b) Sketch the graph for $y = -\frac{1}{4}x + 3$ (4)



Part II

- a) Calculate $2.8 \div (-3.1 + 5^2)$ (3)

- b) Draw next 2 figures in a pattern shown below. (4 marks)



Fig. 1

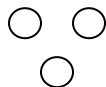


Fig. 2

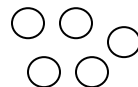


Fig. 3

Question: 2

Part I

- a) Graph the following inequality. (4)

$$\sqrt{2} < n \leq 10$$

- b) Add. (3)

$$(-3y - 2xy + x^2) + (-y + 3xy + x^2)$$

Part II

- a) Subtract. (3)

$$(-3y - 2xy + x^2) - (-y + 3xy + x^2)$$

- b) A photographer charges a sitting fee of Nu.100 and then charges Nu.70 for each photograph purchased. A customer has Nu. 1200 to spend. Determine the number of photographs the customer can buy. (4)

Question: 3

Part I

a) Solve $\frac{3}{4}x + 1 = \frac{2}{3}x + 4$ (3)

- b) Some bamboo plants grow at a rate of 0.0000125 km per hour. Use scientific notation to find out how many metres they grow in 6 weeks? (4)

Part II

a) Divide (3)
 $(4x^2 + 14x + 6) \div (x + 3)$

b) Solve.

(4)

i) $5a - 10 = 20$

ii) $5x + 4 > 8x + 10$

Question: 4

Part I

a) The area of the land inside the square wall around the Dzong is about $4200m^2$. About how long is each side of the wall? (3)

b) Divide.

(4)

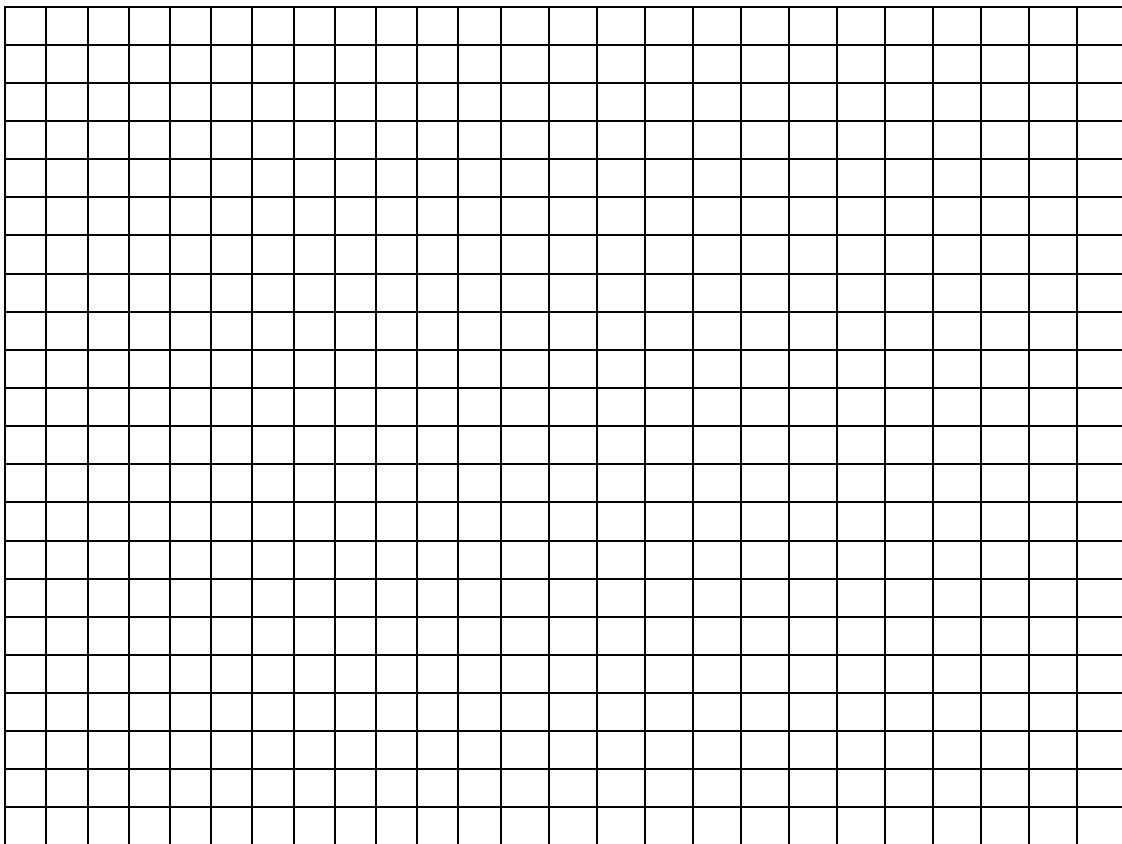
i) $(6 + 2y^2) \div 2y$

ii) $(5xy - 3x - x^2) \div x$

Part II

- a) The quotient of a polynomial divided by a monomial is $3y - 2$. What could the polynomial and monomial be? List two possibilities. (4)

- b) Sketch the graph for the equation $3x + 2y = 6$ (3)



Question: 5

Part I

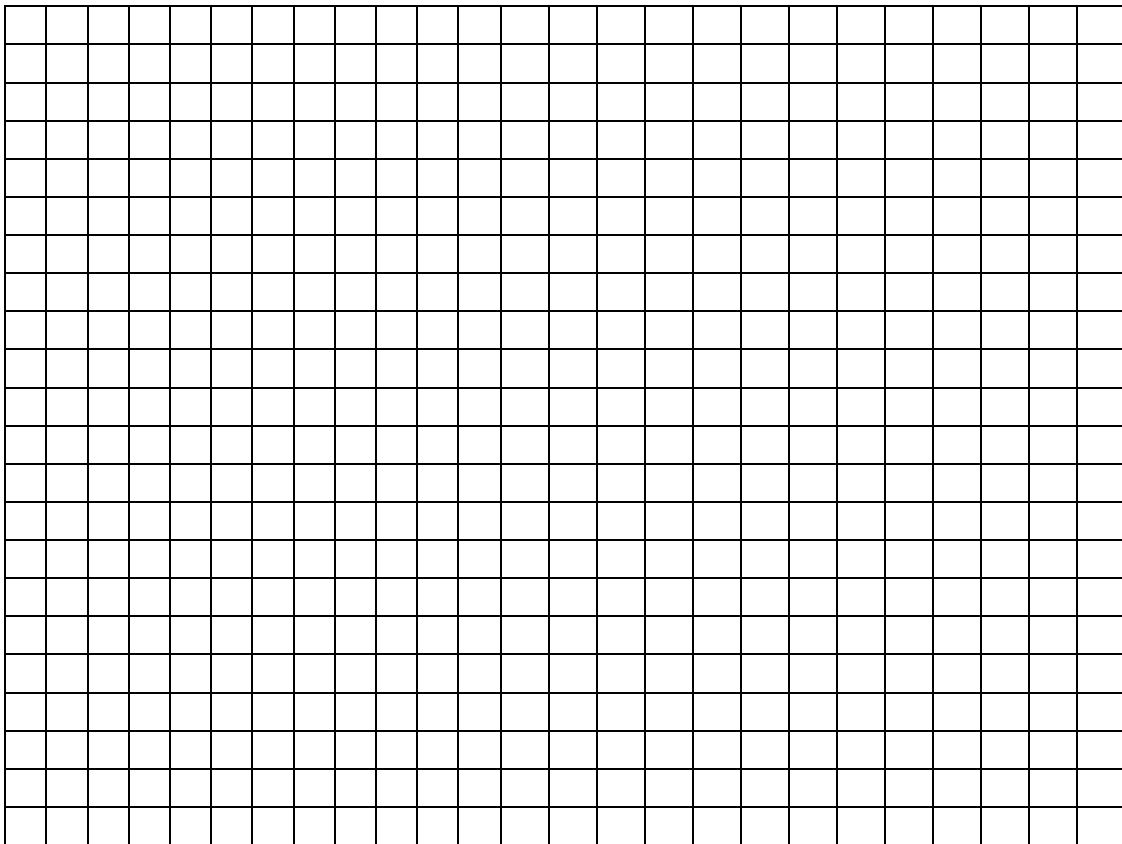
Sonam works at two different jobs.

- One job pays him Nu.500 an hour.
- Other job pays him Nu.350 an hour.

He wants to earn a total of 5000.

a) Write an equation to describe the situation. (3)

b) Sketch the graph of above equation. (4)



Part II

a) Expand and simplify.

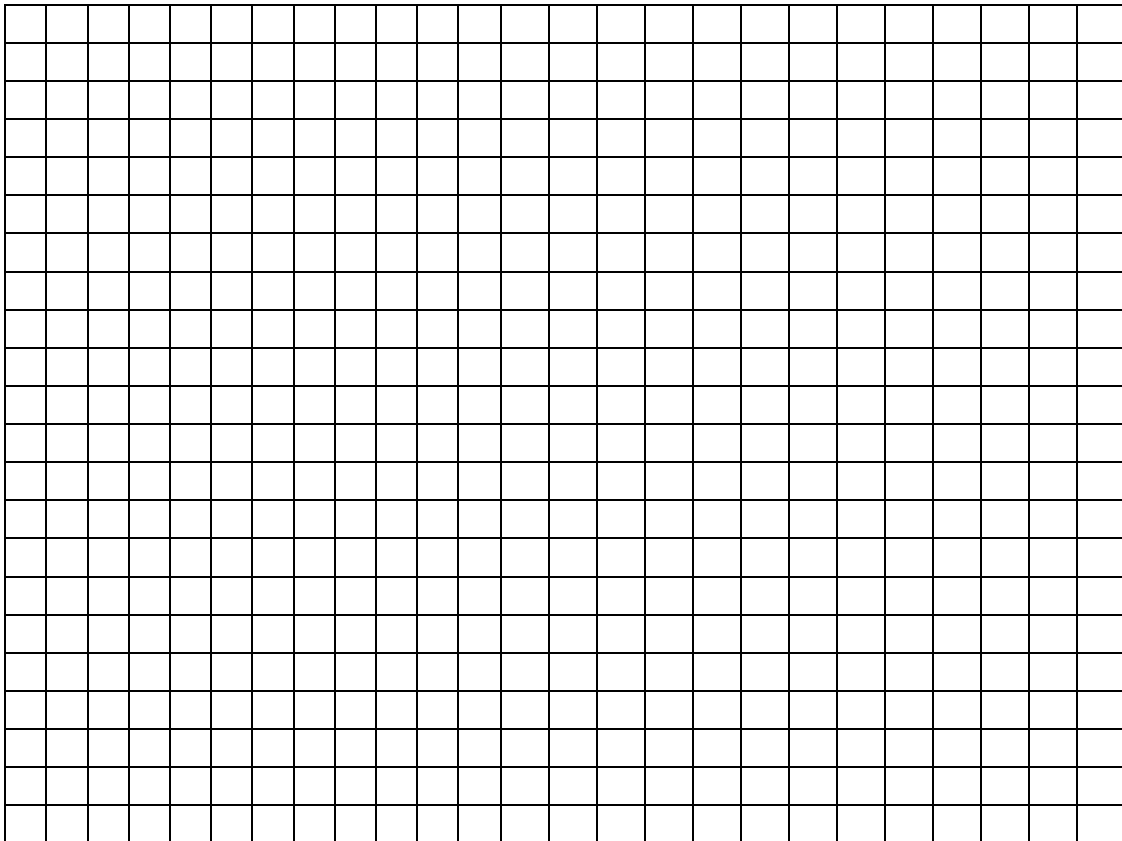
(3)

$$5x(2x - y) - 3y(2 + 3x)$$

b) Create a graph to solve the system of linear equations.

(4)

$$y = 2x - 7 \text{ and } y = 5x - 4$$



Question: 6

Part I

- a) The oranges in the basket on Dema's back weigh about 19 kg. on average there are 11 oranges per kilogram. Estimate the number of oranges Dema is carrying. (3)

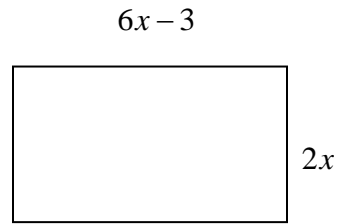
- b) Describe two different ways to estimate. (4)
 0.25×465

Part II

- a) There are seven Higher Secondary Schools in a dzongkhag with an average of 400 students per school. If about 45% of the students are male, about how many females attend these schools? (4)

b) Calculate the area.

(3)



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