

Royal University of Bhutan
Paro College of Education
Autumn Semester Examination – 2013

B.Ed(P) IV– Math in Upper Primary II (MAT 404)

Full mark: 100

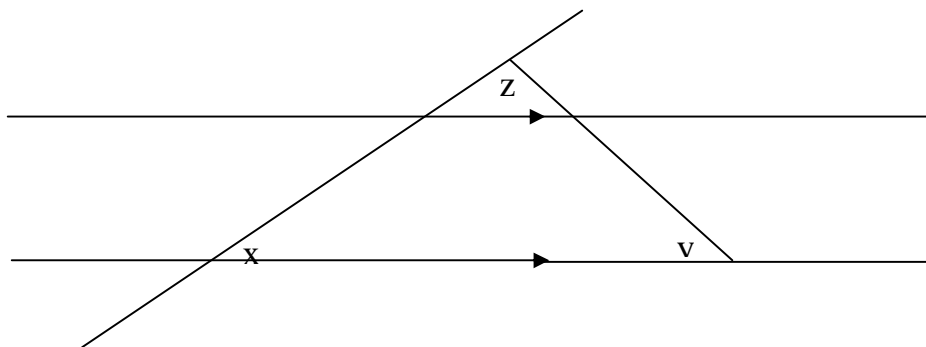
Time: 3 hours

Instruction: You are NOT allowed to use any electronic device. You will be supplied with Grid paper and Isometric grid paper to answer some of the questions.

This paper contains seven questions. Answer **ANY FIVE** questions. All questions carry 20 marks each. Mark for each sub question is given in the bracket.

Question 1

- a. Using a pair of compasses and scale, construct a triangle ABC where $AB = 6$ cm, $AC = 7$ cm, and angle $ABC = 105^\circ$. Show all arcs and points clearly. (5)
- b. Find the value of the angles of the triangle marked x , y , z in the diagram below. Explain, calculate and give reasons for your answer wherever possible. (8)



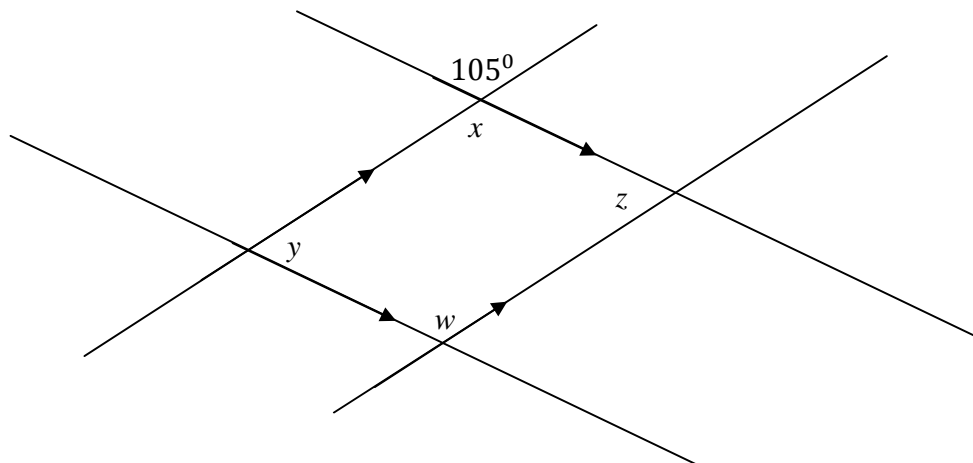
- c. Prove using Algebra tiles that $x^2 - y^2 = (x + y)(x - y)$. Explain if necessary. Show all your illustration and solution in detail. (7)

Question 2

- a. Factor $4x^2 - 12xy + 9y^2$ using algebra tiles. Show the factors clearly. You are expected to explain your answer. (6)
- b. Make a complete lesson plan incorporating 5 Es to teach area or algebra or geometry. (14)

Question 3

- a. Find the value of w , x , y , z in the figure given below and give reasons wherever necessary. (6)



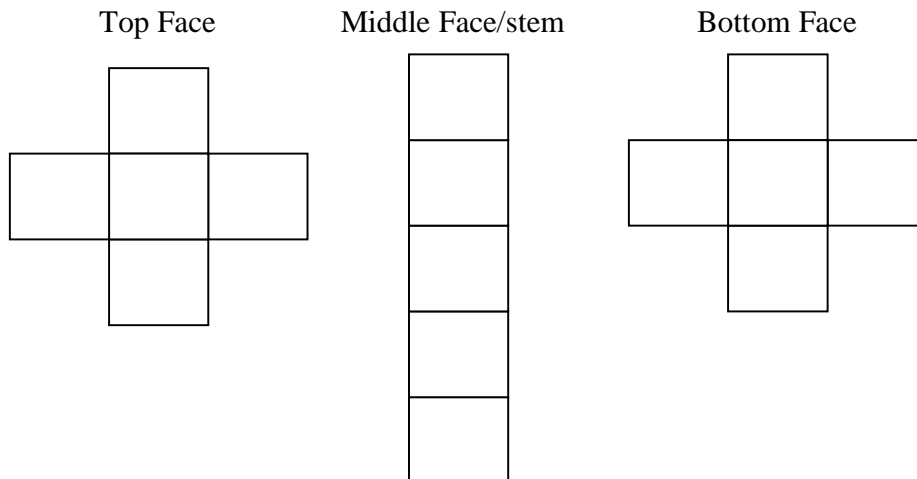
- b. Draw a sketch of an irregular rock. Explain how you are going to find the surface area of the rock (6)
- c. Model the following division problem using algebra tiles.
 $(25x^2 - 36y^2) \div (5x + 6y)$
Write a method to teach this in your class. (8)

Question 4

- a. You are teaching Perimeter. What **Big Idea** will the students explore in the exploring part? What activity will you design for the Elaborative part? (8)
- b. A jar contains 3 red, 5 green, 2 blue and 6 yellow marbles. A marble is chosen at random from the jar. After replacing it, a second marble is chosen. What is the probability of choosing a green and then a yellow marble? (6)
- c. The figure A(1,4), B(2,6), C(3,4), and D(2,5) is translated as per the following translation: $(x, y) \rightarrow (x + 3, y - 2)$. Sketch the pre-image and the image. Rotate the pre-image 90° anticlockwise. (6)

Question 5

- a. You are given 2-D faces of a 3-D diagram. The faces are given below. Draw a 3-D diagram in the isometric grid provided to you. (7)



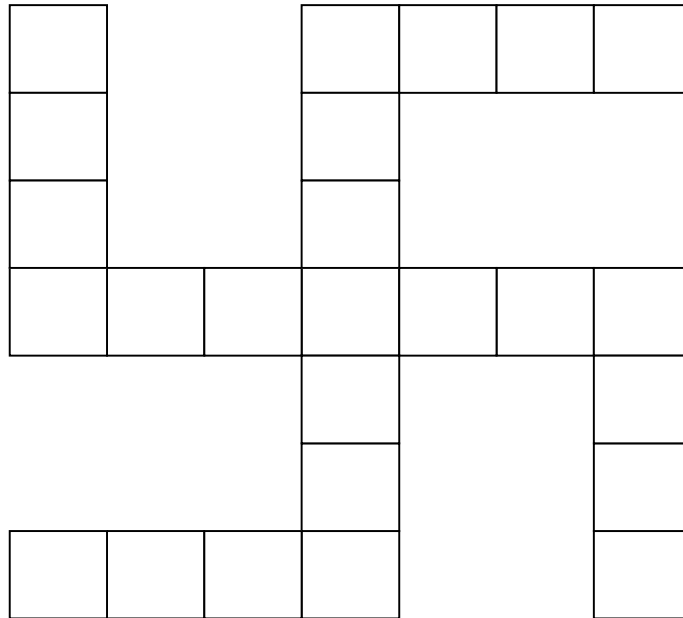
- b. I have 3 plots measuring i. 25 m x 30 m, ii. 50 m x 5 m, and iii. 45m x 10 m. I want to cultivate one plot only. Which plot should I choose? Advise me supported by good reasons. (7)
- c. A coin is tossed and a single 6-sided die is rolled. Find the probability of: (6)
- landing on the head side of the coin and rolling a 3 on the die.
 - landing on the head side of the coin and rolling not 3 on the die

Question 6

- a. A dresser drawer contains one pair of socks with each of the following colors: blue, brown, red, white and black. Each pair is folded together in a matching set. You reach into the sock drawer and choose a pair of socks without looking. You replace this pair and then choose another pair of socks.
- What is the probability that you will choose the red pair of socks both times?
 - What is the probability that it is not a pair of blue socks both times?
 - What is the probability that it will be a pair of red socks followed by a pair of black socks? (7)
- b. Rotate the triangle ABC 90° clockwise where A(2,3), B(-4,-5), and C(-2,2) and then reflect $A'B'C'$ in the X-axis as $A''B''C''$ in the grid paper provided. (6)
- c. Sonam has three plots measuring i. 15m x 80m, ii. 30m x 40m, and iii. 60m x 20 m. He wants to cultivate in one plot only. Which plot should he choose? Give reasons. (7)

Question 7

- a. You are given 2-D faces of a 3-D diagram. The faces are given below. Draw a 3-D diagram in the isometric grid provided to you. [6]



- b. Yangchen is teaching Probability. She wants to use a rubric or a checklist or an anecdotal record. Which one will be a better tool for her to assess and support her students? Justify. (6)
- c. If you are to teach Algebra, What activity will you design in: (8)
- Explore part
 - Elaborate part