

Spring Semester end Examination 2022

Module: MAT202 (Maths in Lower Primary II) **Programme:** BEd (P) **Level:** II

Writing Time: 3 hours

Full Marks: 100

Instruction: *This paper consists of three pages. Spend the first 15 minutes on reading and going through the paper. Do not start writing during this time period. You will be given full 3 hours to write your answers. The paper has a total of seven questions, each with sub-questions. You are required to attempt and provide your solutions to all these questions. Read to understand each question properly before answering them. The marks for the questions are indicated alongside them.*

Question 1 (10 x 3 = 30 marks)

- i. Explain ‘capacity’? Describe the capacity of a water boiler you use at your home using both a standard and a non-standard unit.
- ii. Explain why a square is a rectangle and why both of them are quadrilaterals.
- iii. Sketch a pyramid and tell how many vertices and edges it has.
- iv. Sketch a prism and tell how many vertices and edges it has.
- v. The mean of a set of three numbers is 5. What might the numbers be?
- vi. Explain how one-fourth of a thing is greater than one-fifth of the same thing.
- vii. Is A4 sized paper a 3-D shape? Why or why not?
- viii. List three words that describe the shortest distance between two points.
- ix. Sketch a square. Indicate all of its lines of symmetry using dotted lines.
- x. A sphere has a radius of 5 cm. What will be the internal dimensions of box that will fit in two such spheres exactly?

Question 2 (6 + 2 + 2 = 10 marks)

- a) Add $9 + 8$ using three different strategies. Give a name for each of your strategies and explain them briefly where appropriate.
- b) Selden added a number onto 52 by counting forward in 10s, as 62, 72, 82 and then in 1s, as 83, 84, 85, 86, 87, 88. What number was she adding?
- c) Show the addition of $57 + 34$ using an addition algorithm.

Question 3 (6 + 4 = 10 marks)

- a) Subtract $15 - 9$ using three different strategies. Give a name for each of your strategies, show the steps in the process of your subtraction, and explain them briefly where appropriate.
- b) How is subtracting $67 - 28$ like subtracting $69 - 30$? Which is easier to subtract mentally, and why?

Question 4 (6 + 4 = 10 marks)

- a) Explain $3 \times 5 = 15$ in three different ways. Describe what each number in the multiplication sentence mean in each case. Use illustrations where appropriate.
- b) *One strategy to simplify the multiplication of two numbers is to take the half of one factor and the double of the other. For example, to multiply 32×5 , take the half of 32, which is 16, and double to 5, which is 10. The product will be $16 \times 10 = 160$. It is easier to multiply a number with 10. So, $32 \times 5 = 16 \times 10 = 160$. Create two similar examples.*

Question 5 (6 + 2 + 2 = 10 marks)

- a) Explain $12 \div 6 = 2$ in three different ways. Describe what each number in the division sentence mean in each case. Use illustrations where appropriate.
- b) List all the members of the multiplication-division fact family for $12 \div 6 = 2$.
- c) You are dividing 132 by 2. How could you use multiplication to help you divide it?

Question 6 (6 + 2 + 2 = 10 marks)

- a) Choose a proper fraction less than $\frac{1}{2}$. Represent that fraction in three ways. Use illustrations where appropriate.
- b) A number between 7 and 8 is slightly closer to 7 than 8. What could the number be? Explain why it is closer to 7 than it is to 8.
- c) You add two fractions and the sum is $\frac{5}{6}$. What are your fractions?

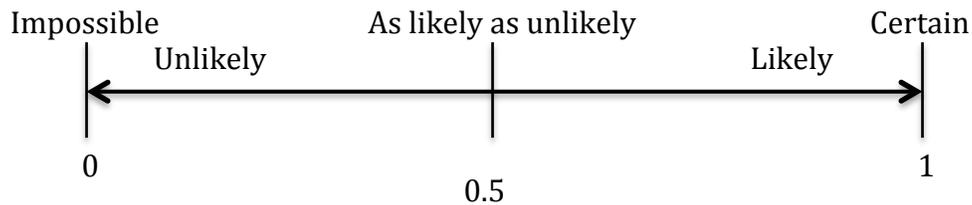
Question 7 (4 + 4 + 2 = 10 marks)

- a) Create a rectangle with dimensions 10 cm by 3 cm. What is the perimeter of the rectangle? What is the area of it?

- b) Create two rectangles with the same perimeters as the one above but with greater areas.
- c) Given the same perimeter when does a rectangle have the greatest area?

Question 8 (10 x 1= 10 marks)

*Probability is about predicting future events. We make predictions using probability words like **certain**, **possible (likely, unlikely)** and **impossible**. These probability words are associated with numbers from 0 to 1, as shown below.*



A container has 7 red, 2 blue and 5 yellow counters. What will be the probability of event below of drawing out a counter randomly?

- A blue counter is drawn (Use a probability word).
- A yellow counter is drawn (Use a probability word).
- A white counter is drawn (Use a probability word).
- A red, a blue or a yellow counter is drawn (Use a probability word).
- Either a red or a blue counter is drawn (Use probability word).
- Either a red or a yellow counter is drawn (Use a number).
- A red counter is drawn (Use a number).
- A black counter is drawn (Use a number).
- A red, blue or a yellow counter is drawn (Use a number).
- Either red or a yellow counter is drawn (Use a number).