

Semester End Examination
Paro College of Education
Royal University of Bhutan
Paro

Module: EAS202, (Supporting Mathematical Thinking) **Programme:** Diploma (ECCD) **Level:** II

Writing Time: Three Hours

Full mark: 100

DIRECTION: This question paper consists of two sections, **A** and **B**. Section A consists of selected-response type questions and section B consists of constructed-response type questions. The weighting for Section A is 20 marks and section B is 80 marks. Every question in section A is worth 2 marks and section B 16 marks. The intended marks for the questions in section B are given alongside every question. Instructions for each section are mentioned accordingly. You are **NOT** allowed to carry/use any electronic devices to answer the questions.

SECTION A (ONE QUESTION - 20 marks)

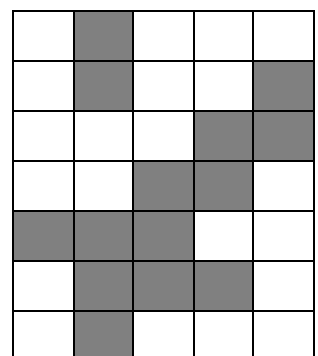
DIRECTION: Answer all the sub-questions numbered **a** to **j**. Choose only one answer that best fits each sub-question and write in the answer script against the question number.

Question 1

- a. “Very young children may think that ‘there are more things’ in a group of larger items than when the same number of objects appear smaller in size; they may think that objects when spread out are ‘a bigger set’ than if the items are close together.”

The above statement best describes about

- A. Counting.
B. Comparing.
C. Measuring.
D. Conservation.
- b. The statements below describe about the shape given to the right.
- Three fifths of the shape is unshaded.
 - About 50% of the shape is shaded.
 - The shaded portion of the shape can be expressed as 60%.
 - The difference between the shaded and the unshaded parts is about 30%.

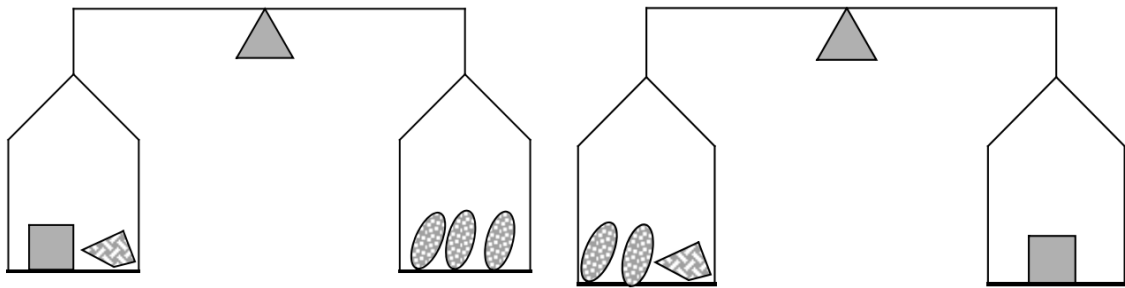


Which of the following responses is correct about the four statements above in the sequence corresponding to the statements?

- A. TRUE, TRUE, FALSE, TRUE.
B. FALSE, TRUE, TRUE, FALSE.
C. TRUE, FALSE, TRUE, FALSE.
D. FALSE, TRUE, FALSE, TRUE.

- c. The diagram below shows two scales. In the first, three ovals weigh the same as one cube and one pyramid while in the second one cube weighs as much as two ovals and one pyramid.

How many pyramids will balance one oval?

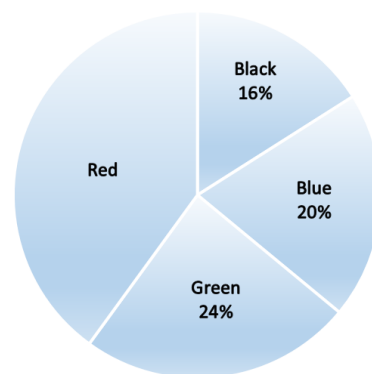


- A. 3
B. 2
C. 4
D. 1
- d. Which of the following activities best promotes mathematical understanding among preschool children?
- A. Learning about the calendar.
B. Counting by rote to ten on a daily basis.
C. Sorting objects in a variety of ways and talking about how they are sorted.
D. Naming geometric shapes that can be found around the room and drawing pictures of them.
- e. A pre-school teacher is planning activities to introduce students to non-standard units of measurement. Which of the following activities will best meet the teacher's goal?
- A. Asking students to use pencils to measure the length of a desk.
B. Asking students to stand in a line, from the shortest person to the tallest.
C. Asking students to use a measuring tape to measure the length of the classroom door.
D. Asking students to determine how many one-litre bottles of water can fill a small bucket.

- f. The chart given to the right represents the favourite colours of children in an ECCD classroom.

If there are 50 children in total, how many children like red?

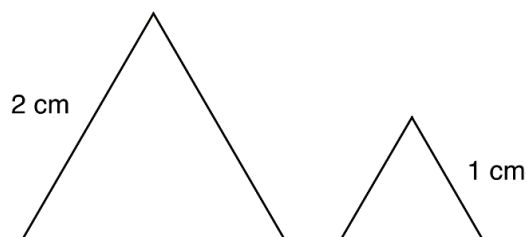
- A. 25 children.
- B. 20 children.
- C. 30 children.
- D. 15 children.



- g. The diagram given to the right shows two equilateral triangles.

How many times will the smaller triangle fit into the larger triangle?

- A. 2
- B. 3
- C. 4
- D. 5



- h. Use the five statements given below to answer the question that follows.

- i. When you toss a coin, it will land on the head.
- ii. When you put your hand in water, it will become wet.
- iii. Next year the Sun will rise from the west.
- iv. This summer the rivers in Bhutan will decrease in their volume.
- v. If you are well prepared, you will pass the EAS202 examination this time.

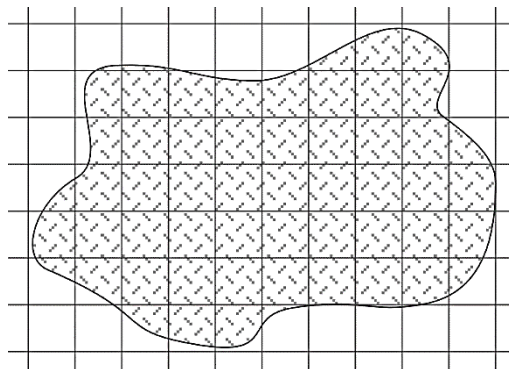
Which of the following lists of chance terms describe correctly the above statements in the corresponding sequence?

- A. Unlikely, Always, Never, Even Chance, More Likely.
- B. Always, More Likely, Never, Unlikely, Even Chance.
- C. More Likely, Never, Unlikely, Even Chance, Always.
- D. Even chance, Always, Never, Unlikely, More Likely.

- i. The diagram to the right shows a pond on a 1-metre square grid.

The closest estimated area of the pond is

- A. about 50 square metre.
- B. about 45 square metre.
- C. about 40 square metre.
- D. about 35 square metre.



j. Use the five statements given below to answer the question that follows.

- i. The capacity of a car's petrol tank.
- ii. The weight of an elephant.
- iii. The distance from Thimphu to Bumthang.
- iv. The length of a mouse's tail.
- v. The weight of a bag of sugar.

The metric unit that would be most useful for measuring each in the above statements respectively are,

- A. Litre, Tonne, Kilometer, Centimeter, Kilogram.
- B. Kilogram, Tonne, Kilometer, Litre, Centimeter.
- C. Tonne, Kilogram, Kilometer, Centimeter, Litre.
- D. Litre, Tonne, Kilogram, Centimeter, Kilometer.

SECTION B

(Five Questions - 80 marks)

DIRECTION: *There are SIX questions in this section. Answer any **FIVE** questions. Sub-questions must be answered in order and completely for every question attempted.*

Question 2

- (a) Give a brief account of the materials present in different play areas that promote and develop the mathematical thinking of young children at your ECCD centre. Give suitable/relevant examples as necessary in support of your response. [8]
- (b) Elaborate on the opportunities and experiences that young children are provided to learning mathematical skills and concepts meaningfully from other learning spaces apart from the blocks play. [8]

Question 3

- (a) Explain the role of technology/ICT in the context of ECCD, the strengths, drawbacks and the challenges in general and in relation to your workplace setting. [8]
- (b) Give an account of how you designed and executed an activity or a set-up at any one play corner/area that reinforced and facilitated children's skills and understanding of any or several of the measurement aspects. [8]

Question 4

- (a) Explain your understanding of 'what it means to measure', and how this understanding informs you to help your children at the centre enabling them to understand the measurement concept. List six measurement aspects that we can integrate in young children's play context. [5+3 = 8]
- (b) Describe a simple activity or a set-up of an area/corner in which your focus of children's engagement and learning outcomes is on the development of data and chance. Give necessary illustrations and explanations as required. [8]

Question 5

- (a) i). List all the key principles of counting.
ii). Explain any one clearly giving suitable examples and illustrations in support of the idea. $[2\frac{1}{2} + 5\frac{1}{2} = 8]$
- (b) Give an account of how you provide geometric experiences to young learners at your play centre giving appropriate and meaningful examples. [8]

Question 6

- (a) Choose any two from the following pre-number ideas and describe a short activity each in context of early years' mathematics learning experiences. [2 × 4 = 8]
- i. Matching.
 - ii. Sorting.
 - iii. Comparing.
 - iv. Ordering.
- (b) Explain how building blocks play can help develop young children's mathematical skills and concepts. Use suitable diagrams/illustrations and relevant examples to support your answer. [8]

Question 7

- (a) Elaborate on the following two points with reference to early mathematics in ECCD centre practices giving relevant examples. [4 + 4 = 8]
- i. The importance of language.
 - ii. Family connections.
- (b) Design an appropriate activity of reasonable length to help young children develop skills and experience meaningful mathematical learning in particular measurement. [8]