**CRITIRCAL AND CREATIVE THINKING ITEMS**

**CLASS VIII : CHAPTER 3 : UNDERSTANDING QUADRILATERALS**

**INDEX**

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| **S.No.** | **Theme of the item** |
|  | Fire cracker |
|  | Mt everest |
|  | Himalayan range |
|  | Raju’s Day out |
|  | Climbing a wall |
|  | Decoration of pandal |
|  | Sheet folding |

CCT PRACTICE ITEM

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| Domain:  Mathematical Literacy | Theme:  Fire Cracker | Class: 8  Expected Time: 8 min  Total Credit: 8 |
| **Q.03Burning fire cracker is symbol of joy and happiness in many countries. It mainly burns during new year and special occasion of the different countries. During new year Amit and his family went to an orphanage to share happiness with other needy children. They distributed sweets and crackers to them. Shape of one cracker is shown below.While burning, a question came to the mind of a child. Help him to find the answers**  **i) What is the shape of the cracker?**  **ii) After lightning the cracker at what angle with respect to the edge sparks ejected if the shape is regular.**  **iii) What is the interior angle of the cracker?**  **iv) What is the total angle covered by cracker in ten rotation**. | Learning Outcome:   1. Identification of shapes. 2. Sum of total exterior angle of a polygon 3. Comprehensive ability an analytical approach. 4. Computation skill | |
| **Answer: 1. Hexagon FC 02**  **Any other response NC 00**  **2. FC 02**  **Any other response NC 00**  **3. FC 02**  **Any other response NC 00**  **4. FC 02**  **Any other response NC 00** |  | |

Mathematical Literacy

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| FRAMEWORK | CHARACTERISTICS |
| Competency Cluster | Analysis, computation, justification |
| Overarching idea | Connections between work and ability |
| Context | Real life situation |
| Item Format | Simple MCQ, short response, closed constructed – response |
| Cognitive Process | Scientific |
| Proficiency Level | Skill , confidence and accuracy |

Credit Pattern :

Full Credit: 02

Partial Credit: 01

No Credit : 00

Prepared by- Kendriya Vidyalaya Sangathan, Silchar Region.

CCT PRACTICE ITEM

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| Domain:  Mathematical Literacy | Theme:  Mt Everest | Class: 8  Expected Time: 6 min  Total Credit: 06 |
| **Q.04** ‘**Krushnaa Patil is the youngest woman who successfully climbed Mount Everest. She achieved this at the age of 19,in 2009. At a very early age she was passionate about mountain climbing. During her childhood most of her vacations were on Himalaya’.**  **By reading this article a child of class 9 also get passionate about mountaineering and search different instruments required for that. He made a ladder of given shape**.  **The distance between two consecutive rungs is 50cm on both sides.**  A  B  E  F  G  H  I  J  K  L  C  D   1. What shape is formed by two consecutive rungs with adjacent side? 2. Trapezium b) kite 3. If m 4. What should be the measures of | Learning Outcome:   1. Identification of geometrical shapes. 2. Application of geometrical principle in real life situation. 3. Thrill/self-confidence /dare to accept challenges of daily life. 4. novelty | |
| Answer :   1. Isosceles Trapezium FC 02   Any other response NC 00   1. FC 02   Any other response NC 00   1. and FC 02   PC 01  Any other response NC 00 |  | |

Mathematical Literacy

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| --- | --- |
| FRAMEWORK | CHARACTERISTICS |
| Competency Cluster | Analysis, computation, justification |
| Overarching idea | Connections between real life with geometry. |
| Context | Real life situation |
| Item Format | Simple MCQ, short response, closed constructed – response |
| Cognitive Process | Scientific |
| Proficiency Level | Skill , confidence and accuracy |

Credit Pattern:

Full Credit: 02 if all three answer is correct

Partial Credit: 01 if two of them is correct

No Credit: 00 any other answer or missing answer

Prepared by- Kendriya Vidyalaya Sangathan, Silchar Region.

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| Domain:  Mathematical Literacy | Theme:  Himalayan Range | Class: 8  Expected Time: 8 min  Total Credit: 06 |
| Description of item:  The high altitudes of mountainous regions of the Himalayan range has scarcity of certain food items due to weather conditions. The Green House Chamber stores the maximum light for plants as well protects them from worst effects of strong winds and other adverse climatic situations/conditions of particular region. A Child Mohan of class 9 of Ladakh, wants to help his parents in increasing the production of vegetables in their farm. For that he designed a green-house chamber of height 6m as shown:   1. Identify the shape of the roof (Top and lateral) 2. If he found MG=5m, FG=10m and BL= 8m then what is length of AK? 3. Count the number of polygonal faces. 4. This program is the part of which revolution in our country…………. 5. White revolution b) Blue revolution c) Green revolution | Learning Outcome:   1. Identification of shapes. 2. Application of the property of Trapezium and rectangle. 3. Importance of green house. 4. Comprehensive ability- an analytical approach. | |
| **Answer :**   1. Top : rectangle and lateral : Trapezium FC 02   Any one correct PC 01  Any other answer NC 00   1. AK =BL = 8 m FC 02   Any other answer NC 00   1. 9 FC 02   Any other answer NC 00   1. Green revolution / food for all program FC 02   Any other answer NC 00 |  | |

Mathematical Literacy

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| FRAMEWORK | CHARACTERISTICS |
| Competency Cluster | Analysis, understanding,application of geometrical principle. |
| Overarching idea | Connections in geometrical activity |
| Context | Activity |
| Item Format | Short response, constructed response |
| Cognitive Process | Scientific |
| Proficiency Level | Application of geometry for fun |

Credit Pattern :

Full Credit: 02

Partial Credit: 01

No Credit : 00

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**Practice items for Mathematical Literacy**

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| **Domain:**  Mathematical Literacy | **Theme:**  Raju’s Day out | **Class(es): VIII**  **Expected time:10 min**  **Total Credit:06** |
| **Raju’s Day Out**  On a particular day, Raju starts from his house in the morning and walks 3 km towards East to reach his school. After school, he turns towards North from school and goes 4 km to reach the market for buying notebooks. Raju’s uncle is admitted at the hospital which is at 6 km from the market. Raju turns towards East from the market and goes to the hospital to visit his uncle. From the hospital Raju turns South and travels 4 km to reach his tuition classes. After the classes are over, Raju goes to his friend’s house for a birthday party. His friend’s house is situated at a distance of 3 km towards East from his tuition.  Three roads of length 5 km, 6km and 5 km connect Raju’s home to the market, school to tuition and hospital to his friend’s home.  QUESTIONS :  **[Q01].**Trace Raju’s route using the story given and identify the figure enclosed by Raju’s home, Market, Hospital and his friend’s home.  **[Q02].**How many triangles are there? Are they congruent? Justify.  **[Q03].**Identify the closed figure enclosed by School, Tution, Hospital and Market. | **Learning Outcome:**  **(As per NCERT)**   1. **Students will get a proper concept about direction.** 2. **Students can draw figures by following direction.** 3. **Students can identify various types of quadrilaterals.** | |

**Mathematical Literacy**

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| **FRAMEWORK** | **CHARACTERISTICS** |
| Competency Cluster | Reflection |
| Overarching Idea | Space and Shape, Application of geometry to real life |
| Context | Scientific |
| Item Format | Subjective and close constructed response. |
| Cognitive Process | Scientific and analytical |
| Proficiency Level | High |

**Credit Pattern:**

Full Credit: 02

Partial Credit: 01

Nil Credit: 00

**Description of Answer Key and Credit:**

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| **[Q01]: Full Credit:**  **C:\Users\Owner\Desktop\New Doc 2020-02-05 09.07.45_1.jpg**  Trapezium  **Partial Credit :**Correct tracing of figure but no name is mentioned.  **No Credit:** Any other answer or missing answer    **[Q02]: Full Credit:** 2 triangles. They are congruent. Justification can be given by SSS or RHS or SAS congruency.  **Partial Credit:** No justification given for congruency of triangles.  **No Credit:** Any other answer or missing answer  **[Q03]: Full Credit:** Rectangle  **No Credit:** Any other answer or missing answer |

**Practice items for Mathematical Literacy**

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| **Domain:**  Mathematical Literacy | **Theme:**  **Climbing a wall** | **Class(es):VIII**  **Expected time: 10 MIN**  **Total Credit: 06** |
| **Climbing a wall**  In an adventure training camp, Rohan’s coach gave him a task to climb a wall by following certain instructions.   1. Rohan should start climbing from the bottom of the wall. 2. The wall had certain target points (shown in figure), only which Rohan must use while climbing.   Rohan starts climbing in such a way that by placing his hands and feet on four target points, he obtains a trapezium. Similarly, he can make other shapes such as square, rhombus, rectangle and parallelogram during his climbing task.  sC:\Users\Owner\Desktop\New Doc 2020-02-04 16.19.41_1.jpg  QUESTIONS:   1. Which figure do you get by joining the points – 2. D,C,H,X (b) E,F,G,H (c) I,J,K,L (d) I,J,M,N 3. In which of the shapes, the diagonals are perpendicular bisectors of each other? 4. Trace at least one quadrilateral which is different in shape from the one mentioned in question (1) and name it. | **Learning Outcome:**  **(As per NCERT)**   * **Student learns to identify the different types of quadrilaterals.** * **Student learns to apply properties of quadrilaterals in real life situations.** | |

**Mathematical Literacy**

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| **FRAMEWORK** | **CHARACTERISTICS** |
| Competency Cluster | Reflection and Reproduction |
| Overarching Idea | Similarity and differences of shapes, properties of geometrical shapes |
| Context | Real life situation |
| Item Format | Close structured short responses |
| Cognitive Process | Scientific and analytical |
| Proficiency Level | Average |

**Credit Pattern:**

Full Credit: 02

Partial Credit: 01

No Credit: 00

**Description of Answer Key and Credit:**

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| --- |
| **[Q01]: Full Credit: (**a) Rectangle (b) Rhombus (c) Square (d) Parallelogram  **Partial Credit:** Any 2 – 3 correct answers**.**  **No Credit:** 0 – 1 correct response.  **[Q02]: Full Credit:** Square and Rhombus  **Partial Credit:** If any one of the shapes is mentioned.  **No Credit:** Any other answer or missing answer  **[Q03]: Full Credit:** Tracing the shape KOJN , Kite  **Partial Credit:** The shape is traced but name of the figure is not mentioned.  **No Credit:** Any other answer or missing answer |

**Practice items for Mathematical Literacy**

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| **Domain:**  Mathematical Literacy | **Theme:**  **DECORATION OF PANDAL** | **Class(es): VIII**  **Expected time: 06 MINS**  **Total Credit: 04** |
| **DECORATION OF PANDAL FOR CRAFTS MELA**  A Craft Mela is to be organized by a Welfare Association to promote the art and culture of tribal people. The pandal is to be decorated by using a string of bulbs all around the field.  There are two options for doing the same – either to arrange the string of bulbs in a rectangular pandal ABEF or in a parallelogram pandal ABCD of equal areas.  C:\Users\Owner\Desktop\c78afaf3-741d-4fb2-9d64-27eba74d3618.png  **QUESTIONS** :  **[Q01**] What shape of the pandal should be chosen to minimize the expenses of using bulbs and why?  **[Q02]**Suppose the pandalchosen is to be divided into two equal triangular parts – one for displaying bamboo made exhibits, and the other for displaying jute made exhibits , how will you to do so ? | **Learning Outcome:**  **(As per NCERT)**   * **Students will analyse and compare the perimeters of rectangle and parallelogram by visualizing the problem.** * **Students will apply the properties of quadrilaterals to solve the problem.** * **Students will relate the problem to real life.** | |

**Mathematical Literacy**

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| **FRAMEWORK** | **CHARACTERISTICS** |
| Competency Cluster | Reproduction and Connection |
| Overarching Idea | Perimeter of Shapes |
| Context | Scientific and Analytic |
| Item Format | Subjective, Close structured and Short Response |
| Cognitive Process | Scientific and Analytical |
| Proficiency Level | Average |

**Credit Pattern:**

Full Credit: 02

Partial Credit: 01

No Credit: 00

**Description of Answer Key and Credit:**

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| **[Q01]: Full Credit:** Rectangle / ABEF / Rectangle ABEF , Because of lesser perimeter.  **Partial Credit:** If only the name of the shape is mentioned but no reason is given.  **No Credit:** Any other answer or missing answer    **[Q02]: Full Credit:** By joining vertices A,E or B,F / By drawing any of the diagonals.  **No Credit:** Any other answer or missing answer |

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| Domain  Mathematical Literacy | Theme  Sheet Folding | Class : 8  Expected Time:15 min  Total Credit: 8 |
| **Description of the Item**  A student takes a white sheet. He then folds it once as shown in the diagram. He then draws two line segments of different lengths as shown in the figure. If he cuts it along the line segments and opens up.  C:\Users\Shiksha Nauriyal\Pictures\pisa.png  (a) What shape you will get?  …………………………………………………………………..  (b) Does the shape obtained have a line of symmetry?  ……………………………………………………………..  (c) Give a method to check whether the diagonals of the shape obtained bisect each other?  …………………………………………………………………………………………………………………  …………………………………………………………………………………………………………………….  (d)If the line segments are equal (refer to the figure given below), then what shape the student will get?  C:\Users\Shiksha Nauriyal\Pictures\tempsnip 1.png  …………………………………………………………………………. | Learning Outcome :( As per NCERT)  Understanding the types of quadrilaterals. | |
| **Answer key**   1. Kite FC:02   Any Other Response NC: 00  **2.** Yes, 1 line of Symmetry FC: 02  Any other Response NC: 00   1. By Paper Folding or Measurement FC:02   If any one of the method mentioned PC: 01  Any other response NC:00   1. Rhombus FC: 02   Any other response NC: 00 |  | |

**Credit pattern**

**: Full credit- 2,**

**Partial credit: 1**

**No Credit: 0**

Mathematical Literacy

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| **FRAMEWORK** | **CHARACTERISTICS** |
| Competency Cluster | Connections |
| Overarching Idea | Space and Shape |
| Context | Educational |
| Item Format | Closed and open structured response |
| Cognitive Process | Pattern Recognition |

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