



तत् त्वं पूषन् अपावृणु
केन्द्रीय विद्यालय संगठन

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CCT TEST ITEMS

CLASS VII: CHAPTER 14: SYMMETRY

S. NO.	TITLE OF TEST ITEM
1.	RECYCLING LOGO
2.	SNOWFLAKES
3.	AMBULANCE
4.	PLAY WITH ALPHABETS
5.	MANDALA
6.	MIRROR IMAGE
7.	PENDANT
8.	ROTATIONAL SYMMETRY
9.	ENGLISH ALPHABETS
10.	WHITE BOARD

MATHEMATICS UNIT 1: RECYCLING LOGO

The Universal Recycling symbol is rendered with a black outline and green fill and is internationally recognized for recycling activity. Both filled and outline versions are in use. To raise awareness of environmental issues, a contest on designing the Universal designing symbol was won by a 23- year old university student named Gary Anderson. The logo is usually displayed with the arrows circulating clockwise. The triangle is made up of three arrows drawn as a continuous loop.



Question 1.1: The number of times this logo coincides one full rotation in clockwise direction is:

- i. Two times
- ii. Three times
- iii. Four times
- iv. None of the above.

Question 1.2: The direction of rotation of logo is: (i) clockwise (ii) anticlockwise

Question 1.3: Does the logo show rotational symmetry?

Question 1.3: Two students discuss the order of rotational symmetry of recycling logo. Rini says it is 2, while Rana says it is 3. Who is correct? Justify the correct answer.

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 8 points
DESCRIPTION OF ITEM: The item has a picture of recycling logo along with some information	LEARNING OUTCOME: Understand the types and order of rotational symmetry.	

MATHEMATICAL LITERACY: QUESTION 1.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA(CONTENT AREA)	Quantity
CONTEXT FOCUSED	Scientific
ITEM FORMAT	MCQ
COGNITIVE PROCESS	Understanding and explaining relationships
PROFICIENCY LEVEL	1 C

CREDIT PATTERN

Recycling logo scoring 1.1

FULL CREDIT: three times or (ii)**NO CREDIT:** other responses and missing

Give 2 points for the correct answer option (ii) three times.

MATHEMATICAL LITERACY: QUESTION 1.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA (CONTENT AREA)	Change and relationship
CONTEXT FOCUSED	Scientific
ITEM FORMAT	MCQ
COGNITIVE PROCESS	Identifying Mathematical aspects
PROFICIENCY LEVEL	1 A

CREDIT PATTERN

Recycling logo scoring 1.2

FULL CREDIT: Clockwise**NO CREDIT:** other responses and missing

Give 2 points for the correct answer clockwise

MATHEMATICAL LITERACY: QUESTION 1.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA (CONTENT AREA)	Space and shape
CONTEXT FOCUSED	Scientific
ITEM FORMAT	Open Constructed Response
COGNITIVE PROCESS	Identifying constraints and assumptions
PROFICIENCY LEVEL	2

CREDIT PATTERN

Recycling logo scoring 1.3

FULL CREDIT: for correct answer**NO CREDIT:** For missing response or incorrect explanationGive 2 points if the answer includes a plausible explanation. The plausible explanation can be-
(i) Yes.**MATHEMATICAL LITERACY: QUESTION 1.4**

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA (CONTENT AREA)	Uncertainty and data
CONTEXT FOCUSED	Scientific
ITEM FORMAT	Open Constructed Response
COGNITIVE PROCESS	Representing situation mathematically
PROFICIENCY LEVEL	2

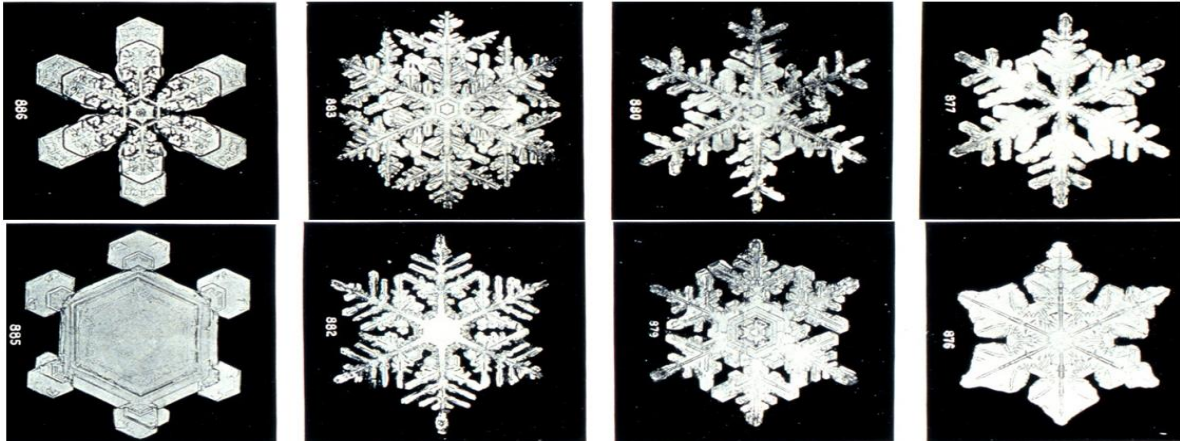
CREDIT PATTERN

Recycling logo scoring 1.4

FULL CREDIT: for correct explanation**PARTIAL CREDIT:** the order is 3/Rana is correct**NO CREDIT:** For missing response or incorrect explanationGive 2 points if the answer includes a plausible explanation. The plausible explanation can be-
Rana is correct. The recycling logo looks three times exactly the same in one complete revolution. So the order of rotational symmetry is 3

MATHEMATICS UNIT 2:- SNOWFLAKES

A snowflake is a single ice crystal that has a sufficient size and falls through the Earth’s atmosphere as snow. Snow appears white in colour, despite being made of clear ice. Snowflakes are formed in varied varieties of intricate shapes, and no two shapes are alike.



Question 2.1: Observe the snowflakes given in the above picture and then answer the following questions.

Observation	Say Yes/ No
(a) All the snowflakes have rotational symmetry.	Yes/No
(b) The relation between width in inches (W) of a snow flake to the time in seconds (t) when it remains in solid form is given by $W = t \times 3.1$. In 2 seconds, the width of the snow flake is 6.2 cm.	Yes/No

Question 2.2: Complete the following:

Figure	Order of rotational symmetry	Number of lines of symmetry
	Infinite	Infinite

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 6 points
DESCRIPTION OF ITEM: The item has a picture showing different shapes of snowflakes along with some information	LEARNING OUTCOME: Understand the line symmetry and rotational symmetry.	

MATHEMATICAL LITERACY: QUESTION 2.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	(i)Reproduction (ii) Connections
OVERARCHING IDEA (CONTENT AREA)	Change and Relationship
CONTEXT FOCUSED	Occupational
ITEM FORMAT	True/False
COGNITIVE PROCESS	Recognizing mathematical structure
PROFICIENCY LEVEL	1 C

CREDIT PATTERN

Snowflakes scoring 2.1

FULL CREDIT: Yes, No

NO CREDIT: other responses and missing

Give 2 points for the correct answer is- (a)Yes, (b) No

MATHEMATICAL LITERACY: QUESTION 2.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA (CONTENT AREA)	Space and shape
CONTEXT FOCUSED	Scientific
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Translating a problem into Mathematical language
PROFICIENCY LEVEL	2

CREDIT PATTERN

Snowflakes scoring 2.2

FULL CREDIT: 6, 6 in both cases

PARTIAL CREDIT: 6, 6 in any one case

NO CREDIT: other responses and missing

Give 4 points for the correct answer

MATHEMATICS UNIT 3:- AMBULANCE

The left side of an object appears to be the right side in the mirror. When the driver of the front vehicle sees the word “Ambulance” in the rear view mirror, he can see the inverted image of the word and read it correctly giving way to the Ambulance.



Question 3.1: Why are the letters of Ambulance reversed?

Question 3.2: The vertical mirror images of the letters B, E, N changes, but their horizontal mirror images remain same. Why?

(i) Find out the alphabet which was not changed if we take horizontal and vertical image both.

Question 3.3: Find out four alphabets which remains unchanged when we take their vertical mirror image.

Question 3.4: Find the mirror image of following figures?

FIGURES	VERTICAL MIRROR IMAGE	HORIZONTAL MIRROR IMAGE

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 8 points
DESCRIPTION OF ITEM: The item has a picture of ambulance along with some information	LEARNING OUTCOME: Recognizing and identifying mirror images and reflection	

MATHEMATICAL LITERACY: QUESTION 3.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA (CONTENT AREA)	Change and relationships
CONTEXT FOCUSED	Occupational
ITEM FORMAT	Open Constructed Response
COGNITIVE PROCESS	Identifying constraints and assumptions
PROFICIENCY LEVEL	3

CREDIT PATTERN

Ambulance scoring 3.1

FULL CREDIT: For correct explanation

NO CREDIT: other responses and missing

Give 2 points for plausible explanation –

- (i) The letters of word Ambulance were reversed so that drivers see the word right way round in the rear-view mirror.

MATHEMATICAL LITERACY: QUESTION 3.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Uncertainty and data
CONTEXT	Occupational
ITEM FORMAT	Short Response item
COGNITIVE PROCESS	Recognizing aspects of a problem
PROFICIENCY LEVEL	3

CREDIT PATTERN

Ambulance scoring 3.2

FULL CREDIT: (i) O

NO CREDIT: other responses and missing

Give 2 points for correct answer O

MATHEMATICAL LITERACY: QUESTION 3.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	scientific
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Simplifying a situation
PROFICIENCY LEVEL	2

CREDIT PATTERN

Ambulance scoring 3.3

FULL CREDIT: Any four letters

NO CREDIT: other responses and missing

Give 2 points for any four letter out of the following –A, H, I, M, O, T, U, V, W and X

MATHEMATICAL LITERACY: QUESTION 3.4

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA(CONTENT AREA)	Space and shape
CONTEXT	Occupational
ITEM FORMAT	Fill in the blanks
COGNITIVE PROCESS	Translating a problem into Mathematical language
PROFICIENCY LEVEL	4

CREDIT PATTERN








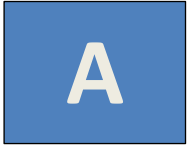

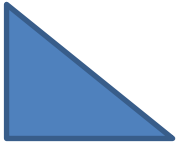
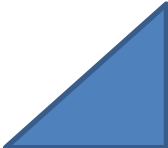
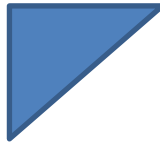
Ambulance scoring 3.4

FULL CREDIT: For all 8 correct figures

PARTIAL CREDIT: For 4 correct figures

NO CREDIT: other responses and missing

Give 2 points for all 8 correct figures which are as follows:-

FIGURES	VERTICAL MIRROR IMAGE	HORIZONTAL MIRROR IMAGE
		
		
		
		

MATHEMATICS UNIT 4:-PLAY WITH ALPHABETS

Mohan writes “W” on a tracing paper and draws a line vertically on it at the centre as shown in the following figure. He then folds the paper along the line and gets two parts of alphabet W.



Question 4.1: Do the two parts coincide with each other?

Question 4.2: What will happen if he draws a line horizontally on it at the centre and fold the paper along the horizontal line?

Question 4.3: Answer the following questions:-

Observation	Say Yes/ No
(a) Does W have horizontal line of symmetry?	Yes/No
(b) Does W have vertical line of symmetry?	Yes/No

ENGLISH

Question 4.4: Find out the letters given in the above image having vertical line of symmetry.

Question 4.5: Find out the letters given in the above image having horizontal line of symmetry.

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 15 min TOTAL CREDIT: 10 points
DESCRIPTION OF ITEM: The item has a picture of ambulance along with some information	LEARNING OUTCOME: To understand about line symmetry using alphabets	

MATHEMATICAL LITERACY: QUESTION 4.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA (CONTENT AREA)	Space and Shape
CONTEXT	Occupational Process
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Identifying the mathematical aspects
PROFICIENCY LEVEL	1

CREDIT PATTERN

PLAY WITH ALPHABETS scoring 4.1

FULL CREDIT: yes

NO CREDIT: other responses and missing

Give 2 points for correct response Yes

MATHEMATICAL LITERACY: QUESTION 4.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA	Change and relationship
CONTEXT	Occupational
ITEM FORMAT	Closed constructed Response
COGNITIVE PROCESS	Identifying constraints and assumptions
PROFICIENCY LEVEL	2

CREDIT PATTERN

PLAY WITH ALPHABETS scoring 4.2

FULL CREDIT: For correct answer

NO CREDIT: other responses and missing

Give 2 points for the correct answer –
The two parts doesn't coincide with each other.

MATHEMATICAL LITERACY: QUESTION 4.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connection
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	Personal
ITEM FORMAT	True/False
COGNITIVE PROCESS	Recognizing aspects of the problem
PROFICIENCY LEVEL	2

CREDIT PATTERN

PLAY WITH ALPHABETS scoring 4.3

FULL CREDIT: No, Yes

NO CREDIT: other responses and missing

Give 2 points for correct answer –(i) No (ii) Yes

MATHEMATICAL LITERACY: QUESTION 4.4

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connection
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	Occupational
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Translating into mathematical language
PROFICIENCY LEVEL	1

CREDIT PATTERN

PLAY WITH ALPHABETS scoring 4.4

FULL CREDIT: I, H

NO CREDIT: other responses and missing

Give 2 points for correct answer I and H.

MATHEMATICAL LITERACY: QUESTION 4.5

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connection
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	Educational Process
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Translating into mathematical language
PROFICIENCY LEVEL	1

CREDIT PATTERN**PLAY WITH ALPHABETS** scoring 4.5**FULL CREDIT:** E, I and H**NO CREDIT:** other responses and missing

Give 2 points for E, I and H

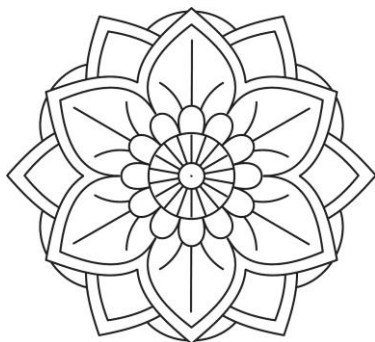


“Mandala” is a Sanskrit word that means “circle”. Ancient scriptures depict Mandalas as a period of creativity, powerful existence and a symbol of deeper connection with self and the Universe.

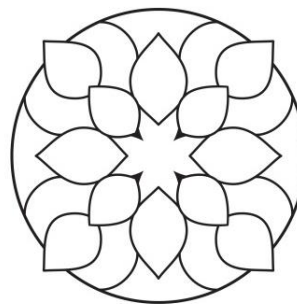
Question 5.1: Are Mandalas symmetrical?

Question 5.2: Is it true that mandalas have both line symmetry and rotational symmetry?

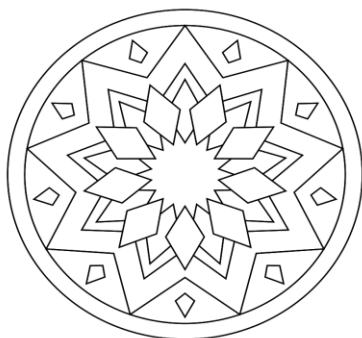
Question 5.3: Find the lines of symmetry of following mandalas?



(a)



(b)



(c)



(d)

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 4 points
DESCRIPTION OF ITEM: The item has a picture of mandala along with some information about it.	LEARNING OUTCOME: Understand line symmetry using mandalas	

MATHEMATICAL LITERACY: QUESTION 5.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connection
OVERARCHING IDEA(CONTENT AREA)	Space and Shape
CONTEXT	Scientific
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Recognizing Mathematical structure
PROFICIENCY LEVEL	1

CREDIT PATTERN

MANDALA scoring 5.1

FULL CREDIT: yes

NO CREDIT: other responses and missing

Give 1 point for correct response Yes

MATHEMATICAL LITERACY: QUESTION 5.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connection
OVERARCHING IDEA(CONTENT AREA)	Uncertainty and data
CONTEXT	Occupational
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Identifying constraints
PROFICIENCY LEVEL	1

CREDIT PATTERN

MANDALA scoring 5.2

FULL CREDIT: yes

NO CREDIT: other responses and missing Give 1 point for correct response Yes

MATHEMATICAL LITERACY: QUESTION 5.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connection
OVERARCHING IDEA(CONTENT AREA)	Quantity
CONTEXT	Personal Process
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Representation situation mathematically
PROFICIENCY LEVEL	3

CREDIT PATTERN

MANDALA scoring 5.3

FULL CREDIT: For all correct responses

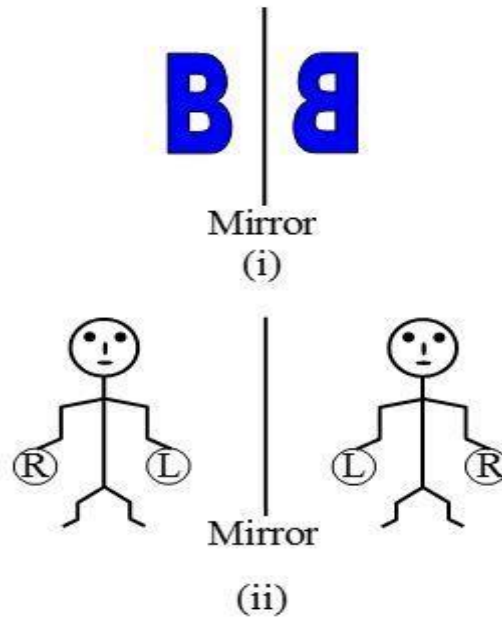
PARTIAL CREDIT: - For any two correct responses

NO CREDIT: other responses and missing

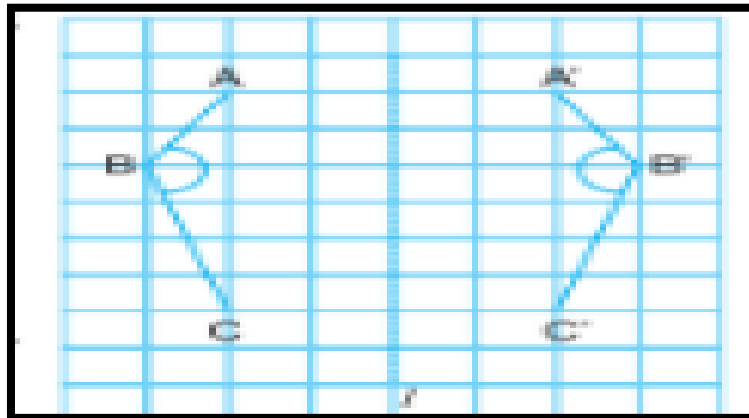
Give 2 points for all correct response- (a) 6 (b) 4 (c) 9 (d) 4

MATHEMATICS UNIT 6:-MIRROR IMAGE

The image obtained in a plane mirror which appears almost identical but is reversed in the direction perpendicular to mirror surface.



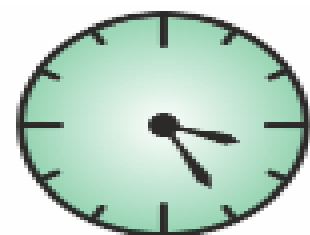
Question 6.1: The following figure shows an angle ABC and its mirror image angle A'B'C'. Observe it and answer the following questions.



Observation	Say Yes/ No
(a) $AB \neq A'B'$	
(b) $BC = B'C'$	
(c) $\angle ABC = \angle A'B'C'$	

Question 6.2: What is the effect of reflection on the length of arms of given angle?

Question 6.3: Does reflection changes the size of an angle?



03:25

Question 6.4: Find the mirror image of the following clock.

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 8 points
DESCRIPTION OF ITEM: The item has a picture which explains the effect of mirror image.	LEARNING OUTCOME: Understand the effects of Plane mirror image and reflection.	

MATHEMATICAL LITERACY: QUESTION 6.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA(CONTENT AREA)	Change and Relationship
CONTEXT	Uncertainty and data
ITEM FORMAT	Yes/No
COGNITIVE PROCESS	Simplifying a situation
PROFICIENCY LEVEL	2

CREDIT PATTERN

MIRROR IMAGE scoring 6.1

FULL CREDIT: No, Yes, Yes

NO CREDIT: other responses and missing

Give 2 points for correct response No, Yes, Yes

MATHEMATICAL LITERACY: QUESTION 6.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA	Change and Relationship
CONTEXT	Personal Process
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Translating problem into mathematical language
PROFICIENCY LEVEL	2

CREDIT PATTERN

MIRROR IMAGE scoring 6.2

FULL CREDIT: For correct response

NO CREDIT: other responses and missing

Give 2 point for correct response- The length of arms of angle will remain unchanged.

MATHEMATICAL LITERACY: QUESTION 6.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA(CONTENT AREA)	Change and Relationship
CONTEXT	Personal Process
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Recognizing aspects
PROFICIENCY LEVEL	1

CREDIT PATTERN

MIRROR IMAGE scoring 6.3

FULL CREDIT: No

NO CREDIT: other responses and missing

Give 2 points for correct response No

MATHEMATICAL LITERACY: QUESTION 6.4

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reflection
OVERARCHING IDEA(CONTENT AREA)	Change and Relationship
CONTEXT	Occupational
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Representing the problem
PROFICIENCY LEVEL	1

CREDIT PATTERN

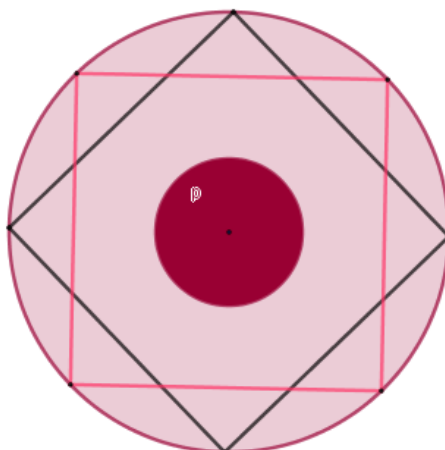
MIRROR IMAGE scoring 6.4

FULL CREDIT: For correct response

NO CREDIT: other responses and missing

MATHEMATICS UNIT 7:- PENDANT

Radha drew a pendant design using circles and squares as shown in the following figure.



Question 7.1: Find out whether the design is symmetrical or not?

Question 7.2: The design has rotational symmetry of order greater than 1. Justify the statement.

Question 7.3: How many lines of symmetry are there in this design?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Question 7.4: What is the size of smallest angle between these lines of symmetries?

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 8 points
DESCRIPTION OF ITEM: The item has a picture along with some information.		LEARNING OUTCOME: Understand line symmetry and rotational symmetry.

MATHEMATICAL LITERACY: QUESTION 7.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Space and shape
CONTEXT	Occupational
ITEM FORMAT	Short response Item
COGNITIVE PROCESS	Representing a situation mathematically
PROFICIENCY LEVEL	1

CREDIT PATTERN

PENDANT scoring 7.1

FULL CREDIT: For correct response

NO CREDIT: other responses and missing

Give 2 points for correct response- Yes, It is symmetrical.

MATHEMATICAL LITERACY: QUESTION 7.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	Scientific
ITEM FORMAT	Open constructed response
COGNITIVE PROCESS	Translating to mathematical language
PROFICIENCY LEVEL	1

CREDIT PATTERN**PENDANT scoring 7.2****FULL CREDIT: For correct response****NO CREDIT:** other responses and missing

Give 2 points for correct response- The design has rotational symmetry of order greater than 1 because in one complete rotation it looks exactly same for more than one time.

MATHEMATICAL LITERACY: QUESTION 7.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	occupational
ITEM FORMAT	Short response Item
COGNITIVE PROCESS	Identifying the mathematical aspects
PROFICIENCY LEVEL	1

CREDIT PATTERN**PENDANT scoring 7.3****FULL CREDIT: (d) or 4****NO CREDIT:** other responses and missing

Give 2 points for correct response (d) or 4

MATHEMATICAL LITERACY: QUESTION 7.4

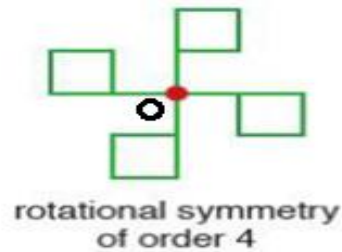
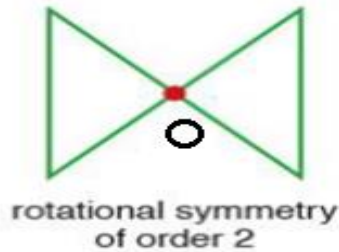
FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Quantity
CONTEXT	Scientific
ITEM FORMAT	Short response Item
COGNITIVE PROCESS	Representing the problem in a different way
PROFICIENCY LEVEL	4

CREDIT PATTERN**PENDANT SCORING 7.4****FULL CREDIT: For correct response 22.5°****NO CREDIT:** other responses and missing

Give 2 points for correct response- 22.5°

MATHEMATICS UNIT 8: ROTATIONAL SYMMETRY

Q 8. A two dimensional shape has rotational symmetry if when rotated about a central point O, it fits its outline. The number of times it fits its outline during a complete revolution is called the order of rotational symmetry. For example,



Consider a square with P as one of its corners as shown in the figure given below. Let us perform quarter-turns about the centre of the square marked.

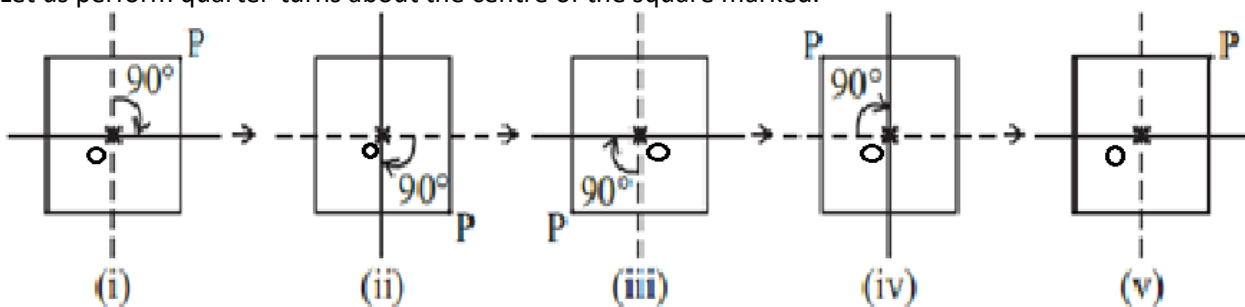


Fig (i) is the initial position. Rotation by 90° about the centre leads to Fig (ii). Note the position of P now. Rotate again through 90° and you get Fig (iii). In this way, when you complete four quarter-turns, the square reaches its original position. It now looks the same as Fig (i). This can be seen with the help of the positions taken by P. Thus a square has a rotational symmetry of order 4 about its centre.

Q 8.1 What is the centre of rotation in the above figure?

Q 8.2 What is the angle of rotation?

Q 8.3 What is the direction of rotation?

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 6 points
DESCRIPTION OF ITEM: The item has a picture of two dimensional figure along with some information	LEARNING OUTCOME: Understand types and order of rotation	

MATHEMATICAL LITERACY: QUESTION 8.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	Occupational
ITEM FORMAT	Short response item.
COGNITIVE PROCESS	Recognizing mathematical structure
PROFICIENCY LEVEL	1 A

CREDIT PATTERN

Ans 8.1 “Centre of rotation is point O”

Full credit- for correct answer

No-partial credit

No-credit for wrong answer

Give 2 points for the correct answer

MATHEMATICAL LITERACY: QUESTION 8.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Uncertainty and data
CONTEXT	Scientific
ITEM FORMAT	Short response item
COGNITIVE PROCESS	Identifying constraints and assumptions
PROFICIENCY LEVEL	2

CREDIT PATTERN

Ans 8.2 Angle of rotation is 360°

Full credit- correct answer

No-partial credit

No-credit for wrong answer

Give 2 points for the correct answer

MATHEMATICAL LITERACY: QUESTION 8.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA(CONTENT AREA)	Space and Shape
CONTEXT	Occupational
ITEM FORMAT	Open Constructed Response
COGNITIVE PROCESS	Representing a problem in different way
PROFICIENCY LEVEL	1 C

CREDIT PATTERN

Ans 8.3 When it starts from point –P “It is left to right”

Full credit- for correct answer

No-partial credit

No-credit for wrong answer

Give 2 Points for correct Answer

MATHEMATICS UNIT 9:- ENGLISH ALPHABETS

Look at English alphabets given in the box and answer the questions below.

B, C, Q, M, K, P, O

Q 9.1 Which of the alphabets listed above has a vertical line of symmetry?

Q 9.2 Which of the alphabets has a horizontal line of symmetry?

Q 9.3 Which alphabets have no line of symmetry?

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 6 points
DESCRIPTION OF ITEM: The item some English alphabets.	LEARNING OUTCOME: Understand the types of symmetries.	

MATHEMATICAL LITERACY: QUESTION 9.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA(CONTENT AREA)	Space and Shape
CONTEXT	Scientific
ITEM FORMAT	Short answer response
COGNITIVE PROCESS	Simplifying a situation problem
PROFICIENCY LEVEL	2

CREDIT PATTERN

Ans 9.1 letter M and O has vertical line symmetry

Full Credit for both correct answers

Partial Credit for one correct answer

No Credit for wrong answer

Give 2 points for the correct answer

MATHEMATICAL LITERACY: QUESTION 9.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA(CONTENT AREA)	Quantity
CONTEXT	Scientific
ITEM FORMAT	Short Response Item
COGNITIVE PROCESS	Translating a problem to mathematical language
PROFICIENCY LEVEL	2

CREDIT PATTERN

Ans 9.2 letter B, C, K and O has horizontal line symmetry

Full Credit for all four correct answers

Partial credit for two correct answers

No credit for wrong answer

Give 2 points for the correct answer

MATHEMATICAL LITERACY: QUESTION 9.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Reproduction
OVERARCHING IDEA(CONTENT AREA)	Space and Shape
CONTEXT	Occupational
ITEM FORMAT	Short response item
COGNITIVE PROCESS	Identifying mathematical aspects
PROFICIENCY LEVEL	1

CREDIT PATTERN

Ans 9.3 letter Q and P has no line symmetry

Full Credit for both correct answers

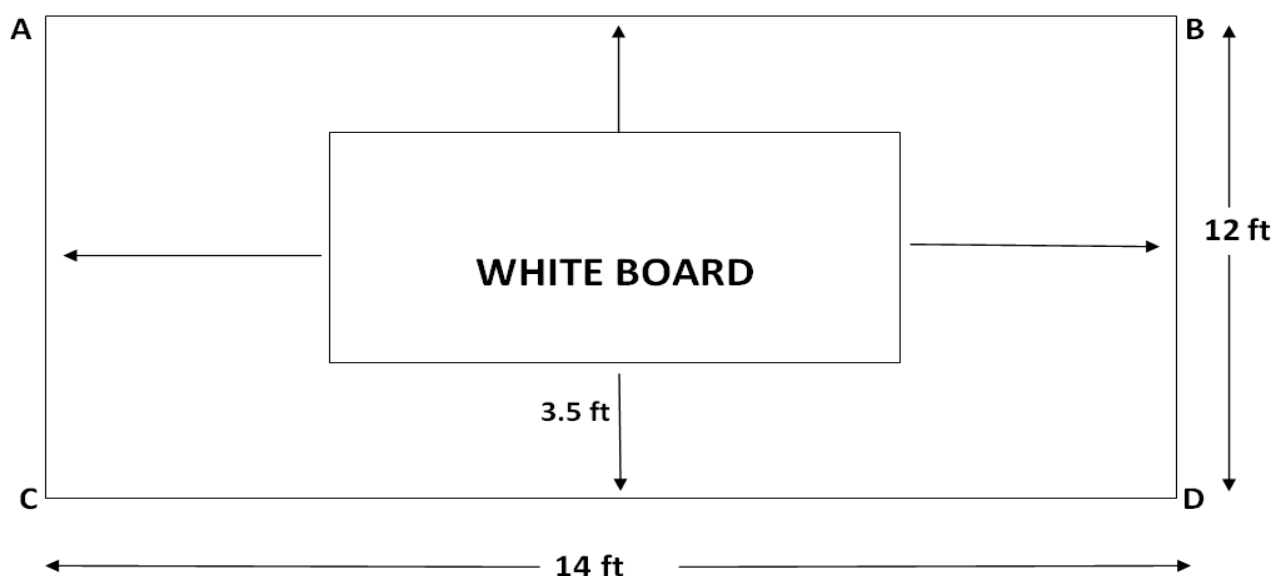
Partial credit for one correct answer

No credit for wrong answer

Give 2 points for the correct answer

MATHEMATICS UNIT 10:- WHITE BOARD IN ONLINE CLASS

Q 10. Mr. Jayant, a Maths teacher purchased white board of measure 4 ft X 3 ft for online teaching. For this he wants to fit the board in symmetrical manner horizontally on the wall with measure 14 ft X 12 ft as shown in the diagram



Q10.1 What is the distance of the edge of board from wall on both sides?

Q10.2 What type of symmetry is used here to fit the board with wall?

Q10.3 What is the distance between board and ceiling?

Q10.4 How much area of wall is used by board?

DOMAIN: Mathematical Literacy	TOPIC: SYMMETRY	CLASS: VII EXPECTED TIME: 10 min TOTAL CREDIT: 8 points
DESCRIPTION OF ITEM: The item has a picture of white Board on wall along with some information.	LEARNING OUTCOME: To understand line symmetry.	

MATHEMATICAL LITERACY: QUESTION 10.1

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Space and shape
CONTEXT	Personal
ITEM FORMAT	Short response Item
COGNITIVE PROCESS	Understanding and explaining
PROFICIENCY LEVEL	1

Ans 10.1 Let the distance of edge of board from left and right wall be X.

Solution:-

Distance of board from left wall + length of board + Distance of board from right wall = length of wall.

$$\therefore X + 4 + X = 14$$

$$\therefore 2X + 4 = 14$$

$$\therefore 2X = 14 - 4$$

$$\therefore 2X = 10$$

$$\therefore X = 5 \text{ ft}$$

CREDIT PATTERN

Full credit for correct answer.

Partial credit for performing solution but not getting correct answer.

No credit for not attempting question.

Give 2 points for correct answer

MATHEMATICAL LITERACY: QUESTION 10.2

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Space and shape
CONTEXT	Scientific
ITEM FORMAT	Open constructed response
COGNITIVE PROCESS	Representing a problem in a different way
PROFICIENCY LEVEL	1

CREDIT PATTERN

Ans 10.2 Horizontal symmetry

Full credit for correct answer.

No-Partial credit

No credit for not attempting question.

Give 2 points for correct answer

MATHEMATICAL LITERACY: QUESTION 10.3

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Change and relationship
CONTEXT	Personal Process
ITEM FORMAT	Short response Item
COGNITIVE PROCESS	Representing a situation mathematically
PROFICIENCY LEVEL	1

CREDIT PATTERN

Ans 10.3 let the distance between board and ceiling be X

Solution:-

$\therefore X + \text{breadth of board} + \text{height of board from ground} = \text{height of wall}$

$$\therefore X + 3 + 3.5 = 12$$

$$\therefore X + 6.5 = 12$$

$$\therefore X = 12 - 6.5$$

$$\therefore X = 5.5 \text{ ft}$$

Full credit for correct answer.

Partial credit for performing solution but not getting correct answer.

No credit for not attempting question.

Give 2 points for correct answer

MATHEMATICAL LITERACY: QUESTION 10.4

FRAMEWORK	CHARACTERISTICS
COMPETENCY CLUSTER	Connections
OVERARCHING IDEA(CONTENT AREA)	Uncertainty and data
CONTEXT	Personal Process
ITEM FORMAT	Short response Item
COGNITIVE PROCESS	Representing a problem in a different way
PROFICIENCY LEVEL	2

CREDIT PATTERN**Ans 10.4**

$$\begin{aligned}\text{Area of board} &= \text{length} \times \text{breadth} \\ &= 4 \times 3 \\ &= 12 \text{ sqft}\end{aligned}$$

Full credit for correct answer.**Partial credit for performing solution but not getting correct answer.****No credit for not attempting question.**

Give 2 points for correct answer
