

Class: VII	Subject: Mathematics	Day:1	Time duration:40 min
Name of the lesson/ unit	Ch-14 SYMMETRY		
Topic/lesson	Line of Symmetry		
Learning Objective	To understand importance of line symmetry& rotational symmetry because of its relevance in day to day life.		
Expected learning outcomes:	Student will be able to - Recall Regular polygon - Recall and define line of symmetry - State and Identify lines of symmetry for different shapes or figures.		
Common misconception (if any):	Identify incorrect number of line of symmetry.		
Prerequisite knowledge:	Regular and irregular polygons,Line symmetry		
Assessment of qualifying knowledge:	Questioning technique and Hands on activity		
Transaction methodology			
Starter/ warm up: Questioning(Enrichment Activity) Collaborative Work (10 Min)	Teacher will collect response and will ask some questions Q. What are regular polygon? Q. What is line of symmetry ? Q. Name different regular polygon . Teacher will asked to students to make a group of 4 students and take A4 size sheet and draw or paste as many objects they can think which have 1 line,2 line and 3 or more line of symmetry.		
Introduction by teacher and N.B work:10 min	Teacher will explain what is Symmetry 1.A figure has Line symmetry , if there is a line about which figure may be folded so that two parts of the figure will coincide. 2. Regular polygons have equal sides and equal angles. They have multiple lines of symmetry. 3.Each regular polygon has as many lines of symmetry as it has sides. Eg. Square has 4 lines of symmetry		
Demonstration by the teacher on the board,	<u>Students will do questions on their own in the book.</u> Teacher will mentor the learners on the way.		

<i>followed by students work in Book (Individual work) : 5 min</i> <i>Guided practice and Notebook work(Collaborative work) N.B : 10 min</i>	<i>Students will discuss book questions with their peer and then will do it in the notebook.</i> Teacher will discuss the solutions of the questions, students will be called on the board to solve the questions.
Closure:(5 mins)Verbal	Teacher to ask students to write 1 learning and 1 doubt that they have after today's class.
Home Learning	From book Assignment will be given Bring cut outs of 2 English alphabets (roll no wise teacher will allot two alphabets to each student.)using origami sheet and small mirror.
Resources	NCERT Book of Mathematics for Class VII A handout of Symmetry Activity as mentioned in the starter.

Topic: Symmetry

Important Points

Line symmetry:

A figure has Line symmetry, if there is a line about which figure may be folded so that two parts of the figure will coincide.

Regular polygons:

1. Regular polygons have equal sides and equal angles.
2. They have multiple lines of symmetry.
3. Each regular polygon has as many lines of symmetry as it has sides. Eg. Square has 4 lines of symmetry.

Reflection symmetry :

Reflection symmetry, line symmetry, mirror symmetry, mirror-image symmetry, is symmetry with respect to reflection. That is, a figure which does not change upon undergoing a reflection has reflectional symmetry.

Rotational symmetry, is the property of a shape has when it looks the same after some rotation by a partial turn.

or

Any object or shape is said to have rotational symmetry if it looks exactly the same at least once during a complete rotation through 360° .

Centre of rotation:

The fixed point about which an object rotates is called the centre of rotation. During the rotation, the shape and size of the object do not change. Rotation may be clockwise or anti-clockwise.

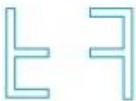
Angle of rotation :

The angle at which a shape or an object looks exactly the same during rotation is called the angle of rotation.

Order of rotational symmetry

The order of rotational symmetry can be defined as the number of times that a shape appears exactly the same during a full 360° rotation. E.g : The centre of rotation of a square is the point of intersection of its diagonals and the angle of rotation is 90° . So, the order of rotational symmetry of a square is 4.

Class: VII	Subject: Mathematics	Day:2	Time duration:40 min
Name of the lesson/ unit	Ch-14 SYMMETRY		
Topic/lesson	Reflection Symmetry		
Learning Objective	To understand importance of line symmetry& rotational symmetry because of its relevance in day to day life.		
Expected learning outcomes:	Student will be able to - Define Reflection symmetry (mirror image) - Identify and state different type of reflection symmetry in English alphabets.		
Common misconception (if any):	Wrong interpretation of reflection(mirror) image.		
Prerequisite knowledge:	Regular and irregular polygons, Line symmetry		
Assessment of qualifying knowledge:	Questioning technique and Hands on activity		
Transaction methodology			
Starter/ warm up: (Questioning followed by Book work) (5 Min)	Teacher will collect response and will ask some questions Q. What is mirror image ? Q. Is it reflection ?		
Introduction by teacher and N.B work:5 min	Students will define Reflection symmetry. Reflection symmetry : Reflection symmetry, line symmetry, mirror symmetry, mirror-image symmetry , is <u>symmetry</u> with respect to <u>reflection</u> . That is, a figure which does not change upon undergoing a reflection has reflectional symmetry.		
Demonstration by the teacher on the board, followed by students work in NB(Individual work) : 10 min	Students will do questions on their own in the book. Teacher will mentor the learners on the way.		
Guided work (Group activity) Collaborative	Teacher will discuss the reflection symmetry of English alphabets and students will asked to find reflection symmetry of English alphabets using cutouts and mirror.		

Work : 10 min	
Closure/ Plenary (Oral): (10 Min)	Which of the following are reflections of each other? (a)  (b)  (c)  (d) 
Home Learning	From book Assignment will be given
Resources	NCERT Book of Mathematics for Class VII Activity using English alphabets

Class: VII	Subject: Mathematics	Day:3	Time duration:40 min
Name of the lesson/ unit	Ch-14 SYMMETRY		
Topic/lesson	Rotational Symmetry (Angle of Rotation , Order of Rotation & Centre of Rotation)		
Learning Objective	To understand importance of line symmetry& rotational symmetry because of its relevance in day to day life.		
Expected learning outcomes:	Student will be able to • Define and Understand Rotational Symmetry • State and Identify Angle of Rotation , Order of Rotation & Centre of Rotation		
Common misconception (if any):	• Incorrect Interpretation of order of rotation & angle of rotation.		
Prerequisite knowledge:	Regular and irregular polygons, Line symmetry		
Assessment of qualifying knowledge:	Questioning technique and Hands on activity		
Transaction methodology			
Starter/ warm up (Book work) Peer work Collaborative Work : (10 Min)	Student will be ask to draw a sketch of NCERT Q.1 Ex 14.2 in pair on origami sheet . Teacher will ask after how many turn you are getting same figure .		
Questioning & discussion(Verbal):10 min	Teacher will ask some questions :- What is one word for the turn after which we were getting the same figure ? What is the name of symmetry ? Rotational symmetry , is the property of a shape has when it looks the same after some rotation by a partial turn. or Any object or shape is said to have rotational symmetry if it looks exactly the same at least once during a complete rotation through 360°. Centre of rotation The fixed point about which an object rotates is called the centre of rotation.		

<i>Demonstration by the teacher on the board, followed by students work in Book(Individual work) : 5min</i> <i>Discussion in peer followed by explanation through Teacher and work done in notebook (Collaborative work) :10 min</i>	During the rotation, the shape and size of the object do not change. Rotation may be clockwise or anti-clockwise. Angle of rotation The angle at which a shape or an object looks exactly the same during rotation is called the angle of rotation. Order of rotational symmetry The order of rotational symmetry can be defined as the number of times that a shape appears exactly the same during a full 360° rotation. E.g : The centre of rotation of a square is the point of intersection of its diagonals and the angle of rotation is 90°. So, the order of rotational symmetry of a square is 4. <u>Students will do questions on their own in the book.</u> Teacher will mentor the learners on the way. <i>Students will discuss Questions of book with their peer and then will do it in the notebook.</i> Teacher will discuss the solutions of the questions, students will be called on the board to solve the questions.
Closure/ Plenary (Written after peer discussion) Collaborative Work (5 Min)	What is the order of rotational symmetry of Hindu mythological symbol 'Swastic' Ans: 2
Home Learning	From book Assignment will be given
Resources	NCERT Book of Mathematics for Class VII Activity using origami sheet, visualise the symmetry through paper folding activities ,identify symmetrical figures from their environment .