

# Types of Symmetry

**Spoken Tutorial Project**

<http://spoken-tutorial.org>

**National Mission on Education through ICT**

<http://sakshat.ac.in>

**Madhuri Ganapathi**

**IIT Bombay**

**10 June 2018**



# Learning Objectives



# Learning Objectives

**We will learn about various types of symmetry like:**



# Learning Objectives

**We will learn about various types of symmetry like:**

- **Line**



# Learning Objectives

**We will learn about various types of symmetry like:**

- **Line**
- **Point**



# Learning Objectives

We will learn about various types of symmetry like:

- Line
- Point
- **Rotation**



# Learning Objectives

We will learn about various types of symmetry like:

- Line
- Point
- Rotation
- **Translational**



# Learning Objectives

**We will learn about various types of symmetry like:**

- **Line**
- **Point**
- **Rotation**
- **Translational**
- **Scale**



# System Requirement



# System Requirement

- **Ubuntu Linux OS v 14.04**



# System Requirement

- **Ubuntu Linux OS v 14.04**
- **GeoGebra v 5.0.438.0-d**



# Pre-requisites



# Pre-requisites

- **GeoGebra interface**



# Pre-requisites

- **GeoGebra interface**
- **If not, for relevant GeoGebra tutorials, please visit our website [www.spoken-tutorial.org](http://www.spoken-tutorial.org)**



# Symmetry



# Symmetry

A geometric figure is **symmetric**, if



# Symmetry

A geometric figure is **symmetric**, if

- it can be divided into two or more identical parts



# Symmetry

A geometric figure is **symmetric**, if

- it can be divided into two or more identical parts
- and its parts can be arranged in an organized manner



# Line Symmetry



# Line Symmetry

A figure has **line symmetry**,



# Line Symmetry

A figure has **line symmetry**,

- if one half of the object is the mirror image of the other half



# Line Symmetry

A figure has **line symmetry**,

- if one half of the object is the mirror image of the other half
- The line over which the figure is reflected is called the **Line of Symmetry**



# Rotational Symmetry



# Rotational Symmetry

An object has **rotational symmetry**, if



# Rotational Symmetry

- An object has rotational symmetry, if**
- **it can be rotated about a fixed point**



# Rotational Symmetry

- An object has **rotational symmetry**, if
- it can be rotated about a fixed point
  - **without changing the overall shape**



# Assignment



# Assignment

- 1 Draw a hexagon and show its rotation symmetry



# Translational Symmetry



# Translational Symmetry

An object has **translational symmetry**, if



# Translational Symmetry

- An object has translational symmetry, if**
- **it can be moved without changing its overall shape**



# Assignment



# Assignment

1 Draw a vector



# Assignment

- 1 Draw a vector
- 2 Translate a point using Translate by Vector tool



# Assignment

- 1 Draw a vector
- 2 Translate a point using **Translate by Vector** tool
- 3 Measure the distance between the original point and the translated point



# Scale Symmetry



# Scale Symmetry

An object has **scale symmetry**, if



# Scale Symmetry

An object has **scale symmetry**, if

- it does not change shape when it is expanded or contracted



# Assignment



# Assignment

- 1 Draw a pentagon and a hexagon on the same window



# Assignment

- 1 Draw a pentagon and a hexagon on the same window
- 2 Dilate the pentagon by a factor of 0.5



# Assignment

- 1 Draw a pentagon and a hexagon on the same window
- 2 Dilate the pentagon by a factor of 0.5
- 3 Dilate the hexagon by a factor of 3



# Summary



# Summary

## Symmetry and various types of symmetry

- Line
- Point
- Rotation
- Translational
- Scale



# About the Spoken Tutorial Project

- Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Forum for specific questions

- Do you have questions in THIS Spoken Tutorial?
- Please visit <http://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- Someone from our team will answer them



# Acknowledgements

- Spoken Tutorial Project is a part of the Talk to a Teacher project
- It is supported by the National Mission on Education through ICT, MHRD, Government of India
- More information on this Mission is available at

<http://spoken-tutorial.org /NMEICT-Intro>

