

# Transformations

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## Grade Level:

- K-2
- 3-5
- 6-8

## CD-ROM Files:

- 20Transformations

## Overview:

In this activity, students will use the drawing tools in PowerPoint to create shapes and then to manipulate them to show translations, rotations, and reflections.

## Software / Equipment:

- Microsoft PowerPoint

## NCTM Standards:

(Geometry) Instructional programs from prekindergarten through grade 12 should enable all students to:

- specify locations and describe spatial relationships using coordinate geometry and other representational systems.
- apply transformations and use symmetry to analyze mathematic situations.

## The Teacher's Role:

1. The teacher will introduce or review the concept of transformation, providing examples for the students.
2. The teacher will demonstrate how to use the drawing tools in PowerPoint to add various shapes to a slide.
3. The teacher will demonstrate how to transform (slide) a shape and will allow students time to practice.
4. The teacher will demonstrate how to rotate (turn) a shape and will allow students time to practice.
5. The teacher will demonstrate how to reflect (flip) a shape and will allow students time to practice.
6. The teacher will provide assistance as the students create 4 slides, add shapes and labels, and print.

Note - Once the students become proficient at transforming shapes, they might want to try the tessellation activity.



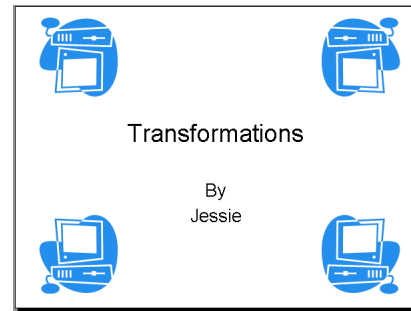
## Student Instructions:

### Getting Ready:

1. Open a new blank PowerPoint document.
2. Choose the title slide layout.

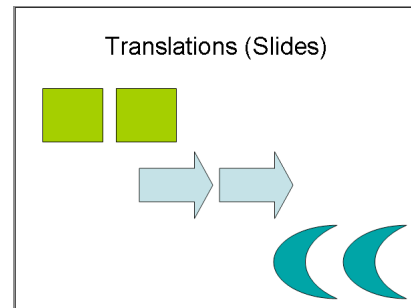
### The Title Slide:

1. In the top text box, enter "Transformations."
2. In the bottom text box, enter "By YourName."
3. Add a shape or a clip art if you want.
4. Change fonts, colors, and sizes if you want.



### The "Transformation" Slide:

1. Pull down the Insert menu to New Slide.
2. Choose the Title Only layout.
3. In the text box, enter "Translations (Slides)."
4. Add a shape at the left side of the slide. (Use the rectangle tool, the oval tool, or the AutoShapes tool.)
5. To duplicate, transform, or slide the shape:
  1. Press and hold the Control key (Windows) or the Option Key (Mac) on you keyboard.
  2. Click the center of the shape and drag it to the right.
  3. Let go of the mouse button; then let go of the Control or Option key.



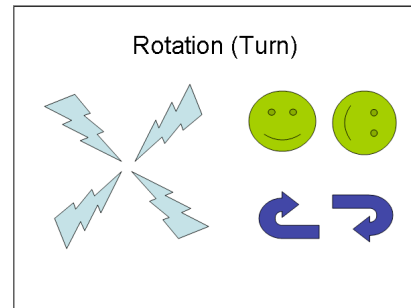
### The "Rotation" Slide:

1. Follow the steps above to insert a new slide, enter the text "Rotation (Turn), and create and duplicate a shape.
2. To rotate the shape:
 

Click to select the shape.

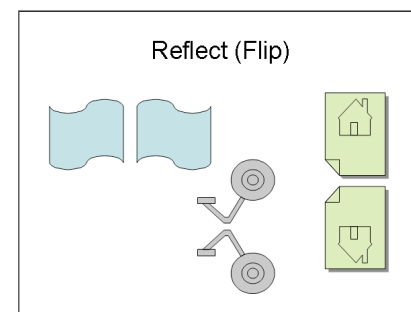
Windows - Click the green dot at the top of the shape and drag it in a circular pattern toward the bottom.

Mac - Click the Free Rotate tool in the toolbar and then click and drag a handlepoint in a circular pattern.
3. Repeat steps 1 and 2 until you have created at least 3 pair of "rotations."



### The "Reflection" Slide:

1. Follow the steps again to insert a new slide, enter the text "Reflection (Flip), and create and duplicate a shape.
2. To reflect or flip the shape:
  - a. Click to select the shape.
  - b. Click the Draw tool in the drawing toolbar and choose "Rotate or Flip".
  - c. Choose either "Flip Horizontal" or "Flip Vertical."
3. Repeat until you have created at least 3 pair of "reflections."



### Printing:

1. Pull down the File menu to Page Setup.
2. Change the Orientation of the Handouts to Landscape.
3. Choose to print as a Handout - 4 slides per page.
4. Print.

