

MIRROR MORPH

Brief Description:

At this exhibit, students can investigate the reflective properties of mirrors by manipulating their surfaces.

Objectives:

After learning how light reflects off a surface, students can try to predict and describe the effect of different mirror distortions on their reflections.

Links to Websites:

<http://mathmidway.org/Training/mirror.php>

http://www.staff.olympia.org/external/classes/Staudenmeier/Student_Page/geometry/Miniature_Golf/Tutorial.html

http://online.math.uh.edu/MiddleSchool/Modules/Module_4_Geometry_Spatial/Activities/Hole_One/UHGeometryHoleinOneTeacherNotes.pdf

Vocabulary:

Angle of incidence

Concave

Convex

Image

Optics

Pre-image

Refraction

Transformation

Angle of reflection

Congruence

Glide-reflection

Isometry

Perpendicular bisector

Reflection

Rotation

Translation

Before:

- ⊙ (Level 1, 2, 3) Explore angle of incidence and angle of reflection in real life (mirrors, miniature golf, billiards, Wii, etc.)

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- ⊙ (Level 1, 2, 3) Show how light is reflected off a smooth surface. Collect the following materials, mirror, two cardboard tubes, flashlight. Place the mirror on a flat surface. Hold one tube at an angle with the end touching the mirror. Ask another person to hold the second tube at the same angle. 5. Shine the flashlight into the tube. If the tubes are at the same angles, the light will bounce off the mirror and down to the end of the second tube.

During:

- ⊙ (Level 1, 2, 3) Have students write down in a notebook their observation of the two mirrors. Discuss concave and convex curves. Ask students to describe the shape of the mirror and the distortion of their reflection. Include observations about how the image changes as they move closer and farther away from the mirror.
Which mirror makes you look fatter, thinner?

After:

Investigations: Discuss various shaped reflectors and their applications.