

Curriculum topics

- Coordinates
- Geometry
- Graphing
- Properties of Light

Subjects

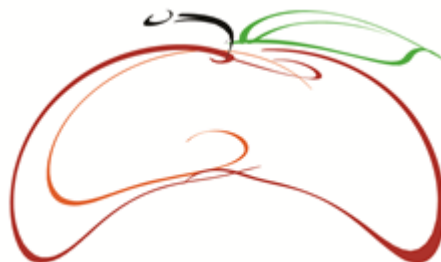
- Art
- Mathematics
- Physical Science

Grade range: 3 – 8

Who we are: Resource Area for Teaching (RAFT) helps transform the learning experience by inspiring joy through hands-on learning.

ANAMORPHIC ART

Science, math, and art make magic!



Use science, math, and art skills to create a drawing on a curved grid. The coordinates used for the drawing on the curved grid are the same as they would be for a square grid. Anamorphic drawings appear distorted from the original and can be difficult to recognize until they are viewed with a cylindrical mirror! A recognizable image seems to “magically” appear!



Share Your feedback!

<http://bit.ly/RAFTkitsurvey>

Materials

Materials in the kit may vary but generally, this kit contains the following:

- Reflective Mylar® (polyester film) sheet or equivalent reflective material, 5" x 4" (1)
- Grid pattern: Star & House, p.6 (1)
- Blank Grid: Square, p.7 (1)
- Blank Grid: Curved, p.8 (1)
- Anamorphic Art Images, pages 4-5 (1)
- **Not included:** Scissors, tape

To Do and Notice

- 1** Mirror Assembly: Create a cylindrical mirror by rolling the 5" x 4" reflective material along the 5" length, with the shiny side out. The mirror will stand 4" tall. Overlap the sides of the reflective material by about $\frac{1}{8}$ ". Tape the overlap.
- 2** Transfer the house pattern from the square grid onto the curved grid by mapping the points on the square grid to the equivalent points on the curved grid. Every place the pattern crosses a line, make a point in pencil. When the pattern is transferred correctly, retrace the pattern with colored markers.
- 3** Repeat step 2 for the star pattern. Transferring the pattern requires patience and persistence. Color in the images as desired.
- 4** Viewing the patterns: Place the cylindrical mirror onto the circle as marked on the curved grids. Look at the reflection on the mirrored tube. What do you notice about the image in the mirror?
- 5** Experimentation: Move the mirror forward and backwards when viewing the images. How does the position of the mirror affect the appearance of the images? What does this tell you about the properties of light? In what ways does this demonstrate how light reflects off certain materials but not others?
- 6** Extensions: Use the curved grid and try to write letters or words so that they appear as legible writing in the curved mirror. Hold an anamorphic art show to highlight your work!
- 7** **Share** student learning with RAFT! Submit photos/video via email at education@raft.net or on social media ([Facebook](#), [Twitter](#), [Instagram](#)).



Core Content Skills:

Science & Engineering (NGSS)

Develop and Use Models,
Electromagnetic Radiation, Wave Properties, Structure & Function, Properties of Matter, Information Processing, Cause & Effect, Systems

Mathematics (CCSS Math)

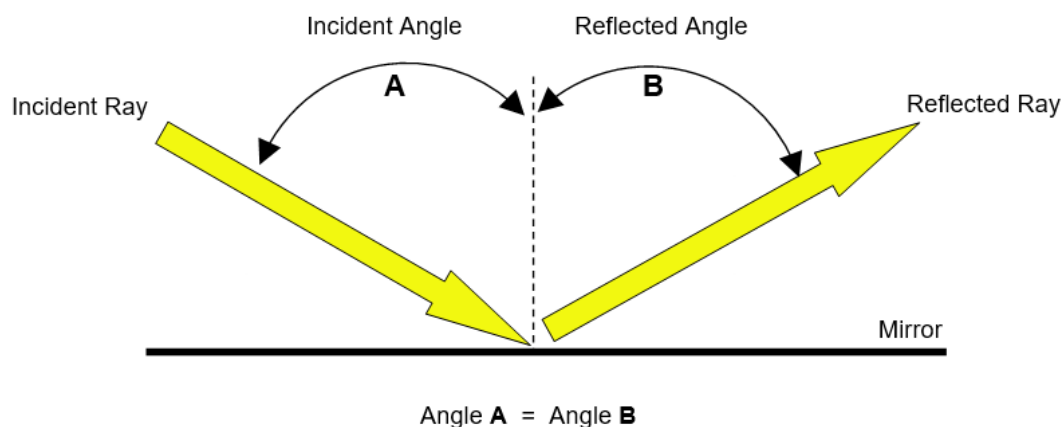
Graphing & Coordinate Planes, Real-World Problem Solving

Social Emotional Learning

- Self-awareness
- Self-management
- Responsible decision-making

The Content Behind the Activity

The basic scientific rule for mirrors is “angle in, angle out” (see below). When the mirror is curved, as are mirrors in a fun house, the reflections become distorted. The image of the house, when viewed in the curved mirror, is reversed from the original, and the grid numbers and letters are backwards. In flat and convex mirrors, such as cylindrical mirrors, images are always reversed left/right. Concave mirrors, such as the bowl of a reflective spoon, can have un-reversed images. A parabolic mirror, a special case of a concave mirror, can make a perfect real image.



Anamorphic art has a long history, having roots in cultures around the world, including China, England, France, and the Netherlands. Distorted images were used for everything from amusing royalty to carrying secret messages and concealing political allegiances. During the Victorian era, anamorphic art and viewers were popular parlor items and eventually became inexpensive toys for children.

Reuse

This kit uses 100% reusable materials designed for other uses. To continue making a positive impact in reducing waste, reuse these materials in other projects. Additionally, any unused materials can be collected and delivered back to RAFT.

Feedback

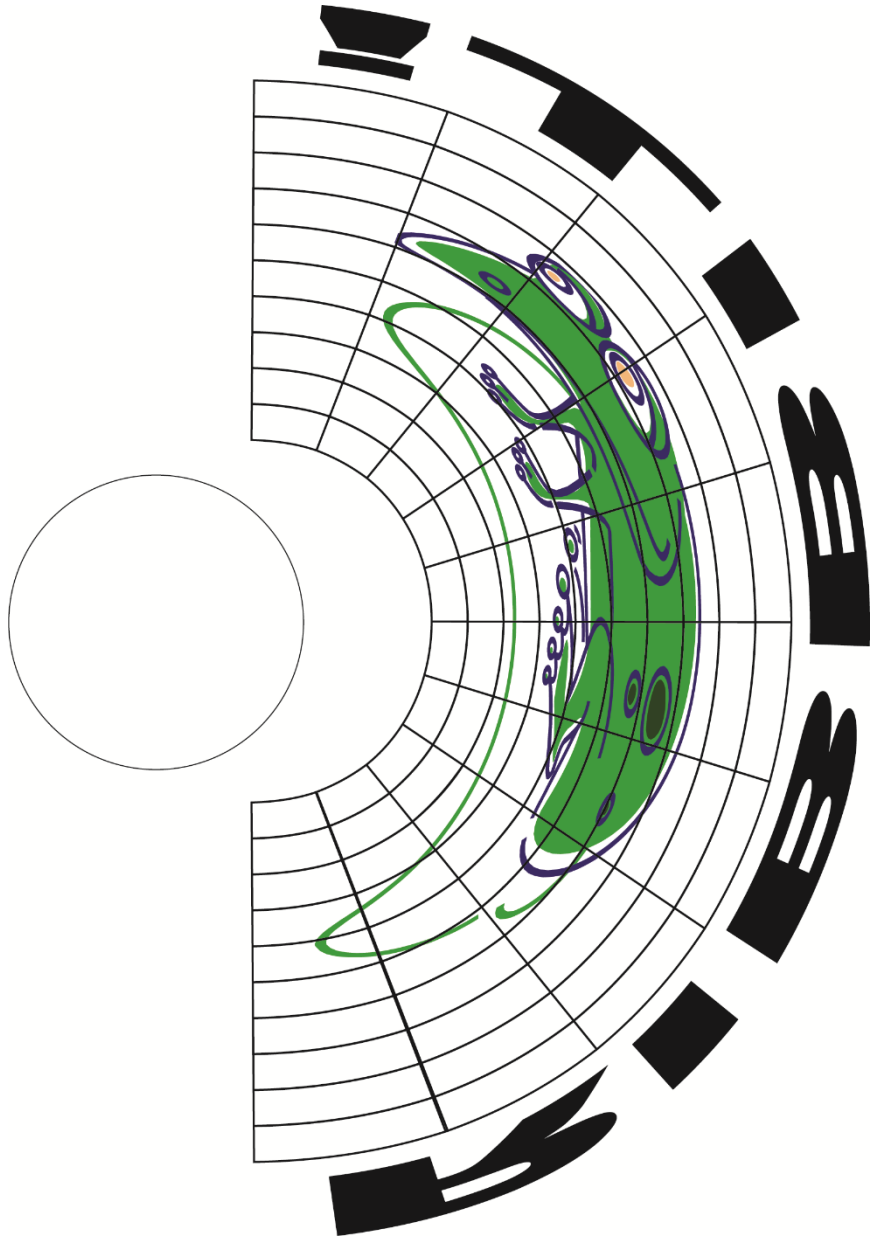
Please comment on this kit by taking this short survey: <http://bit.ly/RAFTkitsurvey>. Let us know of any material concerns (missing, broken, or poorly fitting parts) as well as any suggestions for improvement.

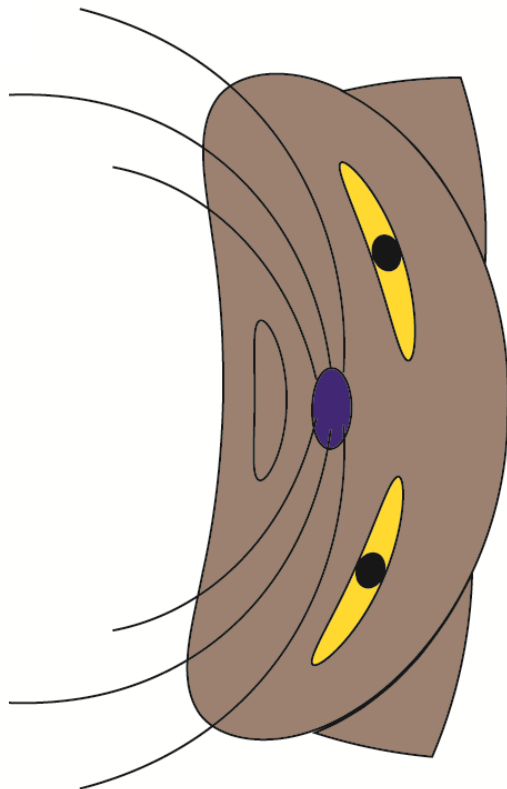
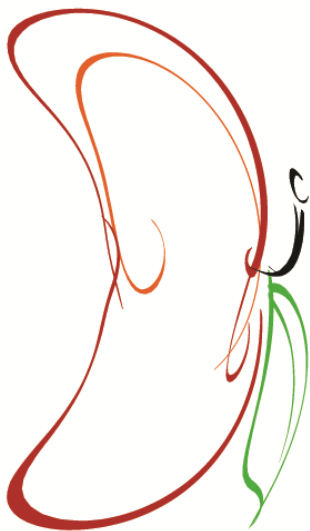
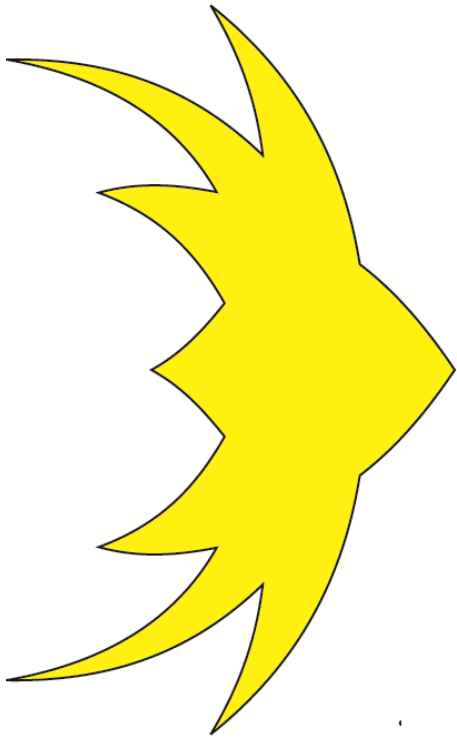
Visit <https://raft.net> to view related activities!

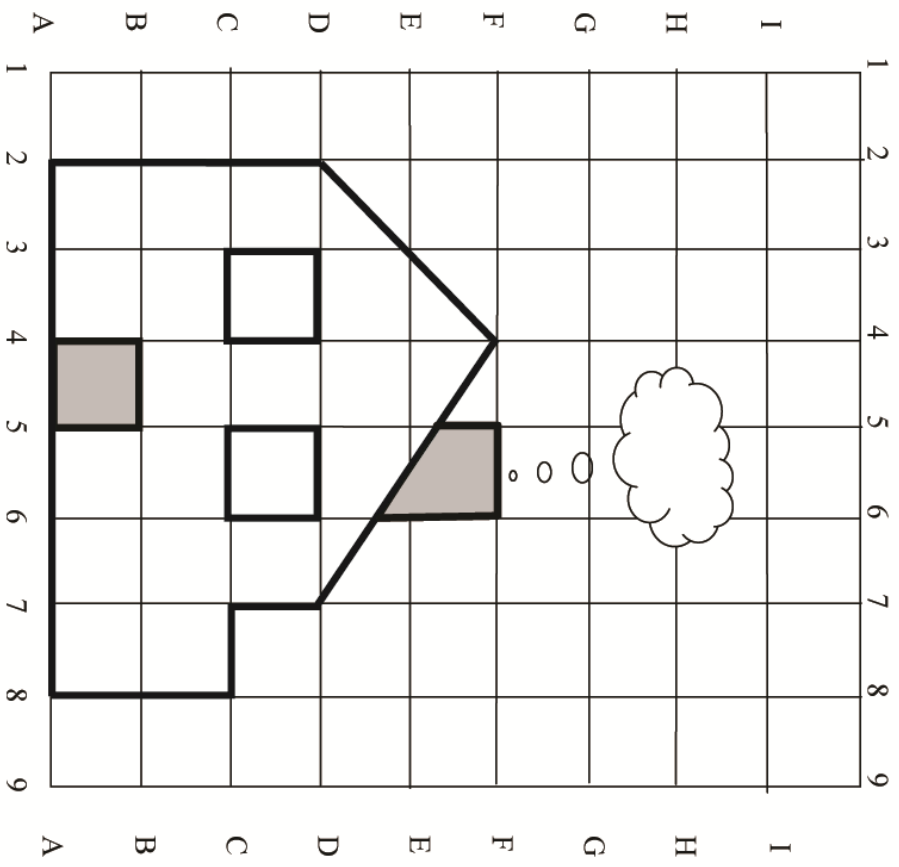
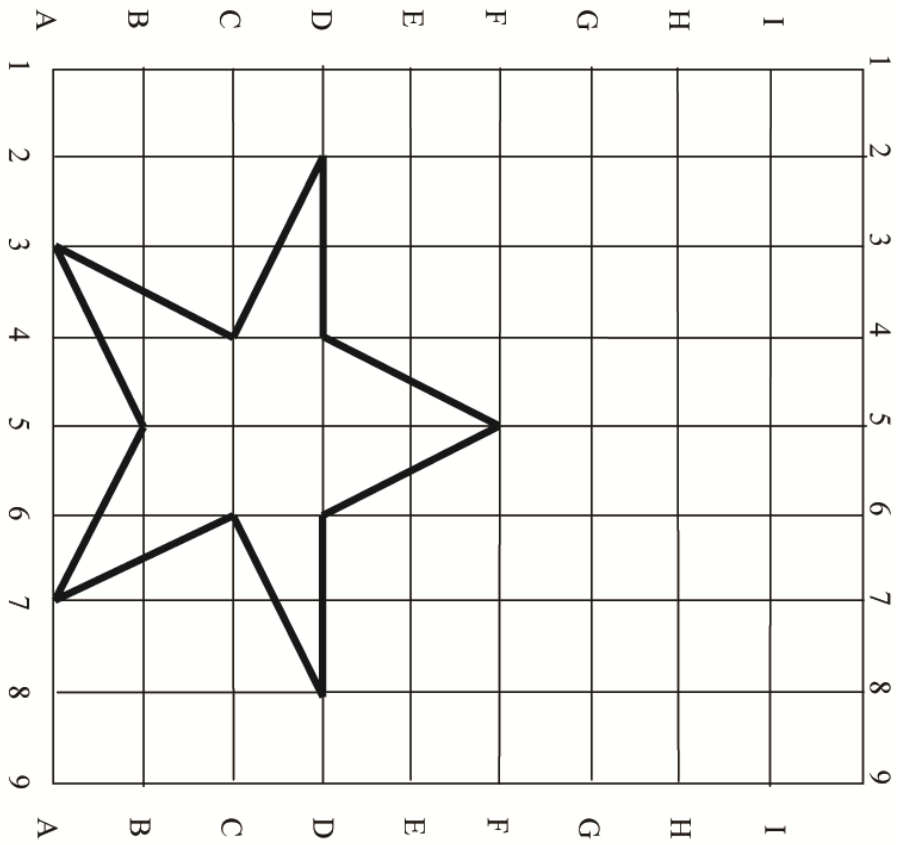
Color Wheel Kaleidoscope
Hinged-Mirror Kaleidoscope
Infinity Mirror

Resources

- Anamorphosis process - <http://www.anamorphosis.com/>
- Video (3:00): Anamorphic Art Tutorial - <http://bit.ly/2Loqhcc>







	1	2	3	4	5	6	7	8	9
I									
H									
G									
F									
E									
D									
C									
B									
A									

	1	2	3	4	5	6	7	8	9
I									
H									
G									
F									
E									
D									
C									
B									
A									

