

# Designing a Logical Logo

In this project you will discover how coordinate grids can be used to draw reflections of geometric figures. You will also learn to recognize the use of reflected figures in artwork. After exploring reflections in several ways, you will have the opportunity to create your own original geometric design.



used to

## PRACTICING THE SKILL

- ☐ Read page 147 in your Student Reference Book to review the definition of a reflection.
- ☐ Visit <http://www.hbschool.com/glossary/math2/index4.html> to see an animated definition of reflection.
- ☐ Take the quiz at <http://regentsprep.org/Regents/math/reflect/PracRefl.htm> to see if you have a clear understanding of reflections.

## USING WHAT YOU’VE LEARNED

Use what you have learned to complete the graphic organizer below. Tell whether each set of figures is an example of a reflection. Then, use complete sentences to write a clear explanation supporting your answer.

	FIGURE A	FIGURE B
Is this an example of a reflection?		
Explain and support your answer.		

Grade 5 Unit 9

★TRY IT!

Now you will practice using a coordinate grid to create reflections. Complete *Reflections on a Coordinate Grid*.

## REFLECTIONS IN THE REAL WORLD

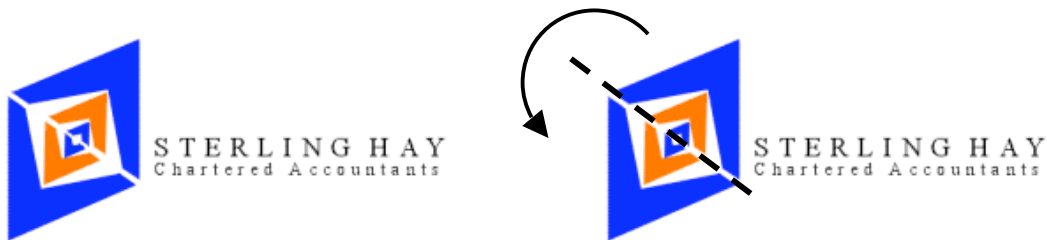
Many geometric designs use reflections to create interesting and appealing artwork. Corporate logos are one example of artwork that often uses reflections.

A corporate logo is a unique symbol or design used to represent one specific company. A logo sometimes includes the name of the company, as well. Shown below are two very famous corporate logos.



## ANALYZING CORPORATE LOGOS

Look at the logo shown below. Can you see that there are three examples of reflections? Each of the triangular shapes is reflected over a line, to create a matching mirror image.



Now, look at the other logos shown here. Each one uses a reflection. Some use more than one reflection. Find and label each reflection, as shown in the example above.



## Your Challenge

### IMAGINE

Imagine that you are starting your very own company! You will be the president of this company, of course – so you have many important decisions to make. Answer some of the questions below to help you begin.

### PLANNING YOUR COMPANY

- ☐ Brainstorm ideas!
- ☐ Will your company sell a product or provide a service?
- ☐ If you have chosen to sell a product, what will you be selling?
- ☐ If you have chosen to provide a service, what service will you provide?
- ☐ What groups of people are most likely to be your customers?
- ☐ What will the name of your company be?



### DESIGNING A LOGO

Your challenge is to design a logo for your new company! Your logo must meet the following requirements.

- ☐ Your logo may use color or it may be in black and white.
- ☐ Your logo must include a geometric design or illustration.
- ☐ The design of your logo must include at least 2 reflections.
- ☐ Your logo must include your company name.

### CREATE

Follow these steps to create your own logo.

- ☐ Visit <http://www.logobob.com/portfolio.htm> to see samples of real corporate logos. Continue to click on “Next Logo” until you have seen several ideas.
- ☐ Sketch out some rough ideas for your logo. Consider several possibilities before finalizing your choice.
- ☐ Create your logo on graph paper, using pencil. Use the grid lines on the graph paper to help guide you as you create your reflections.
- ☐ Use colored pencils, markers, crayons, or a black pen/marker to finish off your design.

## REFLECTION

Answer the following questions:

- ☐ Write a paragraph explaining why you chose to design your logo in the way that you did. Tell how you selected your design and what your design represents. Also, tell how you named your company and how you decided where to put the lettering in your logo.
- ☐ Why do you think it is important for a company to have a logo? How does the logo help the company?
- ☐ Logos are one example of how reflections are used in real-world designs. Where else might we see examples of reflections in the real world? Give at least three ideas. You may even use sketches to show your examples.
- ☐ Creating geometric designs – like those used in logos – often involves mathematical concepts. In this project, you applied your understanding of reflections. What other mathematical concepts could be involved in the creation of a logo? Give at least three ideas. Explain each of your ideas.
- ☐ What types of careers would involve creating geometric designs? Name at least four. Are these careers that you might enjoy? Explain why or why not.

## GOING BEYOND

### Exploring Reflections with Interactive Manipulatives

[http://matti.usu.edu/nlvm/nav/frames\\_asid\\_297\\_g\\_2\\_t\\_3.html?open=activities&id=309](http://matti.usu.edu/nlvm/nav/frames_asid_297_g_2_t_3.html?open=activities&id=309)

Visit this web page to use online pattern blocks in an exploration of reflections. Follow the directions on the right-hand side of the page. What do you notice as you make changes to the blocks? What do you notice as you make changes to the line of reflection? Describe some of your observations below.

### Totally Tessellated!

<http://library.thinkquest.org/16661/background/symmetry.3.html#Anchor-Reflections-33181>

On this website you can read more about reflections and see some real-world examples of reflective symmetry. Describe a real-world example of reflective symmetry in your own classroom.

# Student and Teacher Evaluation

	4	3	2	1
My final project is accurate, and shows that I have applied mathematical ideas or learned new mathematical ideas.	I did a great job! This is a good example of my best work.	I did a good job, with just a few areas to improve.	If I could do this again, there are several things I would change.	There are many ways that I could have done better on this.
COMMENT:				
I followed each step in the directions carefully.	I did a great job! This is a good example of my best work.	I did a good job, with just a few areas to improve.	If I could do this again, there are several things I would change.	There are many ways that I could have done better on this.
COMMENT:				
I used my creativity and imagination to create a final project that is unique and represents my own thoughts and ideas.	I did a great job! This is a good example of my best work.	I did a good job, with just a few areas to improve.	If I could do this again, there are several things I would change.	There are many ways that I could have done better on this.
COMMENT:				
I made effective use of class time. I was able to get myself started quickly, answer questions for myself, and stay on task.	I did a great job! This is a good example of my best work.	I did a good job, with just a few areas to improve.	If I could do this again, there are several things I would change.	There are many ways that I could have done better on this.
COMMENT:				
My presentation was clear and detailed. The students in the class learned new information about my topic.	My presentation was well done. Students learned about the topic.	My presentation was good, but there are one or two things I would improve.	Students learned a few new facts, but I could have been louder or more organized.	I needed to be more prepared for my presentation.
COMMENT:				



**UNIT TITLE:** Grade 5 EDM 3.0 Unit 10  
**Using Data; Algebra Concepts and Skills**  
**AUTHOR(s):** Dr. Stefani Hite

### KEY CONTENT VOCABULARY

algebraic expression	line graph	radius
circumference	mystery graph	rate
coordinates	ordered number pairs	ratio
diameter	pan balance	ratio comparison
formula	pi ( $\pi$ )	variable
geyser	predict	

### UNIT SUMMARY

In Unit 10, students will be introduced to pre-algebra concepts and skills. They will concentrate on solving problems using a pan-balance model, which means making sure that a change to one side must be compensated with a change to the other side. Students will also represent relationships as algebraic expressions that will help them generate input-output tables. Linking the data in the tables to corresponding points on a coordinate grid will help students better understand and interpret the data. Unit 10 has four main areas of focus:

- To solve equations using a pan-balance model,
- To represent relationships as algebraic expressions
- To generate input-output tables, and
- To link data in tables to corresponding points on coordinate grids.

### ACADEMIC ANCHORS ADDRESSED IN THIS UNIT

M5D.1	Demonstrate an understanding of patterns, relations and functions
M5D.1.1	Create or extend patterns
M5D.1.2	Analyze patterns
M5D.2	Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs
M5D.2.1	Select and/or use appropriate strategies, including concrete materials, to solve or represent expressions or number sentences



## ESSENTIAL QUESTIONS

- How can relationships be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways?
- How can mathematical situations and structures be translated and represented abstractly using variables, expressions, and equations?
- How can two quantities that vary proportionally be represented as a linear function?
- How can mathematical rules (relations) be used to assign members of one set to members of another set?

## CONTENT

### Students will know:

- about using pan balances for solving simple equations and sets of two equations in two unknowns
- algebraic expressions can be used to represent situations and describe rules
- about representational forms for rates
- about using a formula as a prediction tool
- about interpreting tables and graphs
- about comparison ratios
- use of the irrational number  $\pi$
- the formula to calculate the area of a circle





## SKILLS

### Students will be able to:

- construct line graphs that represent single sets of data
- construct line graphs that represent two sets of data
- extend patterns in graphs and tables to solve problems
- extend patterns in graphs and tables to solve problems
- find the median of a data set
- identify and use patterns in graphs to match graphs with situations
- identify and use patterns in tables to solve problems
- investigate and apply a formula for finding the area of a circle
- read and analyze line graphs and answer questions based on the displayed data
- represent functions with tables, graphs, and formulas
- represent functions with tables, graphs, and formulas
- represent rates with formulas, tables, and graphs
- use a pan-balance model to solve linear equations in one unknown
- use a pan-balance model to solve linear equations in two unknowns
- use addition and subtraction to solve pan-balance problems
- use multiplication and division to solve pan-balance problems
- use patterns in a table to define the relationship between radius and area
- use ratios to define  $\pi$  and describe the relationship between circumference and diameter
- use ratios to describe the relationship between radius and area
- use ratios to express relationships between dimensions of objects
- use table data to create line graphs
- use variables to write number models that describe situations
- write algebraic expressions to model rules