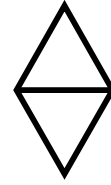
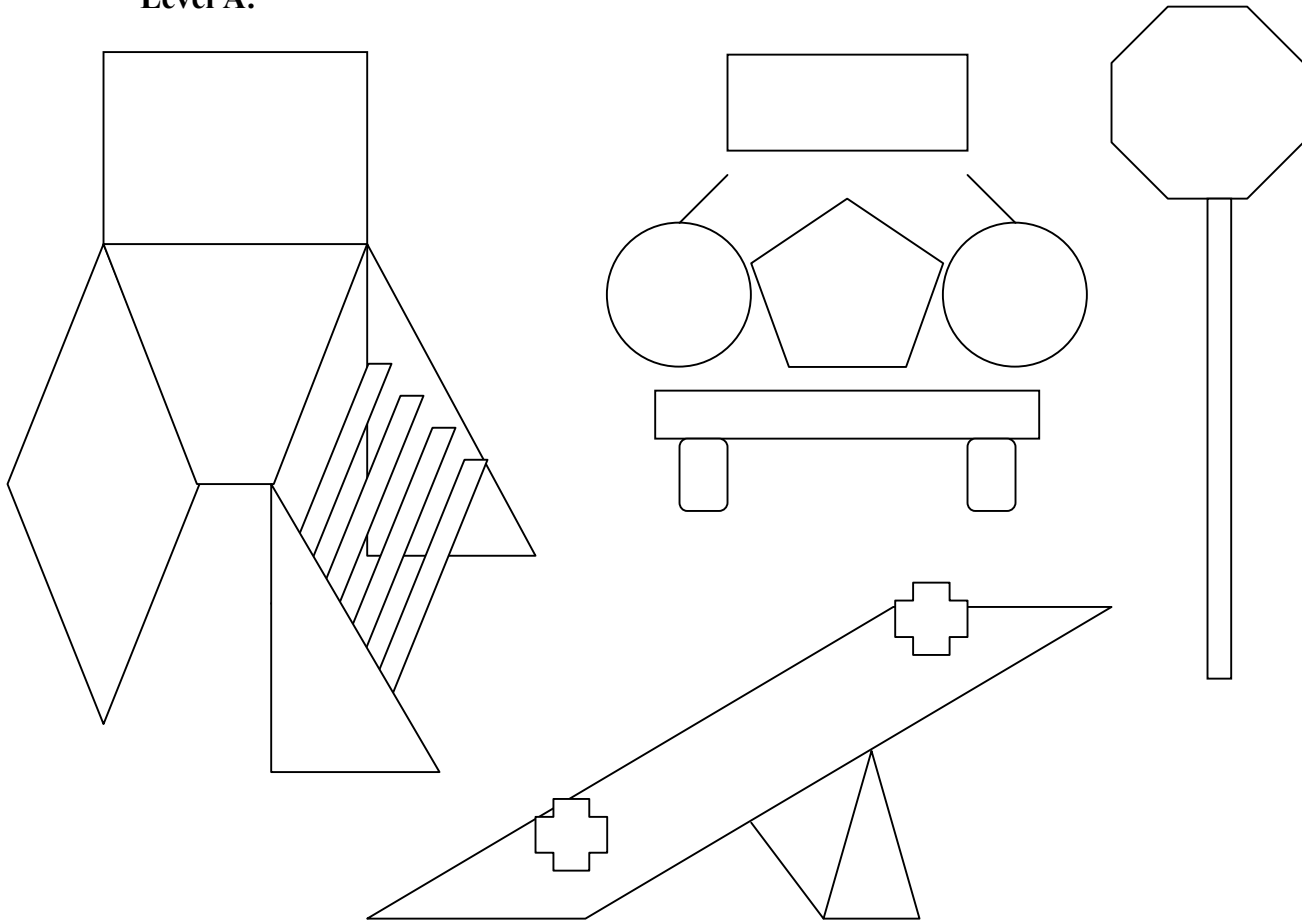


The Problem of the Month

The Shape of Things



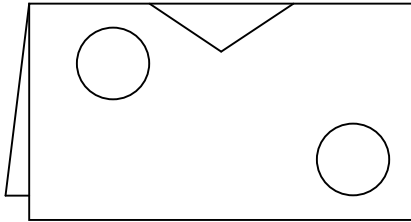
Level A:



Examine the scene of the playground above. There are a lot of different shapes that make up the toys and play-equipment. Name, draw and describe clearly all the shapes you can see in the playground picture.

Level B:

Laura and Jacob are drawing pictures to give to friends. Laura made a drawing using some shapes and a line of symmetry. She used the folded edge as the line of symmetry. Draw a picture of what the paper will look like when it is unfolded.



Jacob made a drawing with 5 shapes in all. When it was finished he noticed that

- his drawing had one line of symmetry
- he drew 4 shapes that had 4 corners
- he drew 1 shape that had 3 corners

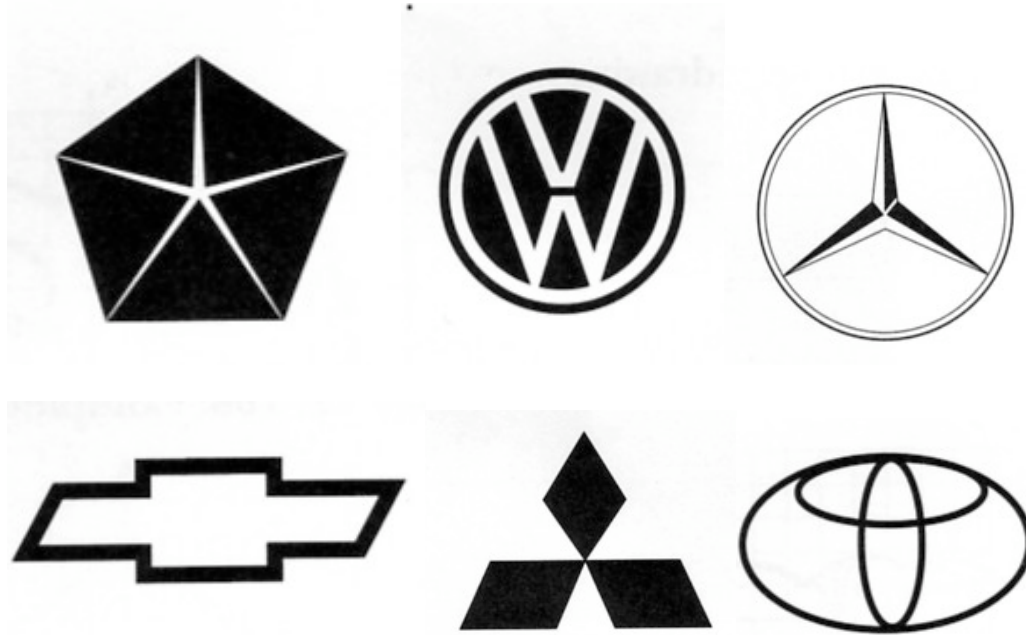
Show what Jacob's drawing could have looked like.



Explain why you drew the drawing you did.

Level C:

You work for a company in its marketing department. It is your job to create a new company logo. You have heard that having a logo with rotational symmetry is attractive and useful for potential customers. You look through a page of company logos. Which of the logo below have rotational symmetry? Explain your findings.



Explain why a logo with rotational symmetry is attractive and useful for potential customers?

Create a new logo for your company that has rotational symmetry.

Illustrate all the line symmetries (if any) of your logo. Justify why your logo has rotational symmetry.

Level D:

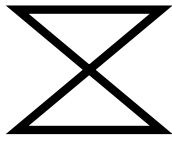
Jake and Mark are making a kite. They have two sticks. “We need to cut the sticks and lash them together,” Mark said. “But, what shape will the kite be?” says Jake. “It depends on these sticks,” Mark replied. What does Mark mean? Explore the types of kites you can make using two sticks. List the different types of kites you can make. Explain using geometry how the sticks affect the shapes of the kites.

Level E:

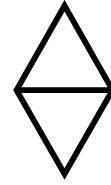
Laurie and Kristina wanted to share a cake equally. The cake was in the shape of a regular hexagon. Kristina said, “There are two ways to cut the cake to make equal size pieces. Either cut from one vertex to the opposite vertex or cut from the midpoint of one side to the midpoint of the opposite side. Those are the only two ways to make one straight cut and have two equal size cakes.” Laurie said, “No, there are other ways to make one straight cut and share the cake equally besides your two ways.” Who is right?

Prove your findings. If Kristina is correct prove why the two ways work and why there are only those two ways. If Laurie is right, state the method(s) for cutting the cake equally and prove your conjecture.

Explore other regular polygon shaped cakes. Does the method(s) used to cut regular hexagon cake work for cutting cakes of different regular shapes? State some conjectures and justify your findings.



The Problem of the Month
The Shape of Things



Primary Version Level A

Materials: A scene of the playground. Access to individual shapes (cutouts). Papers and pencils to write or draw. Color crayons, markers or pencils.

Discussion on the rug: (Students have sets of some cut out shapes in front of them.) Teacher holds up the playground scene. "Here is a picture of a playground. What do you notice about the playground? What else do you notice about it?" (Teacher continues to ask children to notice different shapes in the play area. The teacher asks the students to find a shape among the ones cut out that is also in the picture. She asks the students to describe the shape.) "How can you tell the difference between that shape and another shape?" "Who knows the name of the shape?"

In small groups: (Each group has a playground scene, crayons, pencils or makers, and paper.) (Teacher asks the students to find all the shapes in the picture.) Draw a picture of the shape you found. Where is the shape in the picture? What is the name of the shape? How do you know that shape, describe its parts.

At the end of the investigation: Students either discuss or dictate a response to this summary question. " Pick a shape in the playground. Draw a picture of the shape you found. Where is the shape in the picture? What is the name of the shape? How do you know that shape, describe its parts."

A Playground Scene

