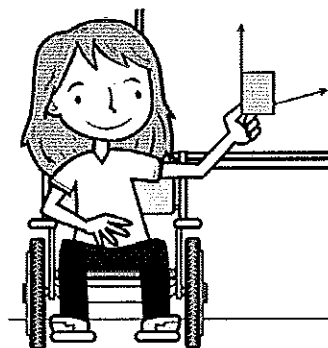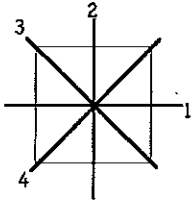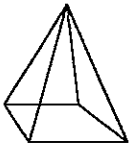# Grade 4, Unit Four: Geometry & Measurement

In this unit your child will learn to:

- classify angles (right, acute, obtuse) and lines (parallel, intersecting, perpendicular)
- perform and identify flips (reflections), slides (translations), and turns (rotations) of shapes
- identify lines of symmetry
- use the language of geometry to identify and describe a variety of 2-D and 3-D shapes

Your child will learn and practice these skills by solving problems like those shown below. Keep this sheet for reference when you're helping with homework.

Problem	Comments
Draw a hexagon with only 1 pair of parallel sides. Label the sides that are parallel to each other. These sides are parallel to each other. None of the other sides are parallel.	Students identify parallel lines or parallel sides of shapes. They go a step further and apply that knowledge when drawing shapes with a certain number of parallel (will never cross) or perpendicular sides (meet at a right angle).
Draw a quadrilateral with only 1 right angle. Label all the angles in your shape as right, acute, or obtuse. acute obtuse right acute	Students should be able to identify different kinds of angles. They apply that knowledge when drawing shapes with a certain number of right (90 degrees), acute (less than 90 degrees), and obtuse (between 90 and 180 degrees) angles.
Draw a reflection of this shape over the line.	To reflect or flip a shape over a line, students first reflect the points for each vertex (corner) of the shape. Then they connect those points to complete a shape that is an exact mirror image of the original.

Draw all the lines of symmetry on this square.	A line of symmetry divides a shape into two halves that are mirror images of each other. When the shape is folded along the line of symmetry, the halves land on top of each other exactly. When finding lines of symmetry, students can imagine folding the shape: sometimes it helps to actually fold a cutout of the shape.
This square has 4 lines of symmetry. You could fold it horizontally, vertically, or on either diagonal and the two halves would match exactly.	
Name this shape. Then write how many faces it has.	Students learn to classify 3-dimensional shapes by the number and kinds of faces (flat surfaces) and vertices (corners) they have.
This is a square-based pyramid. It has 5 faces: the square base and the 4 triangular sides that meet at the vertex at the top.	

Frequently Asked Questions about Unit Four

Q: I can't remember what so many of the geometry words mean. Where can I go for help?
A: There are a lot of words that we use almost only in geometry class. These words are important because they let us name shapes and talk about them in precise ways. You can go to www.mathlearningcenter.org/resources/materials/parents4.asp to find a PDF of vocabulary words for Grade 4 Bridges students (an example is shown below). On this Web page, there is also a link to a helpful online math dictionary for students. Both sources show pictures and examples of all vocabulary words: these visual aids are especially helpful for geometry words.

Bridges in Mathematics   Grade 4 Home Connections Vocabulary   page 1 of 3

Word	Definition	Examples
area	the total number of square units covered by a 2-D shape	The area of this rectangle is 6 square centimeters.
array	an orderly arrangement, as in a rectangle used to represent a multiplication problem	

Q: Why is geometry important?
A: Studying geometry provides ways for students to analyze the physical world. The skills students develop now—including the vocabulary that they will come to understand and use with confidence—will help them in high school geometry, trigonometry, physics, and calculus. An additional benefit of studying geometry is that many students with a strong spatial sense—for example, the ability to visualize and manipulate shapes in their minds—blossom when they are engaged in the kind of spatial problem solving featured in this unit.