Magical Math

Groovy Geometry

Games and Activities That Make Math Easy and Fun

Lynette Long

John Wiley & Sons, Inc.

Groovy Geometry

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Magical Math

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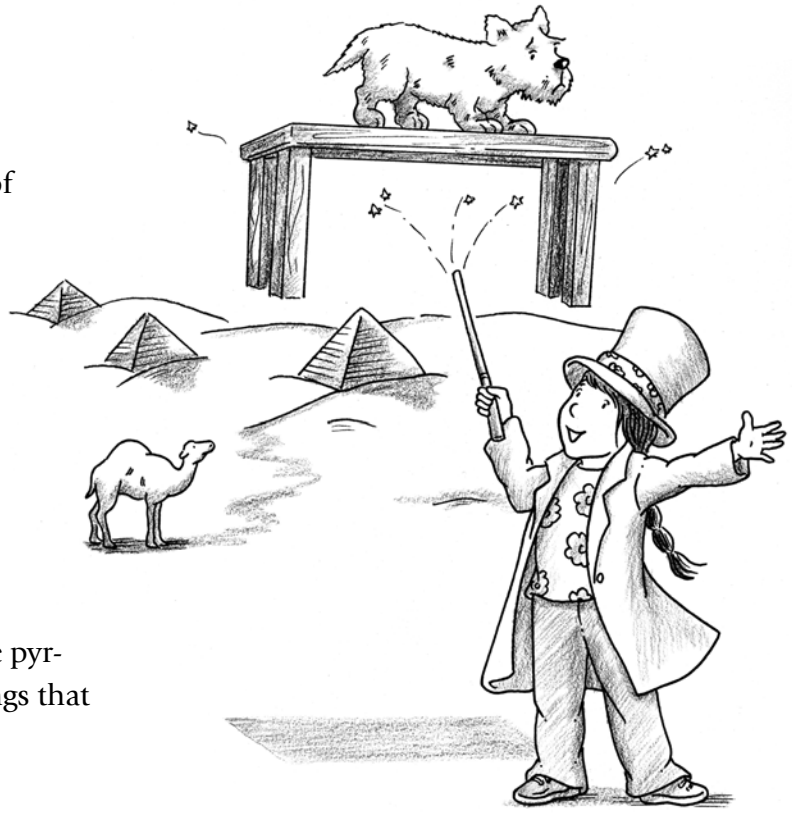
The Magic of Geometry

Geometry is the study of points, lines, angles, and shapes, and their relationships and properties. It sounds like a lot to know, but much of it is already in your head. Geometry is all around us. If people didn't think about geometry, they wouldn't be able to build great structures such as the pyramids, or even simple things that lie flat such as a table.



Geometry can be easily learned by experimenting and having fun with things you can find around the house. You can learn most of the principles of geometry using cereal boxes, soda cans, plates, string, magazines, and other common household objects. So get ready to have a great time exploring the world of geometry.

Some Key Terms to Know

Geometry starts with the concepts of lines, points, rays, and planes. You probably already have a pretty good idea of what lines and points are, but in geometry these terms have a more specific meaning than in everyday life. Here are some words and definitions you'll need to know:

Plane: a flat surface that extends infinitely in all directions

Point: a location on a plane

Line: a straight path of points that goes on indefinitely

Line segment: all of the points on a line between two specific end points

Ray: all of the points on a line going out from one end point indefinitely in one direction

Plane geometry: the study of two-dimensional figures

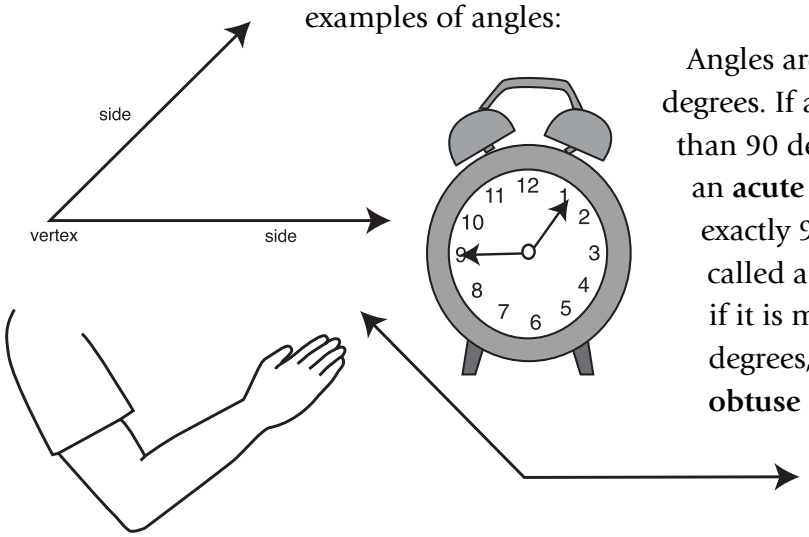
Solid geometry: the study of three-dimensional figures

II

Angles

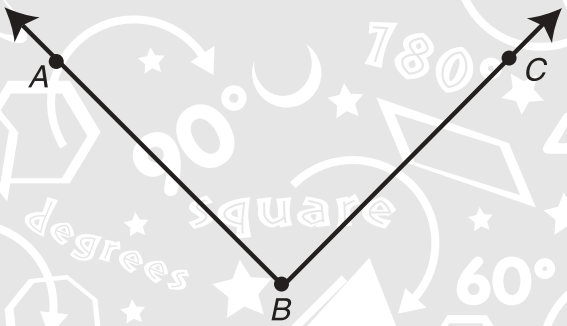
An **angle** is formed by the meeting of two rays at the same end point. The point where the two rays meet is called the angle's **vertex.** The rays are called the sides of the angle.

Angles are everywhere. When you bend your arm, your elbow becomes the vertex of the angle formed by the two parts of your arm. When two streets cross each other, they form angles. Here are some examples of angles:

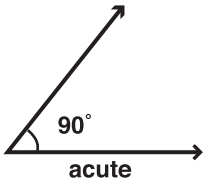


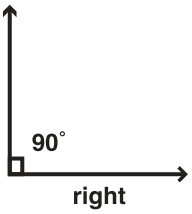
Angles are measured in degrees. If an angle is less than 90 degrees, it is called an **acute angle.** If it is exactly 90 degrees, it is called a **right angle.** And if it is more than 90 degrees, it is called an **obtuse angle.**

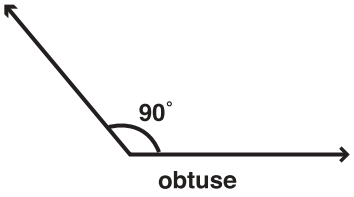
Angles can be identified by labeling a point on each ray and the point that is the vertex. For example, the angle



can be written as angle *ABC* or angle *CBA* (note that the vertex point always goes in the middle). You can also write this angle using an angle symbol as $\angle ABC$ or $\angle CBA$.







In this section, you'll practice measuring and creating different angles, learn the relationship between some interesting angle pairs, discover the relationship between the angles formed when two parallel lines are intersected by another line, practice recognizing right angles and perpendicular lines, and more.

Along the way, you'll measure angles around your house, have an angle-drawing competition, play a game of matching angle pairs, create numbers using only perpendicular lines, and go on a right-angle scavenger hunt. These activities will teach you more than you can imagine about angles, so why not get started?