

There Must Be 50 Ways to Draw a Circle

By Michael Tempel

President of the Logo Foundation

©1991 Logo Foundation

Michael Tempel, President of the newly established Logo Foundation, distributed this paper at the New York Logo Users Group meeting on October 8, to help generate some ideas about drawing circles using Logo. How many ways can you draw a circle? Readers are encouraged to share their ideas with Michael either by mail or via the New York LogoExpress Host.

How can you draw a circle in Logo? That depends on how you are thinking about a circle.

Seymour's Circle

Seymour wanted to become more familiar with circles before trying to tell the turtle how to draw one. So he walked in a circle and thought about what he was doing. It seemed that he was moving forward and turning at the same time.

He tried to separate walking from turning. If he walked without turning, he went in a straight line. If he turned without walking he found himself spinning around in one place.

"Turn and move forward, turn and move forward, turn and move forward..."

Euclid's Circle

Euclid sat alone and very still, with his eyes closed, thinking about circles. He thought of a place, a location; a "point" he called it. He thought of another point at some distance from the first point. He thought of many points, all the same distance from that first point, each off in a different direction.

"Aha!," he thought, "These points make up a circle. The first point is its center."

Descartes' Circle

Descartes was lying in bed, looking up at the ceiling, watching a fly walk in a circle around the light fixture.

A week earlier he had noticed a fly up there and realized that its position could be described exactly and simply with two numbers. The first number telling how far the fly is from one wall. The second number telling how far it is from an adjacent wall.

He also realized that any path that the fly walked in could be described by an equation. For example, if the fly walked from one corner of his square ceiling diagonally across to the opposite corner, it would always be the same distance from one wall as from the adjacent wall.

"If I call the distance from one wall X and the distance from the adjacent wall Y," he thought. "Then the path of the fly is $X = Y$."

"There should be a way to describe any path with an equation of this sort. A circle is complicated, but still, there must be a way ..."

Perry's Circle

Admiral Perry stood at the North Pole. He realized that he could describe any point on Earth by facing in a particular direction and specifying a distance from where he stood. If he kept facing in different directions, keeping the same distance in mind, the places would all lie on a circle.

For example, no matter which way he faced, all the sounded pretty good. So he headed south (which was, of course, his only choice.)

Nolan's Circle

Nolan stood on the mound practicing his fast ball.