

Investigations: Student Software: *LogoPaths*

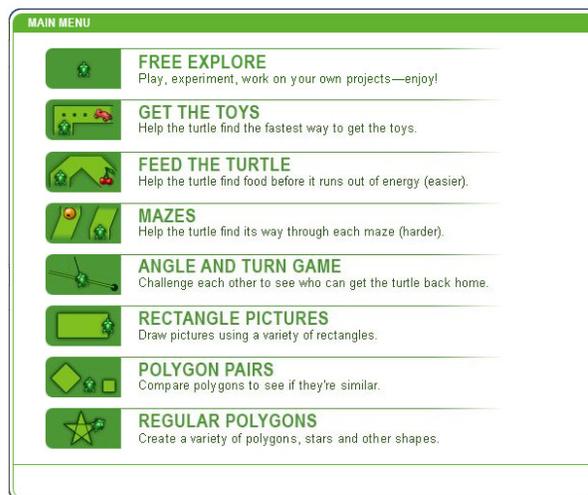
Introduction This guide explains how to install and use the Investigations student software *LogoPaths*.

LogoPaths is a software program for Grades 3–5. It helps students learn mathematical concepts, such as geometry, as well as reasoning and problem-solving skills through computer programming. *LogoPaths* is available for use with Investigations or as a fun and powerful learning tool on its own.

Installation To install the software, simply insert the CD-ROM into the disk drive. A welcome screen should appear. Follow the directions on the screen, clicking **Next** and **Yes** until the program is installed. Click **Close** to complete the process.

To access the program, go to the Start menu, select **All Programs**, then **Investigations**, and finally choose **LogoPaths**. Notice that a *LogoPaths* manual comes with the software. This will provide detailed information about the program. Click **LogoPaths** to begin.

Using *LogoPaths* *LogoPaths* offers an environment in which students learn about geometric concepts and computer programming using virtual manipulatives. The Main menu, which links to different activities, is displayed upon opening the program.



To learn the basics of the program, start by looking at Free Explore.

Double-click Free Explore to enter the activity. This brings up the *LogoPaths* workspace that is seen in each activity. The *LogoPaths* workspace consists of a large, white drawing panel with a toolbar, command center, and Teach, Messages, and Notes panels.

Except for the drawing panel, all other panels may be expanded or hidden by clicking the small white triangles.

In the center of the drawing panel, there is a turtle.



The turtle acts as the cursor. The turtle setting is a default and can be changed to other shapes, such as a dragonfly or soccer ball. The size and color of the shape may also be changed.

TURTLE FEATURES

PEN SIZES: SMALL MEDIUM LARGE

COLORS: RED GREEN BLUE SILVER
 GOLD PURPLE BLACK

SHAPE SIZES: SMALL MEDIUM LARGE

SHAPES:

<input checked="" type="radio"/>  TURTLE	<input type="radio"/>  LIZARD
<input type="radio"/>  DRAGONFLY	<input type="radio"/>  AIRPLANE
<input type="radio"/>  SPIDER	<input type="radio"/>  CAR
<input type="radio"/>  BIRD	<input type="radio"/>  ROCKET
<input type="radio"/>  MOUSE	<input type="radio"/>  BALL
<input type="radio"/>  MANTA	

The appearance of the turtle can be changed by clicking the turtle features button or by writing commands, such as *setcolor redcolor*, in the command center and hitting Enter or Return on the keyboard. Learn to write commands by exploring the help and code hints buttons, which list all of the commands needed. Clicking either of these buttons brings up the following screen, which can be used to search for commands.



Use this screen to search the codes, look for a code by topic (such as *setcolor*), or get general help. The directions and hints buttons in the other activities also assist in understanding how to use Logopaths effectively. Detailed information is available in the *LogoPaths* manual as well.

The color of the turtle is not the only thing that can be changed with commands: the turtle can also move and turn, and the thickness of the line the turtle makes can be changed.

If a user enters a command that *LogoPaths* does not recognize or cannot be done, an error message will appear in the Messages panel.

If there is a standard list of commands that are commonly used, they can be made into a procedure. Procedures are essentially lists of commands. For example, if an equilateral triangle was created by typing a list of commands in the command center, it can be made into a procedure. To enter or edit a procedure, use the Teach panel.

There are three ways to do this:

- Type the commands into the command center, click the teach button, and then enter a name for the procedure.
- Write the name of a procedure starting with *to*, then add the name in the Teach panel, followed by the commands, and finally the word *end*.
- Click the new procedure button in the Teach panel and follow the Teach panel steps: name, commands, and end.

All procedures can be edited in the Teach panel after they are created. Variables can be added to change a procedure to make smaller or larger shapes than the original. Detailed directions are provided in the *LogoPaths* manual.

The step button in the command center will activate step mode. In step mode, the turtle returns to its original position and then automatically carries out all the commands listed in the command center until the stop button is pressed.

The preferences can be adjusted depending on how the turtle should move through the procedures.

PREFERENCES

TURTLE SPEED: SLOW FAST

TURN RAYS: ON OFF

DECIMAL PLACES: 0 1 2

STEP THROUGH TEACH: ON OFF

If the Step Through Teach setting is off, the procedure will be treated as a single command in the command center. If it is on, it will go through each line in the Teach panel. Turtle speed, rotation lines, and measurement of angles and distances can be adjusted here as well.

The label turns and lengths buttons make the turtle move in additional ways, such as moving it 90 degrees or lengthening the distance of a line.



To know the distance and degrees the turtle should move, use the ruler and turtle turner to assist in writing commands. Using the ruler helps measure the distance between the turtle and any point in the drawing panel. The turtle turner shows the degree of the turn the turtle should take.

Write useful notes and tips about commands or anything else in the Notes panel.

Users can also undo, print, save, and reopen the work.

Activities

In addition to Free Explore, there are other directed activities students can use to learn about math and computer programming.



In *Get the Toys*, students guide the turtle from an elevator in the middle of the maze to a toy and back again. Only steps in multiples of 10- and 90-degree turns can be used.



In *Feed the Turtle*, students guide the turtle through a maze filled with pieces of food. The turtle must move over every piece of food before its energy runs out. Only steps in multiples of 10 and turns in multiples of 30 can be taken.



In *Mazes*, the student guides the turtle to various prizes before it runs out of energy.



The *Angle and Turn* game is an activity for more than one player. Player 1 moves the turtle in the direction of a target, and then Player 2 tries to get it closer. The object is to get the turtle to reach the target.



In *Rectangle Pictures*, the student draws rectangles with already-created procedures.



Polygon Pairs is a game where the turtle creates two images using different procedures. The students can compare, overlap, and use different tools to determine if the shapes are similar.



In *Regular Polygons*, students figure out how to create squares, hexagons, stars, and other equal sides and angle shapes using already-created procedures.

Using *Logopaths* in conjunction with *Investigations* will develop students' reasoning and problem-solving skills as well as provide practice for geometric concepts taught in the classroom. Students will have fun learning about math and programming in a hands-on way.

Review

This guide explained how to install and use *LogoPaths* with *Investigations* in Grades 3–5. The software gives students the opportunity to explore geometric concepts and figures in an interactive way. It also strengthens reasoning and problem-solving skills through basic programming situations.

It also discussed different activities, such as *Rectangle Pictures* and *Polygon Pairs*, that students can use to learn math concepts like geometry and programming skills.

To learn more about *Investigations*, please watch the other *Investigations* tutorials on this Web site.