SPRK
schools ⚡ parents ⚡ robots ⚡ kids

Introduction to learning with Sphero

Hello there, and thanks for taking a look at Sphero and Education!

The lessons in the SPRK program teach math, physics, and computer science concepts using hands-on, engaging activities with Sphero, a robot ball. Students work in small groups to write computer programs that control how the Sphero rolls and appears. They are designed as lessons primarily for 4th and 5th graders that will take approximately one hour.

These lessons start with an introduction and then list the Common Core Math Standards that are relevant to the lessons. They contain a teacher guide, a worksheet for the students to fill out, and a student guide.

The CORE lessons cover:
• Math: Percentages, division, geometry, and patterns
• Physics: Speed, time, and distance
• Computer Science: Program flow, variables, conditionals, and reading sensors

What is Sphero?

Sphero is a robot ball with several features that can be controlled through mobile apps, including computer programs that the students build. The main features are:

• Rolling. The Sphero can roll at a given speed and heading for a given amount of time.
• Colors. The Sphero can light up in any color.
• Bluetooth. Sphero connects to devices such an iPads, iPhones, and Android phones and tablets through wireless Bluetooth connections. This allows the Sphero to be controlled by a number of apps.

There are 4 education related apps available to control Sphero. Each of these is available for free from app stores such as iTunes and Google Play.

• Sphero. This is the main Sphero app used for firmware updates and general driving.
• Draw and Drive. Allows you to draw a shape with multiple colors and have Sphero roll in that shape and color.
• MacroLab. Creates simple programs ("macros") that are a series of instructions for the Sphero through an easy-to-use graphical user interface.
• OrbBasic. Creates more complex programs using a text-based programming language.

The CORE & STEM lessons in the SPRK program use MacroLab and OrbBasic.

Help and support

We're here for you! If you have questions, comments, suggestions, or just want to chat please contact us!

• General Support Email: support@gosphero.com
• General Support Phone: 1 (303) 502-9466
• Education: education@orbotix.com
• Volume Purchase: vpp@orbotix.com
• Twitter: @SpheroEdu

Heading and Aiming

One of the things that makes Sphero so unique is that its heading is relative to the user, not relative to the ball. This makes the Sphero much easier to get to go where you want it to go. The diagram shows how the heading works. Note that only 90 degree increments are shown in the diagram, but you can specify the heading down to 1 degree.

Forward
0º

270º

90º

180º

You
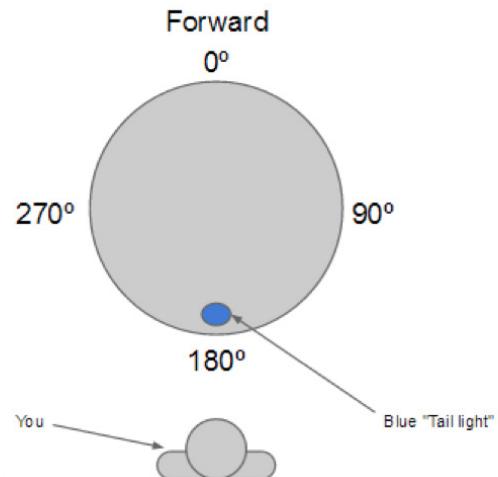
Blue "Tail light"

Each time the Sphero is turned on, it needs to be "aimed," which means setting the direction that will be used for a heading of 0 degrees. This is accomplished with Sphero's "taillight". The taillight is a blue, light inside the Sphero. Each Sphero app has a button that lets you set the taillight, which looks like this:

To use this button, tap and hold on it, and then slowly move your finger around the circle. You will see the blue taillight rotate. When it is pointing directly at you (in other words, directly away from the direction you want the Sphero to roll for heading of 0 degrees), remove your finger. The student guides for all of the MacroLab lessons lead you through how to do this.

For an interactive introduction on how to aiming, use the Sphero app.