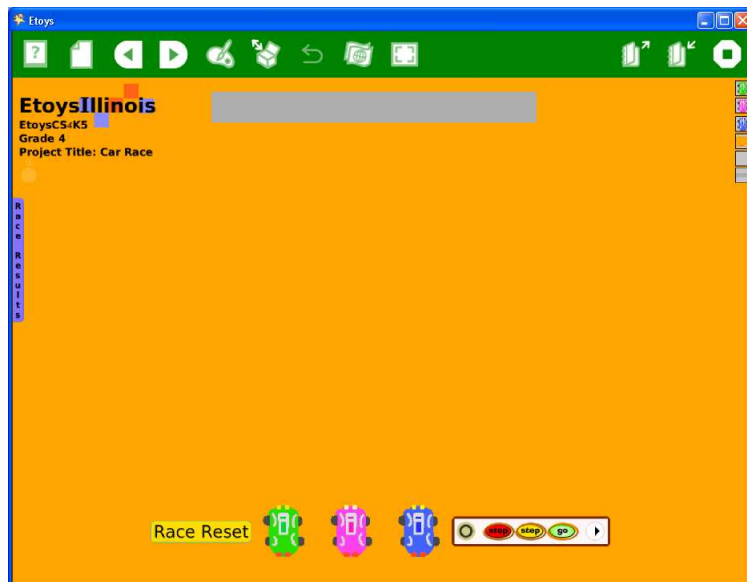



**EtoysIllinois**  
EtoysCS4K5  
**Grade 4**  
**Car Race**


**Description:** Students will:  
Draw a car and script it to move.  
Create a variable called speed, add a random number generator tile to it and use it to move the car forward on the race track.  
Add two or three other cars with the same basic script.  
Write test statements for each car to race and then stop the racing when the first car crosses the finish line.  
Write a script that makes a winner's flag show at the finish and hide when the race is reset.  
Write a reset script using x and y coordinates to position the race cars at the start line evenly spaced apart and at the same distance above the lower edge of the race track.  
Create a graphical tally of the race results and keep the tally information in a flap made this project.  
Discuss race results and compare their results with those of nearby students. Analyze similarities and differences.

**Project View**



**Subject:** Math

<b>Etoys Quick Guides</b>	Click the question mark in Etoys to open the set of interactive tutorials for basic tools and techniques.
<b>Vocabulary:</b>	X axis, Y axis, heading, variable, random number generator
<p><b>Lesson 1:</b></p> <p>Script Tiles: Forward by</p> <p>Menu Tools: Viewer Icons</p> <p>Menus: Viewer Icons Set</p> <p>Menu: Scriptor Icons Set</p>	<p>Draw a car and keep it.</p> <p>Create a script with a forward by tile.</p> <p>Create a variable called speed: click on the V in the top line of the car's Viewer to open a dialogue box, type the word speed.</p> <p>Pick up the speed tile by the first part of the tile and drop it onto the number in the forward by tile. These two tiles will lock together.</p> <p>Click on the Supplies box in the top border of the car's scriptor and add a random number tile to the variable tile. This tile will lock into place too.</p>  <p>Name this script the color of the car and add the word move. Naming scripts helps keep ideas organized.</p> <p>Experiment with this script. The range of numbers used for the speed can be wide or narrow. Give students time to experiment.</p> <p>Keep this project: nameCarRace</p>
<p><b>Lesson 2:</b></p>	<p>Make copies of the car, as many as you want, and repaint each a different color. Make the headlights a different color for each car so that this color can be used to test which car touches the finish line first.</p> <p>Draw a finish line. Lock it using the white menu in its halo of handles so that it does not move or get thrown away. Its color is used in test statements that will help determine the winner of each race.</p> <p>Open a viewer for each car and find the script that was made for the original car.</p>

	<p>Line up all the cars near the lower edge of the screen, use an All Scripts button from Supplies to start and stop all the cars at one time.</p> <p>Rather than moving the cars back to the start with the mouse each time, line up all the cars using the value in the Y axis tile and space them using their X axis values evenly apart.</p> <p>Make a reset button using x axis and y axis tiles to align and space evenly. Leave the ticking state as Normal and make a button to fire this script.</p> <p>Keep the project.</p>
<p><b>Lesson 3:</b></p>	<p>Each car will have a test that pauses its script and the other cars' scripts as soon as one of the cars touches the finish line.</p>  <p>Draw a winner's flag, keep it and open its viewer. Put it near the finish line and give it a heading slightly larger than zero.</p> <p>Make a script for the flag so it turns about 15 degrees and then pauses. Use a test statement.</p>

<p>Script Tiles: Hide and Show</p>	<p>Open the Miscellaneous category for the hide and show tiles to use in the winner script. Think about when the flag should show and when it should hide.</p> <p>Use the Viewer for the world and make one script there that controls all the cars in one place. This same script controls when the winner's flag is visible and when it is not visible. Each car has a similar test but will refer to different cars.</p> <p>Test statements are in the Viewer or in the top border of the scriptor. Give students time to think about what must happen and how they can arrange the statements to do what they want. The pause script tiles are found in the Scripting category.</p> <p>The colors of each car's headlights are different shades of yellow and those are the colors referred to in the top line of each test.</p> <p>Give students time to add other details that will give make this project look like a commercial game they might play.</p>
<p>Object Catalog: Maker Button</p>	<p>Ask students to tally the number of times each car wins. A graphical representation can be made using Maker Buttons.</p>
<p>Script Tiles: Scale Factor</p>	<p>Copy the cars, use the geometry category and change the scale to .20 or some other value that suits the size and scale of the other objects in the project. Change the ticking state from pause to Normal so that these cars do not move when being used to tally the winners.</p> <p>Open the Object Catalog from Supplies and get a Make Button in the Connections category. Put each small car on a Maker Button to provide an endless supply.</p> <p>Make a flap to store these small cars so that students can see them accumulate over time.</p> <p>Click alt-shift-W to open a menu that includes making a flap. Respond to questions in each dialog box and name the flap something like Results, Race Results, or Winners.</p>

	<p>Give students time to experiment, to change the range of the random variable in each script and think about the effects. Should all the ranges be the same? What variables are found in real cars in races? Discuss.</p> <p>Keep this project and give students time to experiment with it. Given time, many students will explore the range of random variables, and add additional features to their race event. Give students time to look at other race projects and to add features they like.</p> <p>Discuss race results. Compare car to car results with neighbor's results.</p>
<b>Standards:</b>	<p>NETS  <a href="http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007.htm">http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007.htm</a>          1. a, b, c          3. a, b, d          4. a, b, c, d</p> <p>NCTM Focal Points: for Grade 4</p> <p>Bloom's Taxonomy/Cognitive Domain:          Knowledge: describes, knows, names, selects, states          Comprehension: estimates, gives examples, explains          Application: demonstrates, produces, uses          Analysis: analyzes, compares, distinguishes, selects, separates          Synthesis: categorizes, explains, reorganizes, predicts          Evaluation: compares, describes, explains</p>
<b>Resources:</b>	<p>Etoys Help Quick Guides: always available in Etoys. Open Etoys and click the question mark to open a set of interactive tutorials of basic tools and techniques.</p> <p><a href="http://www.EtoysIllinois.org">www.EtoysIllinois.org</a> projects, tutorials, and lesson plans  <a href="http://www.MSTE">www.MSTE</a> math resources  <a href="http://www.Squeakland.org">www.Squeakland.org</a> download Etoys software</p>
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