

Pool Table

This activity is used to show students how physics can be used in a life situation to better themselves at a game of billiards. This project shows how velocity, angles, action and reaction, elasticity, and the rules of pool interact together in a fun environment. The students would be able to change characteristics of this model to see how changing different parameters will change the outcome of the pool shot.

When the file opens up, the table starts out in a standard formation of 8-ball with 15 balls of solid and striped colors arranged in a pyramid. The cue ball is in the starting position. First, I would have to go over the rules and how to get different velocities and angles to move the cue ball. Then, the students can team up in pairs on a computer and play between each other to get familiar with the game. Then, on my display screen, I could show them how to change certain parameters such as elasticity of the balls or the edges, the air resistance (that I am using for friction on the table), or the tracking of the cue ball so they can trace the path it takes. I could also show them how to change other parameters such as turning on downward gravity or planetary gravity and see what happens and then explain why. Finally, we can see how the use of physics will change the outcome of the game by using angles on the cue ball or spin on the cue ball to change what happens when the corresponding balls are hit. We can make better shots and play better against our opponents.

To hit the cue ball, use the velocity vector by clicking in the center and dragging it in the direction you want to hit it. When you click on the run button (Ctrl + R), it will take off in that direction and hit the ball you are aiming for. To stop the shot that you took, you can go to the drop down menu labeled "world" and click on "start here" or just press Ctrl + H when you are ready. If the cue ball or any other balls have rotational velocity still, you can drag a rectangle around them with the mouse or double click on an individual one, and then go to the window menu, and select properties. Then, change the $V\theta$ field to 0, then close the window. The previous window can also be used to change velocity and other parameters.

Happy Gaming!