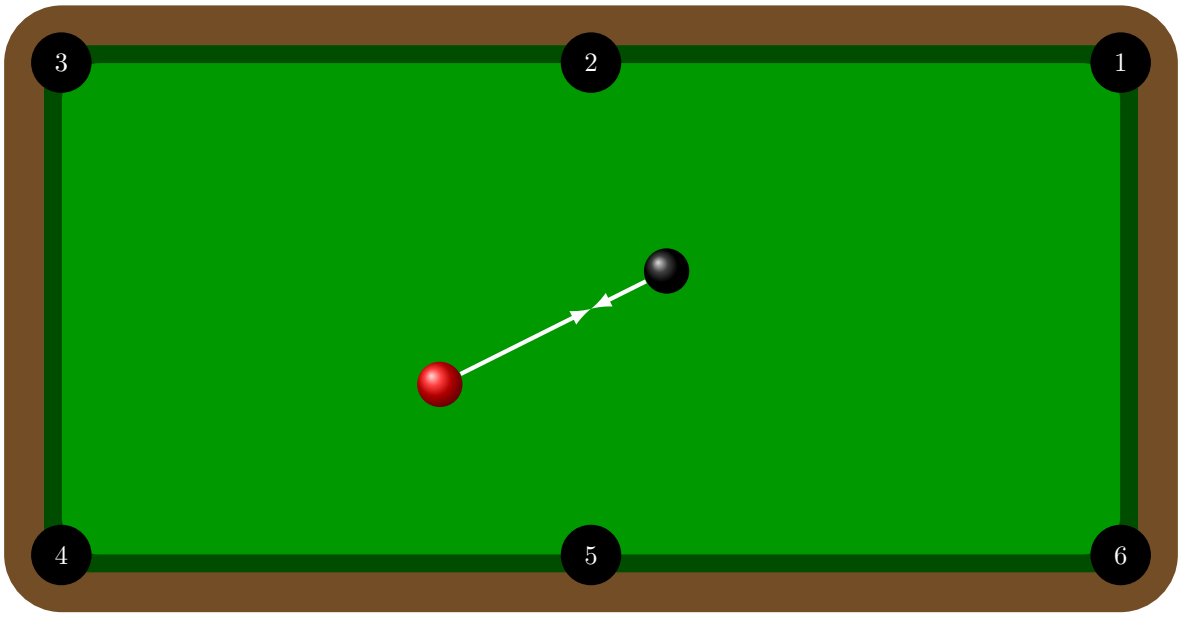
Please answer the questions below to the best of your ability either in the space provided. Everything should be scanned or photographed and submitted through gradescope.com. See instructions for getting added to the gradescope class.

Objective: *I can use both the Momentum Principle and the Energy Principle to study the behavior of collisions.*

1. At the end of a heated game of pool, you get a little anxious and hit the mysteriously red cue ball at the 8-ball while the 8-ball is still in motion. Initially the 8-ball was traveling toward the cue ball at a speed of 0.25 m/s, and you hit the cue ball at a speed of 1 m/s. Unfortunately, your competitor is a devious cheater, and the 8-ball is unexpectedly 6 times the mass of the cue ball.



(6) (a) What is the speed of the 8-ball after the elastic collision?

(1) (b) What hole is the 8-ball moving towards?

(3) (c) The collision happened with the 8-ball square in the center of the 2 m by 1 m pool table. How long will it take the 8-ball to travel to one of the corner pockets assuming minimal friction?