

1. Log on to Scratch <http://scratch.mit.edu/>
2. Select "Try it out."
3. **Upload your file from the previous exercise.**

4. **Create a Wall for our ball to bounce off of.**
 - 4.1. Make a new Sprite called **Wall**, for now make its costume a simple rectangle.
 - 4.2. Select the **Ball** sprite and make a new **Block** called **HitWall** with text argument for the wall we are bouncing off of.
 - 4.2.1. Select **More Blocks**.
 - 4.2.2. Make a **Block** called **HitWall**.
 - 4.2.3. Select **Options**.
 - 4.2.4. Add **string input** and rename it **theWall**.
 - 4.2.5. Select **Run without screen refresh** and press **OK**.
 - 4.3. Add an **if-then** control to your **ball's forever loop** that will detect when the ball hits the Wall
 - 4.4. Add **HitWall** to this **if-then** control and type the name of your wall in as its **argument**. Be careful to use exact spelling and capitalization. Watch for spaces before and after the text.
5. Define the angle that we bounce off – we will do this by rotating and moving the ball until we are parallel to the wall, keeping track of how far we have rotated. Then we will rotate that much more to finish the reflection.
 - 5.1. Set **yourAngle** to 0. You will use **yourAngle** to keep track of the ball's rotation.
 - 5.2. Use the **backOff** command to prevent getting trapped on the wall.
 - 5.3. **Move** 5 steps forward into the wall.
 - 5.4. Write code that will **repeat** the following until the ball is **no longer touching the wall**
 - 5.4.1. **Move** your ball back out of the wall (5 steps backward).
 - 5.4.2. **Turn** the ball **clockwise** a few degrees (try a number from 1 to 5).
 - 5.4.3. **Add** that amount to **yourAngle**.
 - 5.4.4. **Move** 5 steps forward (This will move the ball into the wall, unless the ball has now cleared it and is now parallel.)

- 5.5. After the repeat block, **move** 5 steps backward to get back to the original position.
- 5.6. Turn the ball **yourAngle** degrees clockwise.
- 5.7. Add **MoveOn** to the end of the code to make sure the ball does not get stuck after turning.
6. Test and debug your code.
 - 6.1. Change the angle of your wall by clicking the “i” on its icon in the bottom left pane.
 - 6.2. If you observe strange or sluggish behavior, you may need to adjust the plunge depth (number of steps forward or backward) or the rotation angle size.
7. Add **another wall** and make sure it works the same way.
8. Add a “wall” that is some **other shape** and make sure it works as expected.
9. Make a trap that makes the ball disappear when it is hit. It can be any shape you want. The ball should reappear when the green flag is clicked.
 - 9.1. Create a new **sprite**. Call it what ever you’d like.
 - 9.2. Select the **Ball** sprite and add code to its **forever loop** that **hides** the **ball** (**Looks** commands).
 - 9.3. Add a command to **Stop** the current script (**Control** commands).
 - 9.4. Add code to Ball’s **When Flag Clicked** control to **show** the ball.
 - 9.5. Test and debug your code.
 - 9.5.1. Does the ball reappear in a good location? Traveling in a good direction? If not, fix it.
10. Save your work (Pinball #5).