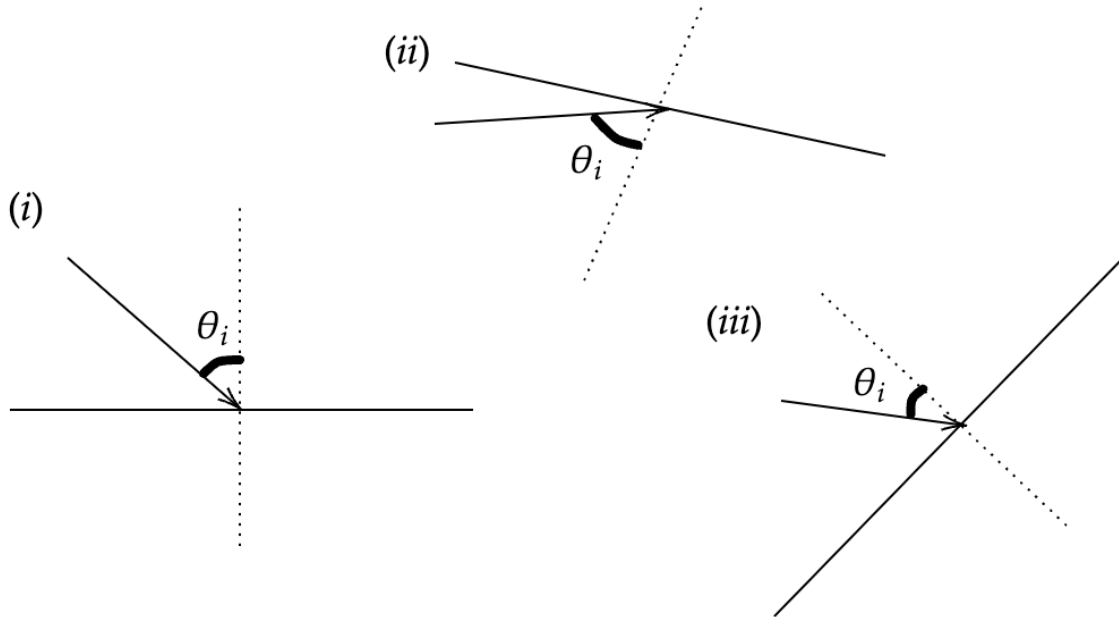


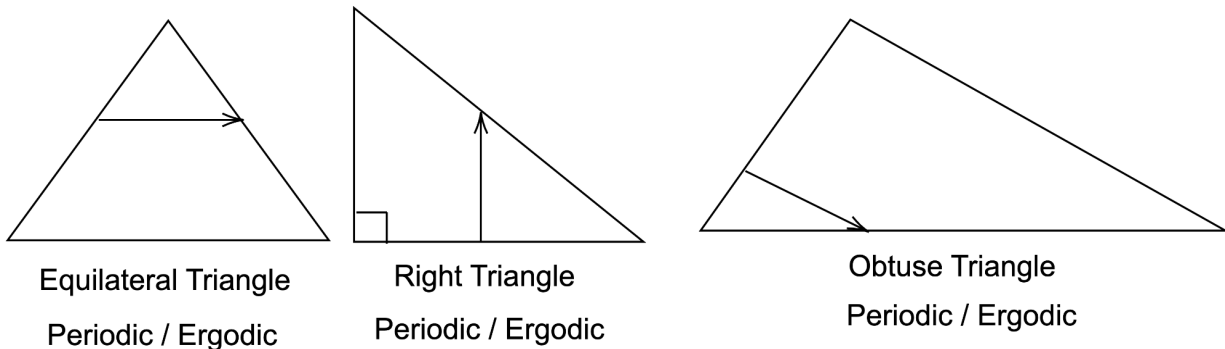
**Do Now: Principle of Reflection**

The principle of reflection states that the angle of incidence equals the angle of reflection  $\theta_i = \theta_r$ , with respect to the normal. Using this fact, draw the reflected light ray for the following three incoming light rays:



**Big Idea: Triangular Billiards**

One of Maryam’s primary areas of research was in billiards. One famous problem in billiards asks whether all triangles have a periodic billiard path. Below, you will see three triangles: equilateral, right, and obtuse. The initial path for a billiard is given. Draw the *next two* paths using the principle of reflection from above and determine if the path is periodic or ergodic (i.e., in enough time, the path will fill the entire triangle by bouncing around). Circle one (Periodic or Ergodic).



**Exit Slip: [Interactive Simulation](#)**

Experiment with this interactive simulation, which shows all possible paths for different triangles.