# *Math & Projectiles*

PROJECT: Modeling the Path of a Basketball

Basketball was invented by James Naismith in 1891. At the time, he was an instructor at the YMCA in Springfield, Massachusetts. He called the game "Basket Ball." The first official game was played on December 21, 1891.

1. The path that a basketball takes depends on several things. Here are three of them.

- The height from which the basketball is tossed
- The angle at which the basketball is tossed (as measured from the horizontal)
- The initial speed of the basketball

Use the *Basketball Simulator* at *Math.andYou.com* to find a height, angle, and speed that successfully make a basket. Set the distance at 25 feet.

| Angle: (degrees) | 45 | Speed: (ft/sec) | 25 | Height: (feet) | 9 | Distance: (feet) | 25 | **Throw** |
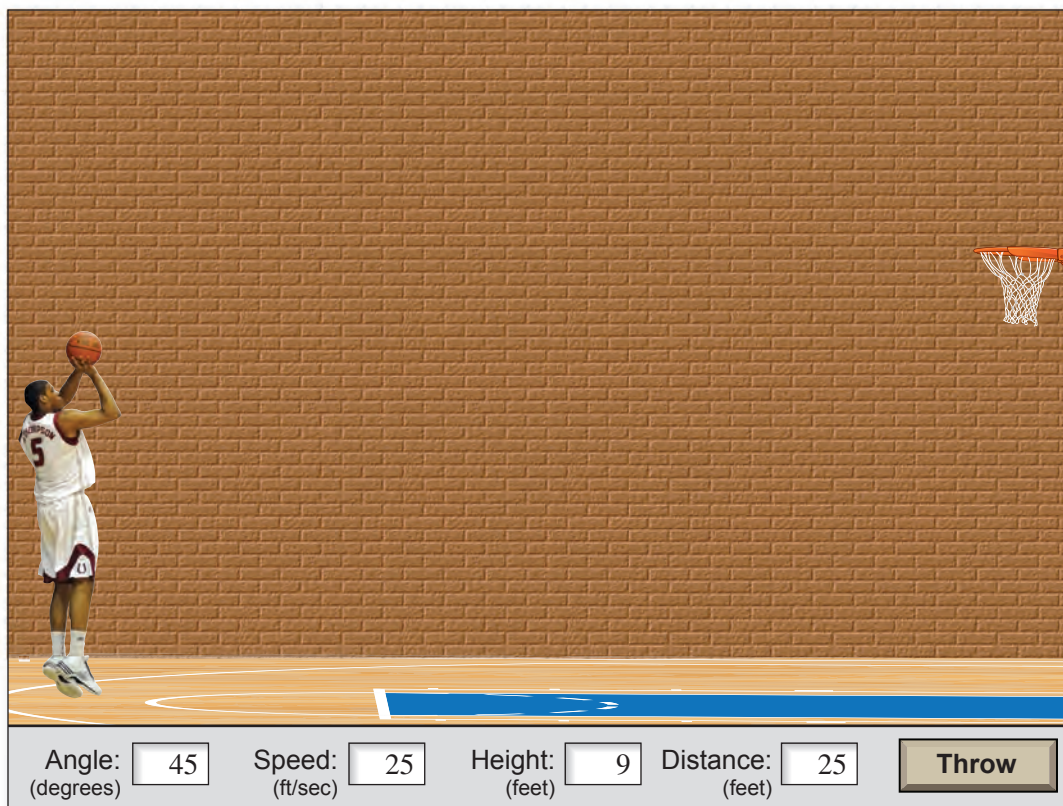
2. You are 25 feet from the basket and release the ball from a height of 9 feet. Is it possible to make a basket by shooting with an initial speed of 25 feet per second? Use the simulator to verify your answer.

3. You are 25 feet from the basket and release the ball from a height of only 7 feet. Is it possible to make a basket by shooting with an initial speed of 25 feet per second? Use the simulator to verify your answer. Compare your answer with your answer in Exercise 2.

4. Is it true that "the greater the speed, the smaller the angle you should throw the ball"? Explain your answer.