

SECTION

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Enrichment

Friction and the Curve Ball

The curve ball was invented by a young pitcher named Arthur “Candy” Cummings. Although Cummings first threw the curve ball during a game while pitching for the Brooklyn Excelsiors in 1867, he actually invented his technique many years before. As a boy, Cummings loved baseball and practiced his pitching on the beach near his New England home. He threw clam shells instead of a baseball and found that by holding and releasing the shells in a certain way he could make them curve.

Did It Really Curve?

He was given the title “inventor of the curve ball” by the Baseball Hall of Fame. In his historical performance, Cummings snapped his wrist at the exact moment when he released the ball. This caused it to arch and fly past the batter to land in the catcher’s mitt. People couldn’t believe it. Nobody knew for sure whether the ball really curved or just looked like it did.

More than 100 years later in 1982, the Massachusetts Institute of Technology (MIT) proved once and for all that a baseball thrown like Cummings threw it does, indeed, curve. Why does it curve? It’s all about friction.

The snap action of the pitcher’s wrist puts a spin on the ball. And that spin changes the friction between the air and the ball. After it’s thrown, parts of the ball experience more air friction and parts of the ball experience less. A curved path results from the ball moving toward the least amount of friction.

Specifically, one movement of the pitcher’s wrist when the ball is released causes a top spin, making the top of the ball move forward against the air (more friction) and the bottom move in the same direction as the air (less friction). Like any curve ball, the ball curves toward the least amount of friction: downward.

Spin It Sideways

In addition to topspin, a pitcher’s wrist can also produce a counter-clockwise spin or a clockwise spin. When a curveball is thrown by a right-handed pitcher the ball spins counter-clockwise. The right side of the baseball experiences less air friction, and the ball curves to the left, or away from a right handed hitter.

When a curveball is thrown by a left-handed pitcher, the ball spins clockwise. The left side of the baseball experiences less air friction, and the ball curves to the right, or away from left-handed batters.

1. What effect might the stitches on a baseball have on the path of a baseball?

2. Do you think a baseball curves better at the top of a high mountain or down on a flat plain? Explain.

3. Describe how the type of spin given to a baseball by a pitcher influences the path of the baseball.
