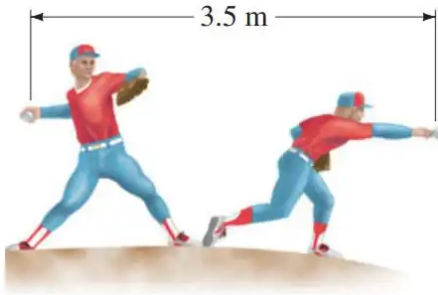## Task #1

A baseball pitcher throws a baseball with a speed of 43 m/s. Estimate the acceleration of the ball during the throwing motion. In throwing the baseball, the pitcher accelerates it through a displacement of about 3.5 m.

Solution: 264 m/s^2

Task #2

A world-class sprinter can reach a top speed of 11.5 m/s in the first 18.0 m of a race. What is the average acceleration of this sprinter? How long does it take her to reach that speed?

Solution: 3.67 m/s^2; 3.13 s

Task #3

A car slows down uniformly from a speed of 28.0 m/s to rest in 8.00 s. How far did it travel in that time?

Solution: $a = -3.5 \text{ m/s}^2$; 112 m

Task #4

Determine the stopping distance for a car going at an initial speed of 26 m/s and a human reaction time of 0.40 s. Assume the deceleration applied by the brakes is 3.0 m/s^2.

Solution: $0.4 \cdot 26 = 10.4$; $26^2/(2 \cdot 3.0) = 112.7$; total distance $= 123.1$ m