

# Pitching

- The top baseball pitches are in the 90's.
- The top softball pitches are hitting speeds of 60-70 mph.
- The professional pitching distance is different: 60 feet to 46 feet
- The difference in distance means the reaction times are almost exactly equal.
- A 90 mph pitch in baseball equates to a 60 mph softball pitch.
- Here is how to calculate that:
  - Batter's reaction time is the amount of time they have before the ball reaches the plate from the time the ball leaves the pitcher's hand.
  - $\frac{60 \text{ mi}}{1 \text{ hr}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec.}} \times \frac{5280 \text{ ft}}{1 \text{ mi}} = \frac{88 \text{ ft}}{1 \text{ sec}}$
  - So 60 mph = 88 feet per second.
  - If the softball is moving at 88 feet per second, how long will it take to go forty feet?
  - We want to solve for x:
  - $\frac{88 \text{ ft}}{1 \text{ sec.}} \times \frac{40 \text{ ft}}{x \text{ sec.}}$
  - $88x = 40$
  - $x = 40/88 = .454545454545\dots$  seconds So the reaction time for the softball hitters is .45 seconds.
  - Similar calculations show that 90 mph = 132 feet per second We want to solve:
  - $\frac{132 \text{ ft}}{1 \text{ sec.}} \times \frac{60 \text{ ft}}{x \text{ sec.}}$
  - $x = 60/132 = .4545454545$  seconds