

**Speed, Velocity and Acceleration Notes**

**Speed:**
- The distance an object travels in a certain amount of time.
  - Average speed – Total distance divided by total time
  - Constant speed - Speed that does not change

**Formula for Calculating Speed**
Speed equals distance divided by time

\[ S = \frac{D}{T} \]

Practice for calculating speed:

*A football field is about 100 meters long. If it takes a person 20 seconds to run its length, how fast was the football player running?*

\[
\begin{align*}
S &= \frac{D}{T} \\
S &= \frac{100 \text{ m}}{20 \text{ sec}} \\
S &= 5 \text{ m/s}
\end{align*}
\]

**Velocity** – uses the same formula for speed, \( V=\frac{d}{t} \)
- An object’s speed and direction at a given time
  - The wind is blowing 65 km/hr from the North

**Acceleration**
- A change in the direction or speed (velocity) of an object over time:
  - A change in speed
    - Starting
    - Stopping
    - Speeding up (positive acceleration)
    - Slowing down (negative acceleration)
  - A change in direction
- Acceleration is caused by unbalanced forces.