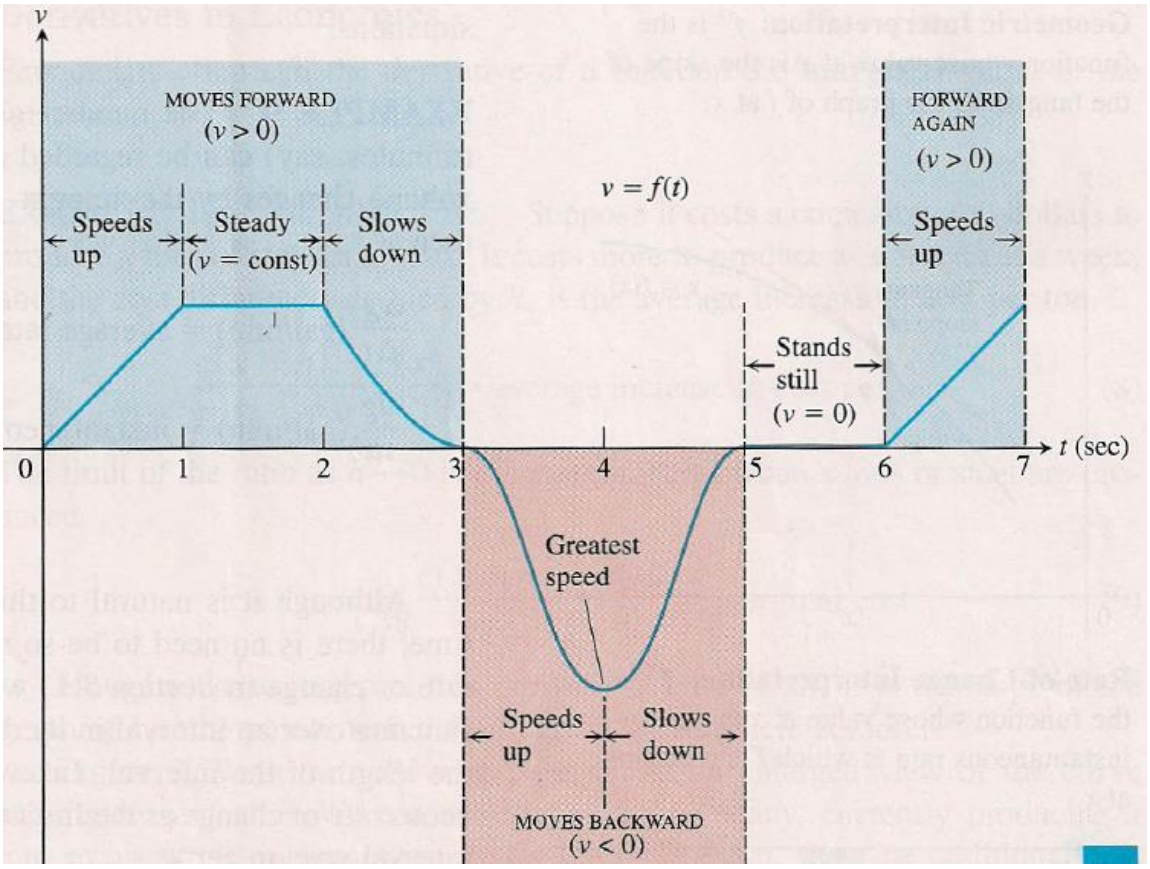
Velocity Graphs

- The graph below shows the velocity $v = f(t)$ of a particle moving on a coordinate line:

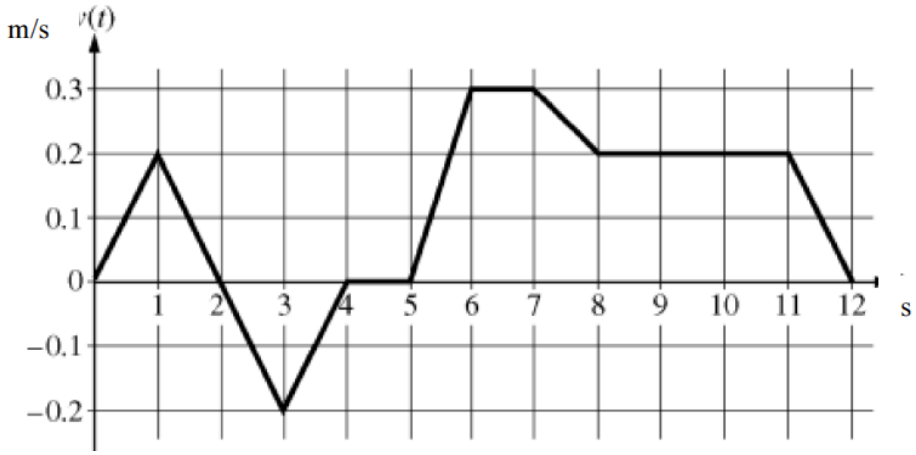


  - The particle moves forward for the first 3 seconds, moves backward for the next 2 seconds, stands still for a second, and moves forward again.
- Besides telling how fast an object is moving, velocity tells the direction of motion.
  - When the object is moving forward, the velocity is positive.
  - When the object is moving backward, the velocity is negative.
  - When the object stops, the velocity is zero.

Acceleration (the derivative of velocity)

- Represents how fast the velocity is changing
- Tells how quickly the body picks up or loses speed

Examples: Interpreting a Velocity-Time Graph



1. Identify the time intervals when the particle is...
    a. Moving forward
    b. Moving backward
    c. Standing still
2. Identify the time(s) when the particle stops.
3. Identify the time intervals when the particle is...
    a. Speeding up
    b. Slowing down
    c. Steady
4. When is the particle's acceleration...
    a. Positive?
    b. Negative?
    c. Zero?
5. When does the particle move at its greatest speed?

An extra reference:

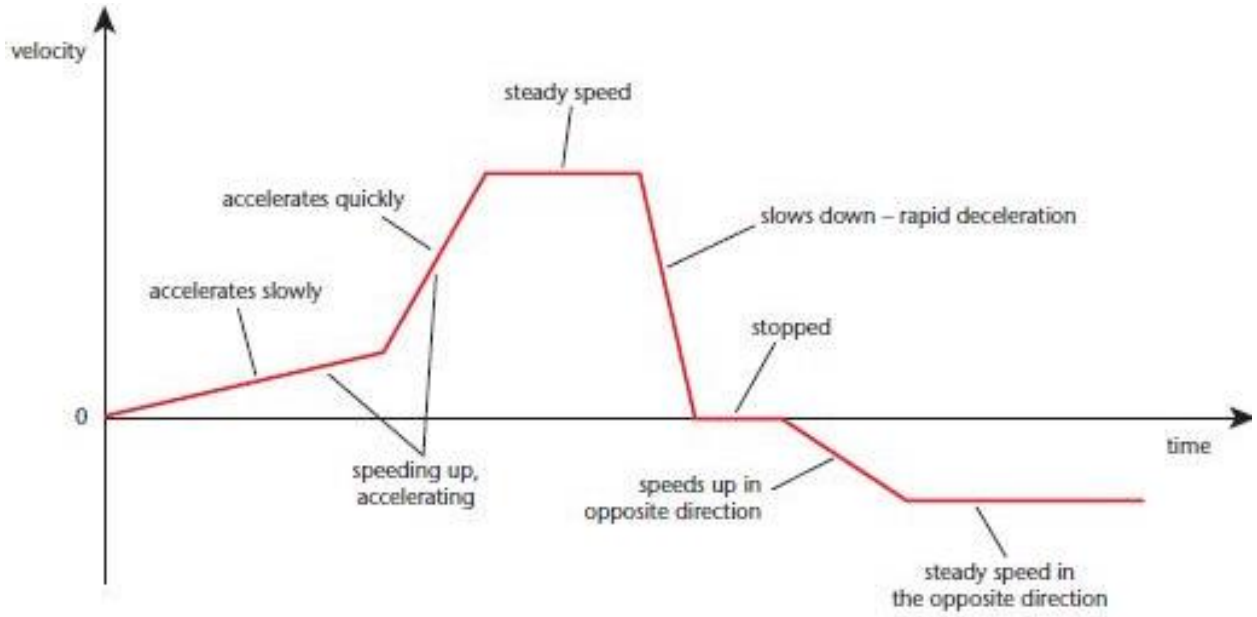


Fig. 9.2 A velocity–time graph.

Assignment: pages 147 – 149, #s 10, 12, 14, 19, 20, 21, 24 & 26

Graphs:

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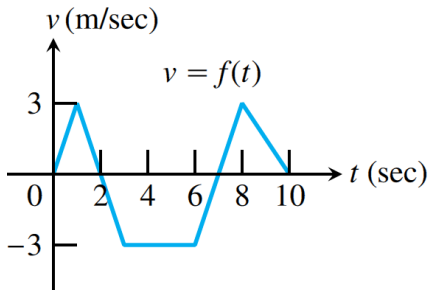

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