

Chapter 2.5-2.9: Linear Motion 2

Text:*Chapter 2.5-2.9*

Think and Explain: 4-8

Think and Solve: 2-4

Vocabulary:

constant acceleration, acceleration due to gravity, free fall

Equations:

$$s = \frac{d}{t} \quad \bar{v} = \frac{\Delta x}{t} \quad \bar{v} = \frac{v_f + v_i}{2} \quad d = v_i t + \frac{1}{2} a t^2 \quad v_f = v_i + a t \quad v_f^2 = v_i^2 + 2 a \Delta x$$

Constants: $g = \pm 10 \text{ m/s}^2$

Key Objectives:*Concepts*

- Distinguish between constant speed, constant velocity and constant acceleration.
- Understand when to use constant acceleration equations.
- Describe what happens to the velocity of an object in free fall.
- Describe how far an object in free fall falls every second.
- Explain how the velocity of a tossed ball changes every second.
- State the velocity and acceleration of a tossed ball at the top of its path.
- Sketch the position vs. time, velocity vs. time and acceleration vs. time graphs for an object in free fall.
- Sketch the position vs. time, velocity vs. time and acceleration vs. time graphs for an object tossed into the air.

Problem Solving

- Solve constant acceleration problems using the equations above.
- Solve free fall problems using the equations above and substituting g for a .
- Solve ball toss problems using the equations above and substituting g for a .