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Ball Toss Introduction

A ball is tossed into the air. It remains in the air for a total of 6 seconds. Straight up and straight down.

① How much time did it spend traveling up? down? Why?

② Draw the motion diagram and include acceleration.

③ Assume acceleration due to gravity is 10 m/s^2 , how fast was the ball traveling when it left the tosser's hand?

④ How fast was the ball traveling when it returned?

⑤ How far did the ball travel (distance) going up?

① Use: $d = \frac{1}{2} g t^2$

② use: $\Delta x = v_0 t + \frac{1}{2} a t^2$

⑥ How far did the ball travel (distance) going down?

① $d = \frac{1}{2} g t^2$

② $\Delta x = v_0 t + \frac{1}{2} a t^2$

2

Ball Toss Introduction

A ball is tossed into the air. It travels straight up for 4 seconds and then travels straight down for 4 seconds.

How much time did the ball spend in the air total? _____

If acceleration due to gravity is 9.81 m/s^2 , how far (distance) did the ball travel during the first 4 seconds?

use: $\Delta x = v_0 t + \frac{1}{2} a t^2$

How far did the ball travel (distance) for the second 4?

use: $\Delta x = v_0 t + \frac{1}{2} a t^2$

How fast was the ball traveling when it left the hand of the person tossing?

use: $v_f = v_0 + a t$

How fast was the ball traveling on its return trip to the person's hand?

use: $v_f = v_0 + a t$

When should you use 9.81 m/s^2 instead of 10 m/s^2 as acceleration due to gravity?