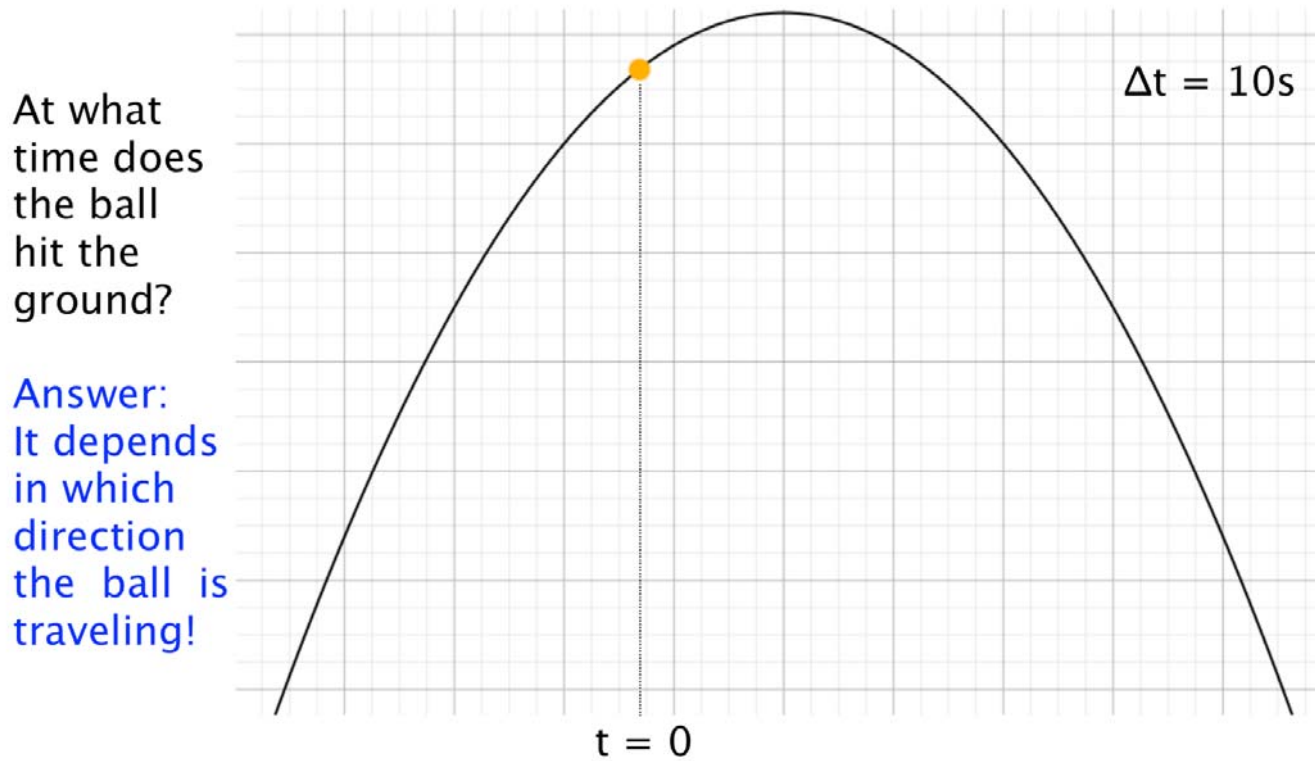


Answer #364

The answer is (c): there isn't enough information given to say!



A popular answer might have been "(a) after $> 5s$ " due to the symmetry of the trajectory: we know the ball spends half its time rising and half its time falling, and each is half of the total time -- $10/2 = 5s$. Since the ball has not yet reached the peak, it must take a little longer before it hits the ground, and therefore it will hit the ground $> 5s$ later.

But there's a flaw here... How do we *know* the ball is on its way up? For if the ball were instead on its way down, using a similar argument one could argue the ball would hit the ground $< 5s$ later! Since the problem never stated which way the ball is traveling, there was not enough information to answer the question.

While this might be scoffed by some as a tricky "gotcha" question, the point we hope to convey is how important it is for one to be *aware* of the assumptions in any given physical situation. Many times we assume things we didn't know we did, only to wind up with illogical conclusions!

Perhaps an interesting psychological study of this problem might investigate how many of our non-American visitors might have assumed the ball was traveling right to left instead!

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For questions and comments regarding the *Question of the Week* contact [Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).

At what time does the ball hit the ground?

Answer:
It depends
in which
direction
the ball is
traveling!

