

Week 18 Free Fall

3 Free Fall Problems (tricky)

1. If you drop from rest from a 10 m diving platform into the water...
 - a) How long will you be in flight?
 - b) How fast will you be going when you hit the water?

2. Galileo supposedly dropped a small round rock and a cannon ball from the Leaning Tower of Pisa. The tower is 56 meters tall.
 - a) How long did the small ball take to hit?
 - b) How long did it take the cannonball to hit?

3. Estimate the fastest speed something could have if dropped in this room.
Hint1: You need to ask Mr. Mont for one more piece of information.
Hint #2: This is a two-part problem.

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4. If a penny were dropped from the observation deck of the Empire State Building (369 m), and if it experienced no drag on the way down...

- a) How much time would it take?
- b) How fast would it be going when it reached the pavement?
- c) Aren't you glad pennies experience a lot of air drag?

5. Rain falls from clouds that could be as high as 2,000 meters up. If rain experienced no drag on the way down...

- a) How much time would it take to fall?
- b) How fast would it be going when it reached the ground?
- c) Aren't you glad rain drops experience a lot of air drag?

6. Felix Baumgartner broke Joe Kittinger's record on October 14, 2012 by falling from a height of 128,000 ft. He reached a top velocity of about -370 m/s.

Assuming he was in free fall...

- a) How long did it take him to hit that velocity?
- b) How far did he fall in that time?

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