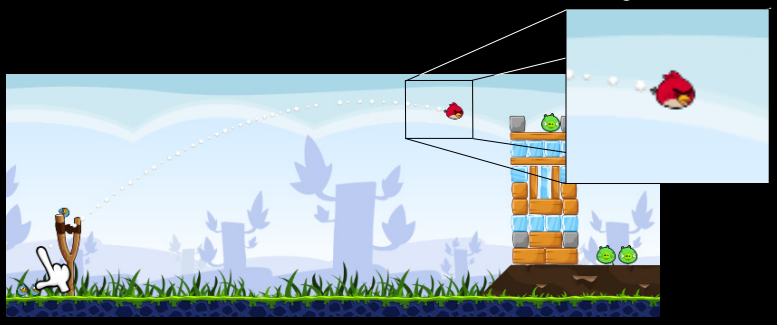
Questions of the Day

2D Projectile Motion

Question of the Day

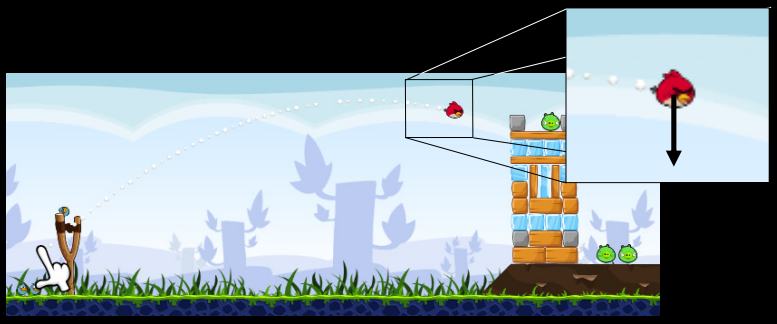
- You're an Angry Bird. Draw the path that you follow.
- *Answer: parabolic trajectory.*

Question of the Day



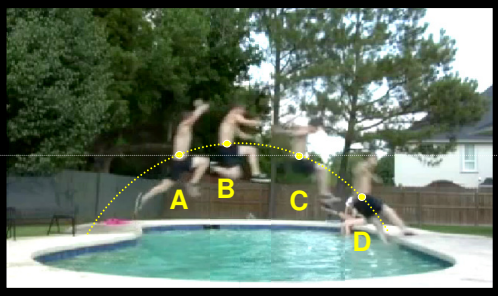
- Draw a force diagram for the Angry Bird at this point in its trajectory.
- *Answer: F_g only.*

Question of the Day



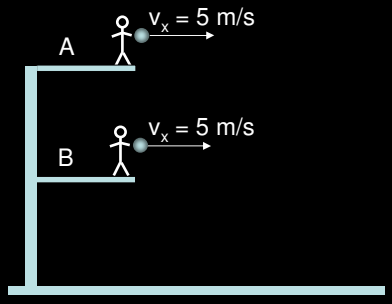
- Based upon the bird's force diagram, what do you predict about the bird's vertical motion and the bird's horizontal motion?
- *Answer: const acc vert, const vel. horiz*

Question of the Day



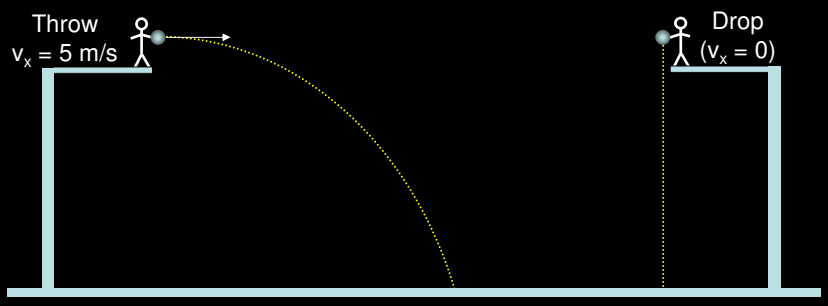
- From fastest to slowest, rank the jumper's…
  - horizontal speed
  - vertical speed
- *Answer: horizontal, A=B=C=D; vertical, D>A=C>B*

Question of the Day



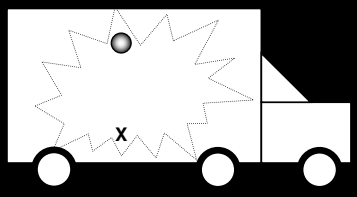
- Two rocks, A & B, are thrown from different heights, as shown. Both are thrown horizontally. Which rock will land farther away? Explain why.
- *Answer: Rock A will land farther away since they both have the same v_x but A has more t to travel.*

Question of the Day



- One ball is thrown horizontally and the other is dropped, both from the same height.
  - Draw each ball's trajectory.
  - Which ball hits the ground first? Why?
- *Answer: Same Δy, $v_{i\text{-}y}$, a_y therefore same Δt.*

Question of the Day

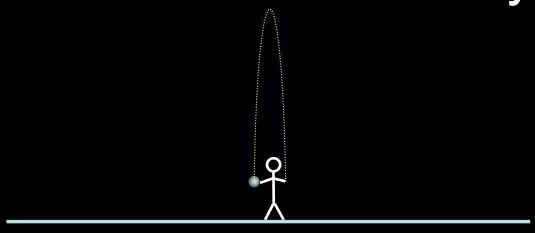


- A truck moves at a constant velocity. Inside the cargo compartment, a ball is held directly above an "x" painted on the floor. The ball is dropped.
  - Where does the ball hit the floor (on the x, in front, behind)?
  - What path would a person in the cargo compartment see the ball follow.
  - A person with x-ray vision is watching all this happen from the side of the road. What path would this person see the ball take?
- *Answer: on the "x"; straight down; parabolic path forward*

Question of the Day

Variable	Affect Time to Hit Ground?
v_{i-x}	***N***
v_{i-y}	***Y***
a_x	***N***
a_y	***Y***
Δx	***N***
Δy	***Y***
mass	***N***

Question of the Day



- You throw a ball straight up in the air and then catch it on its way back down. Between leaving and returning to your hand…
  - where is the ball going the fastest? …slowest?
  - where is the acceleration the largest? …smallest?
  - how will the time to the ball's peak compare to the time to come back down?
- *Answer: fastest at immediately after thrown and before caught, slowest at peak, acceleration is constant, time up will be same as time down*