

FLORIDA STATE UNIVERSITY

User ID

Welcome to Survey 1 of the Physics Playground Summer Camp! You should finish this survey before you play the game. Please enter the **User ID** that the researcher emailed to you in the box below:

Intro

Hello, campers!

We are going to ask you some questions about yourself and then show you 28 questions about physics. Answer them to the best of your ability. Please do not skip any questions. After the questions we will explain how to play the game, and then it will be time to play Physics Playground!

PP Demographics

First Name

Last Name

How old are you?

What is your sex?

What is your ethnicity? Check all that apply

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic
- Native Hawaiian or Pacific Islander
- White
- Other (enter)
- Prefer not to say

How often you play video games?

Have you studied force and motion in a science course before?

Near Q1 EcT Lever 1

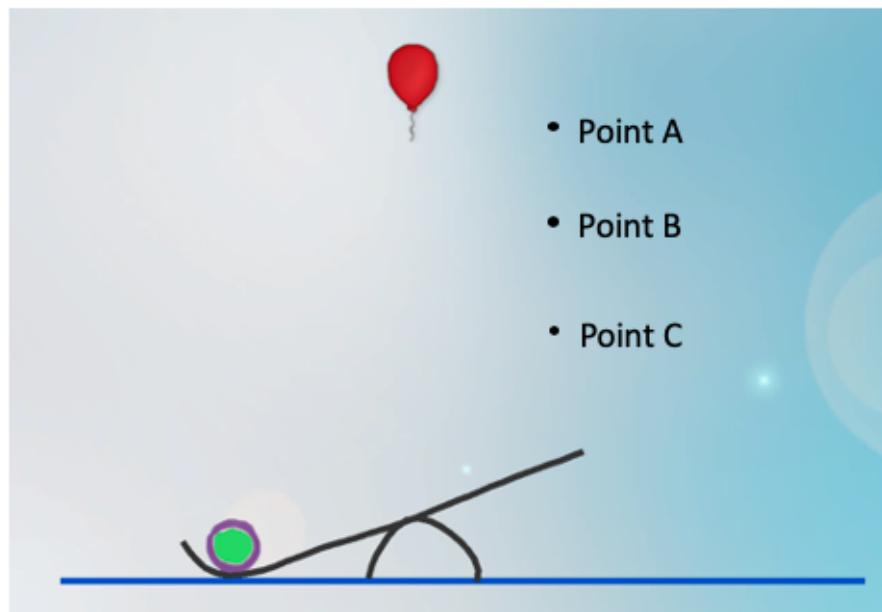
EcT Near Transfer Q1 formB



In this video, the black mass loses gravitational energy when *the green ball*:

- Gains gravitational potential energy
- Loses gravitational potential energy
- Loses kinetic energy
- Gains elastic potential energy

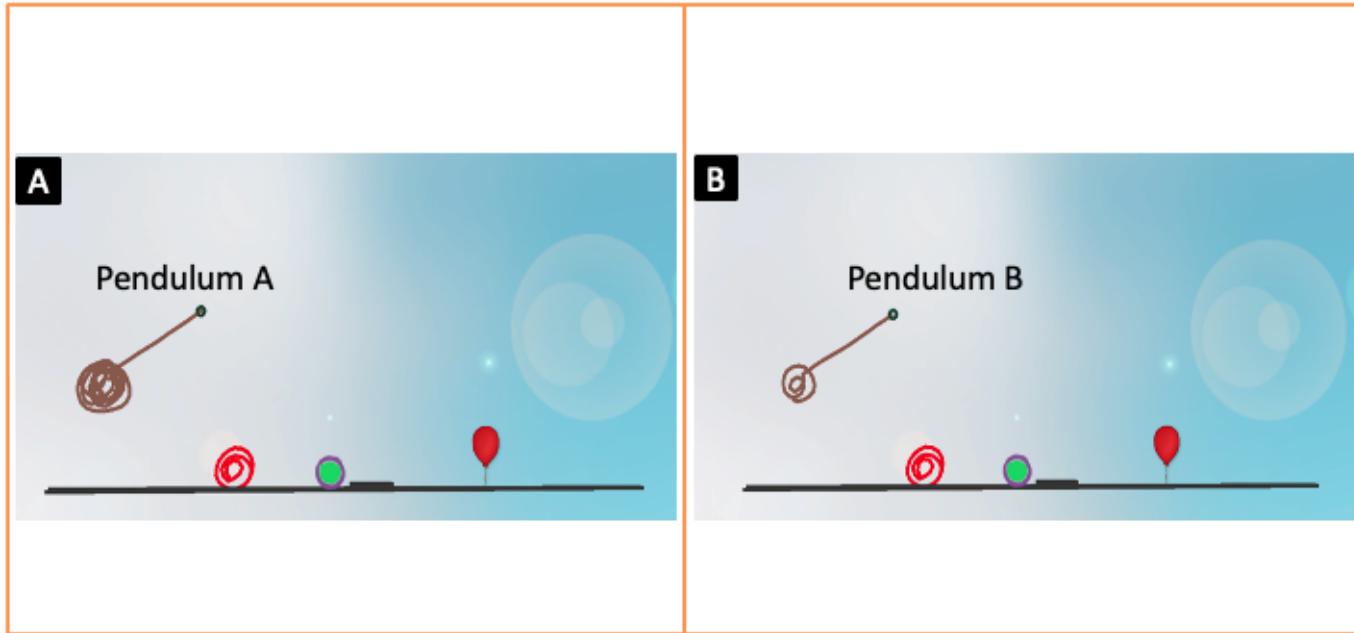
Near Q2 EcT-Lever 2



Where should you drop a weight so that the green ball can gain the *highest energy* possible to hit the balloon?

- All are the same
- A
- B
- C

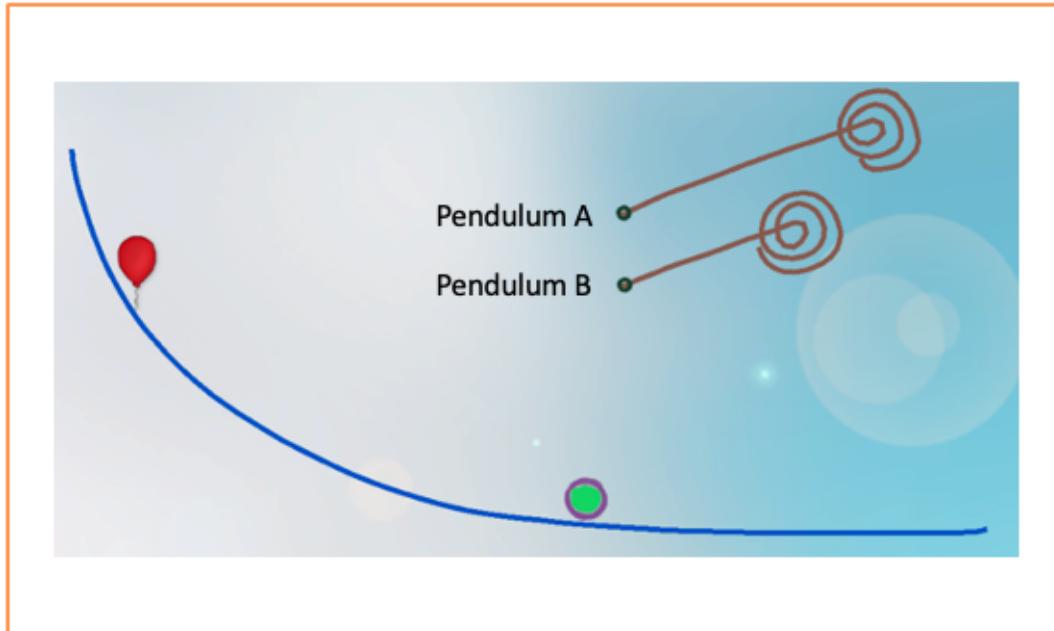
Near Q3 EcT-Pendulum 1



Which pendulum would you choose to push the green ball to the red balloon?

- A
- B
- Both will have the same effect on the ball
- Not enough information

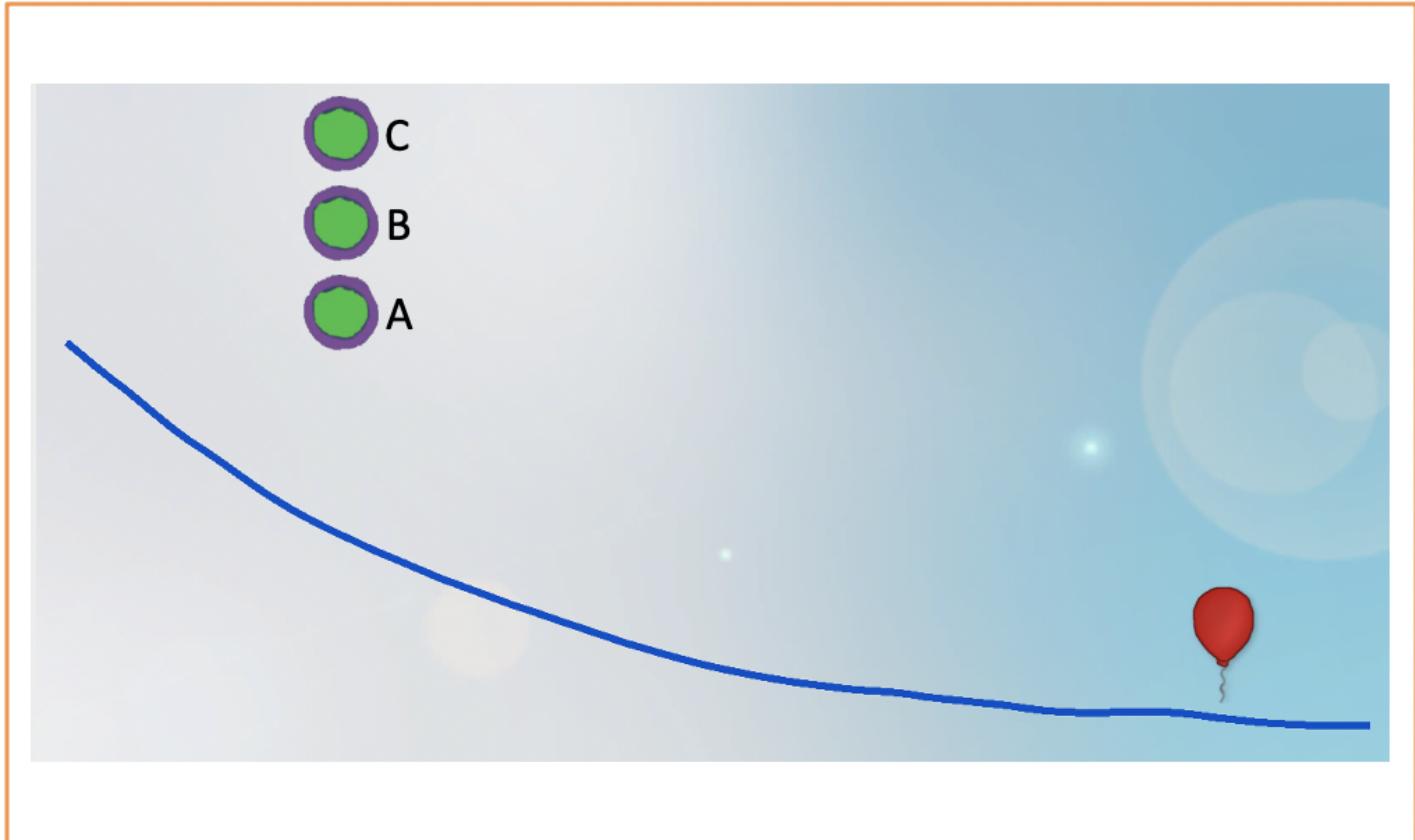
Near Q4 EcT-Pendulum 2



Both pendulums will hit the ball. Which pendulum is *less likely* to get the ball to the balloon?

- A
- B
- Both will have the same effect on the ball
- Not enough information

Near Q5 EcT-Ramp 1



A ball is dropped from each point shown above (A, B, C). When will the ball have the *slowest speed* as it hits the balloon?

- Dropped from point A
- Dropped from point B
- Dropped from point C
- No difference

Near Q6 EcT- Ramp 2

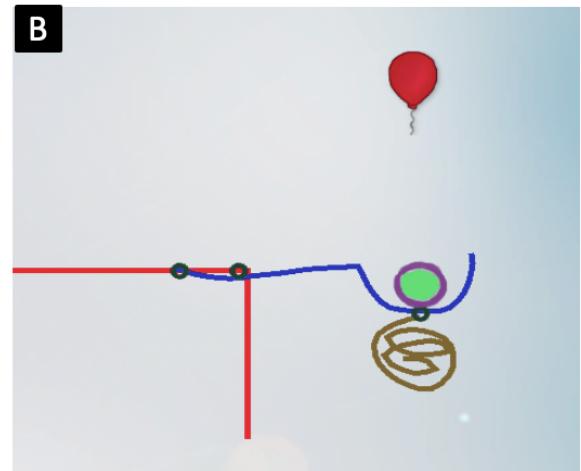
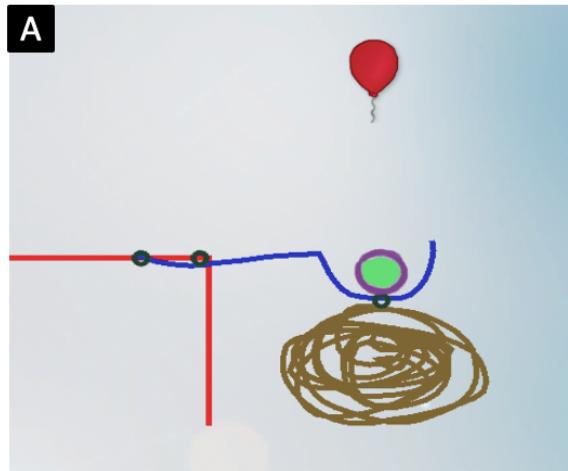
media6



Watch the video. What would make the green ball roll *faster*?

- Moving the black ball to a lower height
- Reducing the mass of the black ball
- Increasing the mass of the black ball
- None of the above

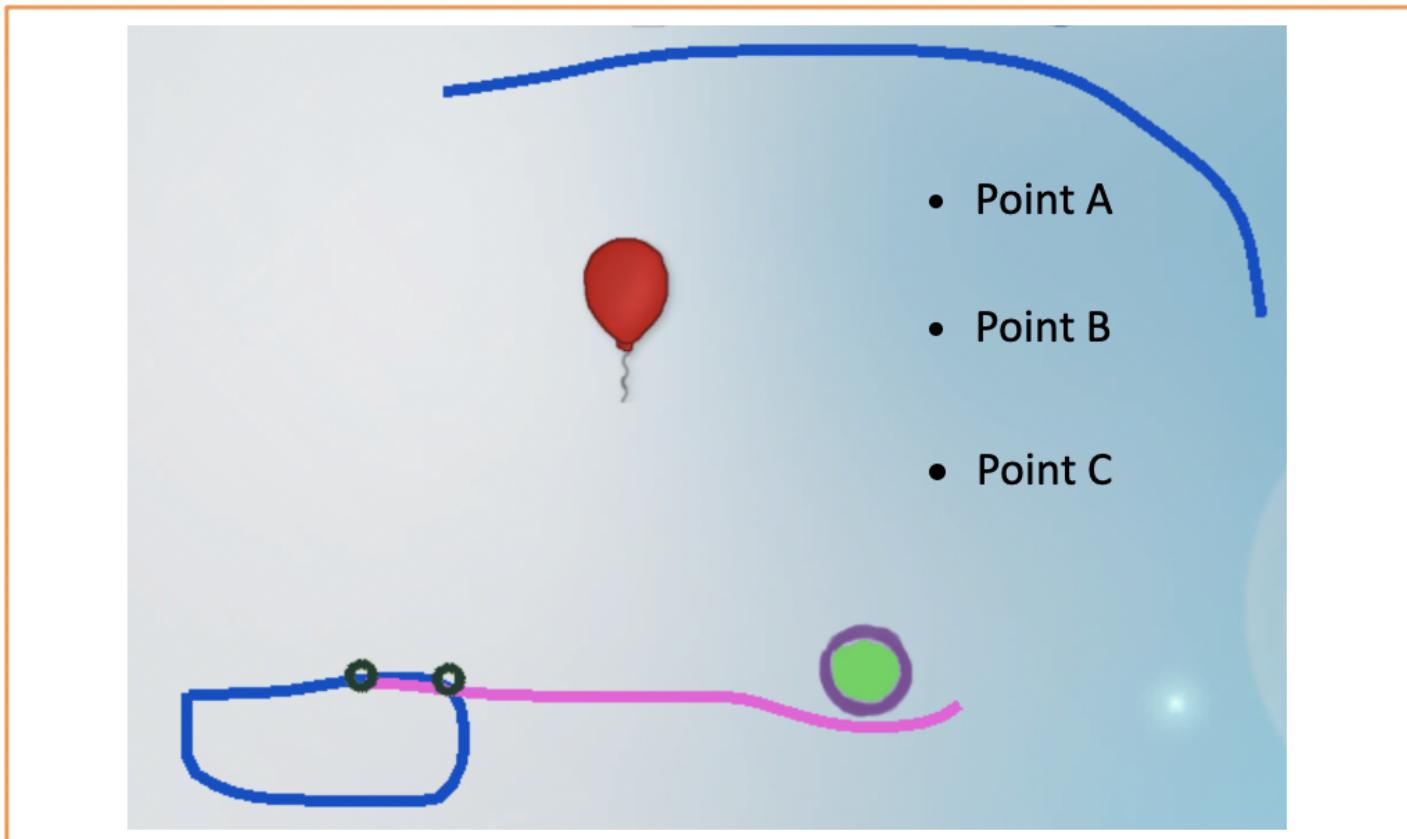
Near Q7 EcT-Springboard 1



Which ball is *more likely* to hit the balloon after releasing the weight?

- A
- B
- No difference
- Not enough information

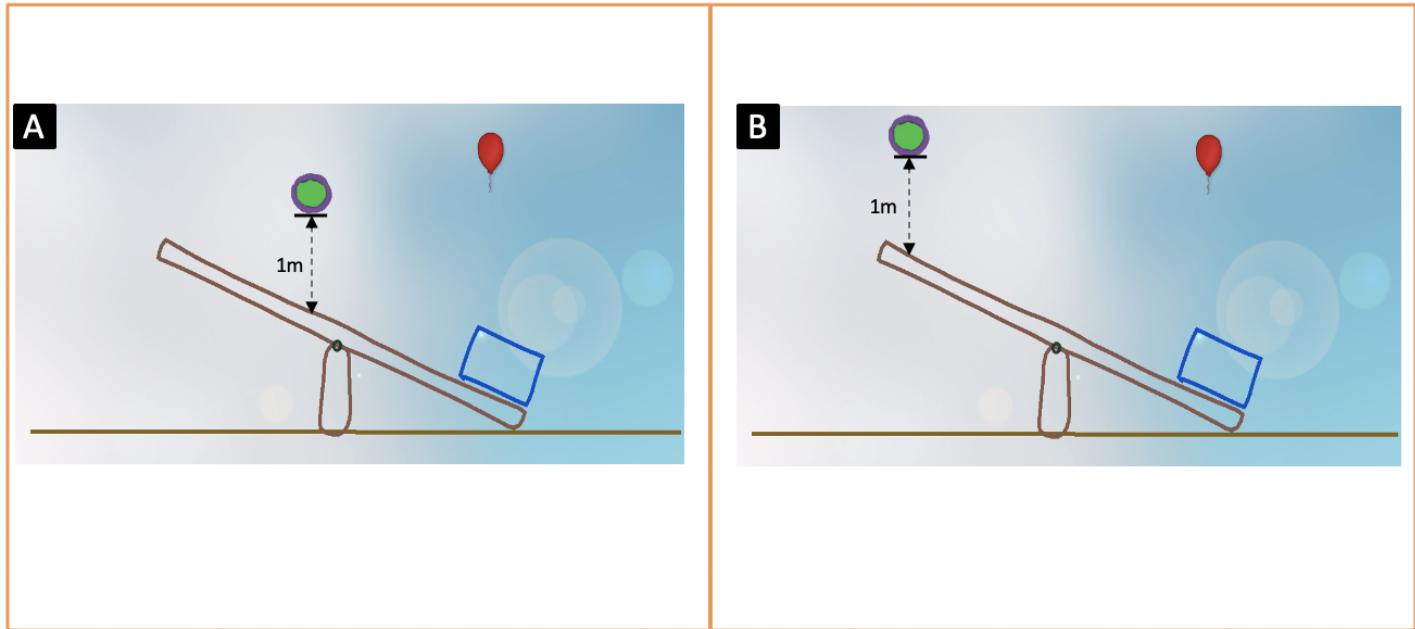
Near Q8 EcT-Springboard 2



If a mass is dropped from each point (A, B, C), what point is less likely to make the green ball hit the balloon?

- A
- B
- C
- All points will have the same effect on the ball

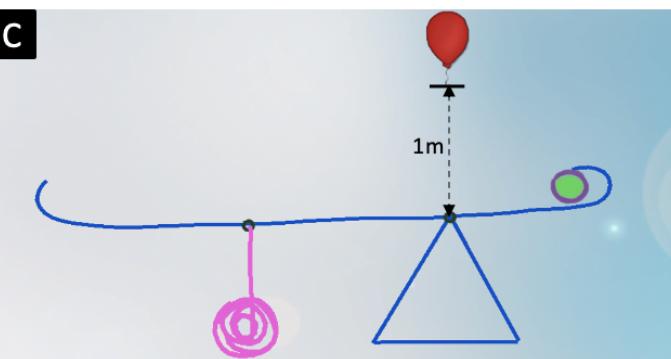
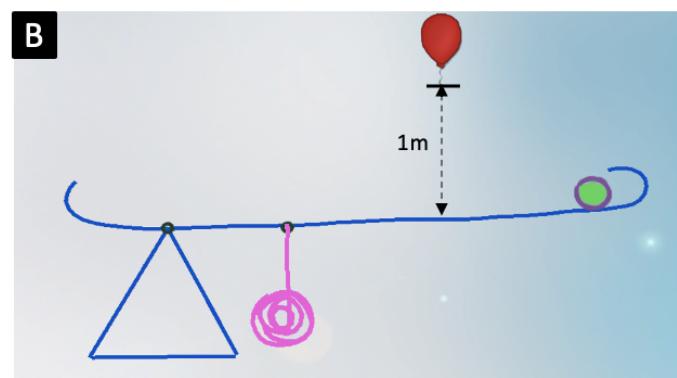
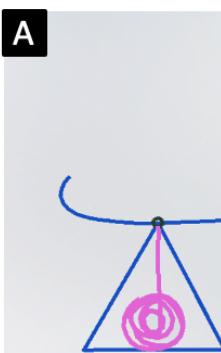
Near Q 9 PoT Lever-Distance 1



In which picture (A or B) will the blue box be launched higher when the green ball hits the lever?

- A
- B
- Both will reach the same height
- Not enough information

Near Q10 PoT-Lever-Distance 2



When the pink weight is added to the lever, in which picture will the green ball hit the balloon after the weight is released?

- a) A
- b) B
- c) C
- d) All would work

When the pink weight is added to the lever, in which picture will the green ball hit the balloon after the weight is released?

- A
- B
- C
- All would work

Near Q11 PoT-Lever-Mass 1

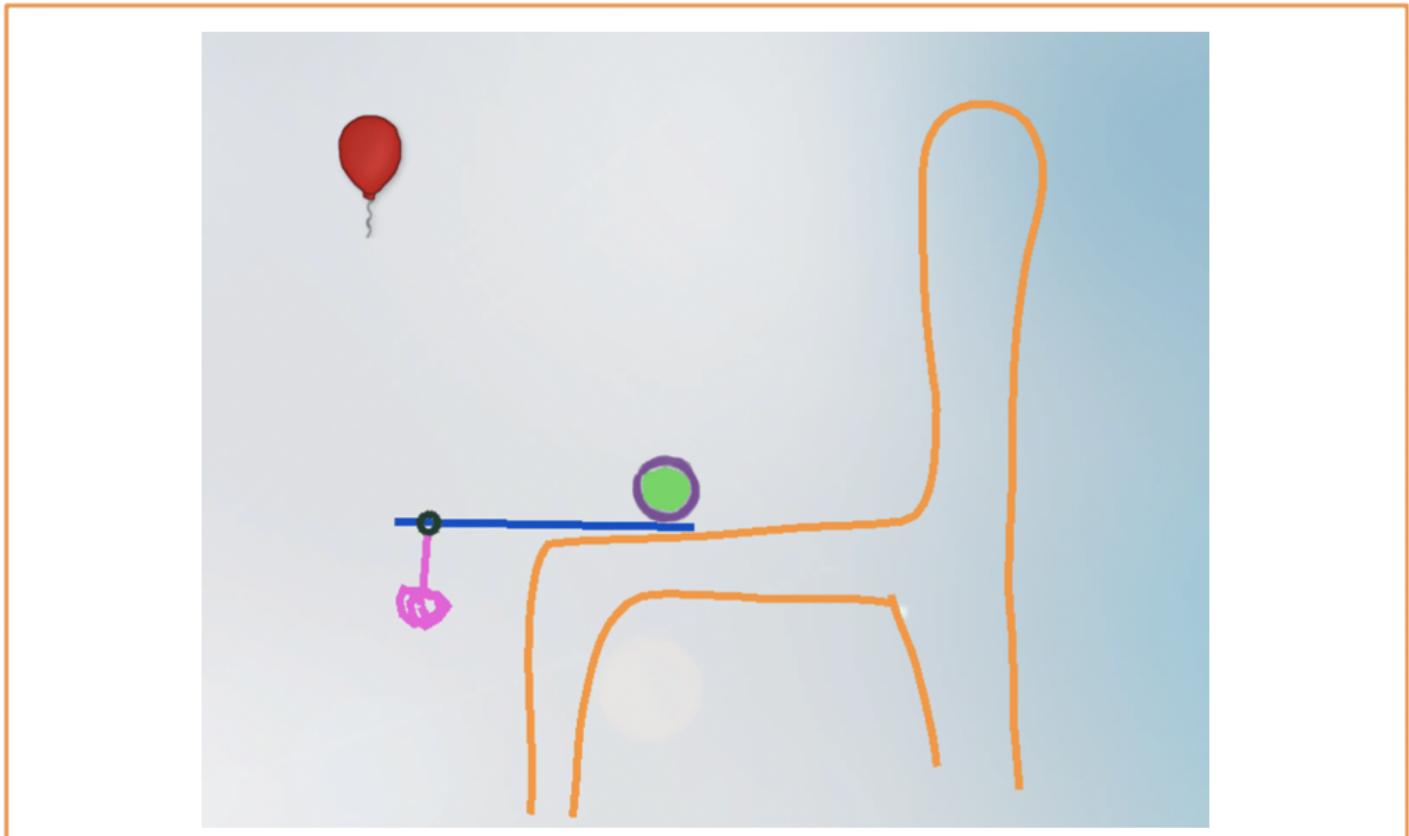
PoT Near Transfer Q11 formB



Watch the video. What would you change to get the green ball to the red balloon?

- Increase the pink ball's mass
- Decrease the the pink ball 's mass
- Increase the starting height of the pink ball
- Make the blue stick longer

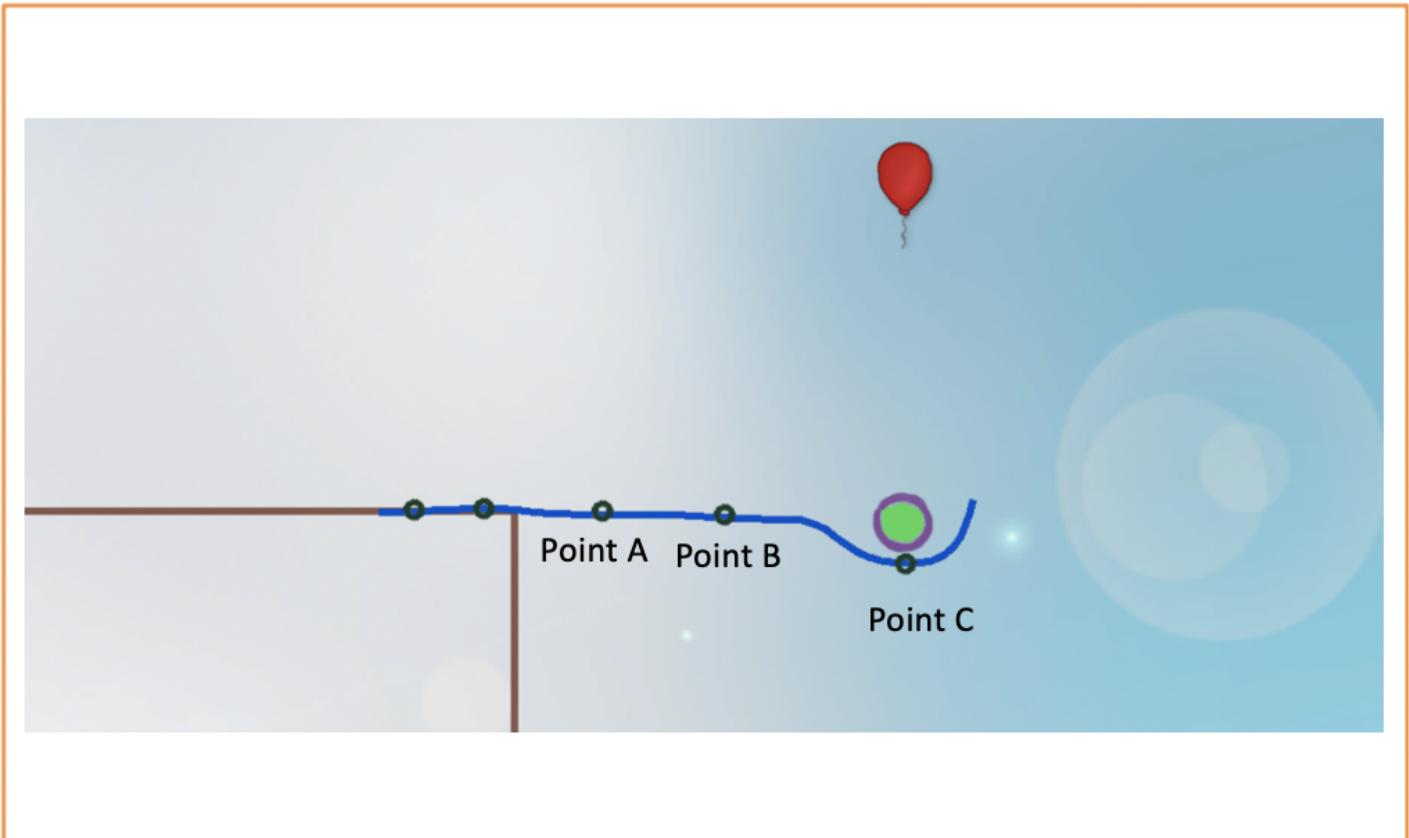
Near Q12 PoT-Lever-Mass 2



What would you change to make the green ball go *higher*?

- Decrease the pink weight's mass
- Increase the pink weight's mass
- Remove the pink weight
- Not enough information

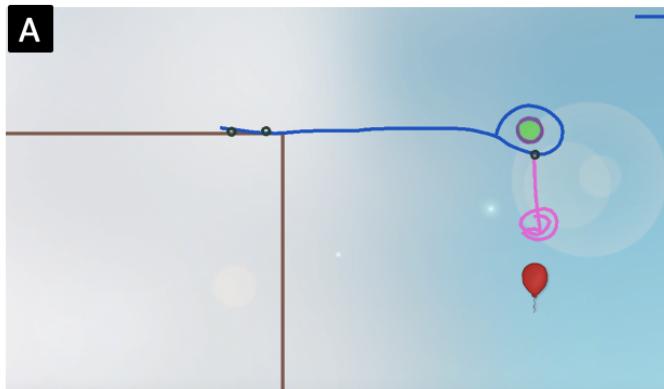
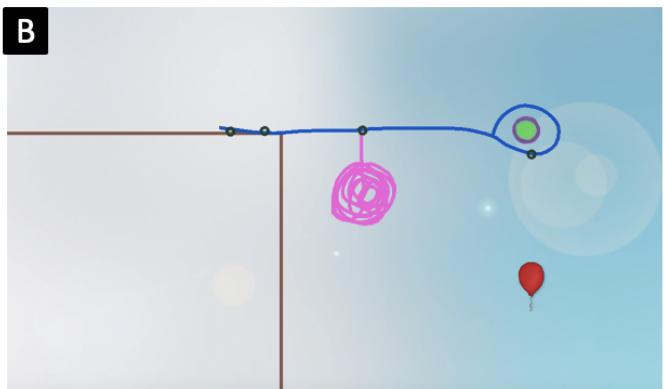
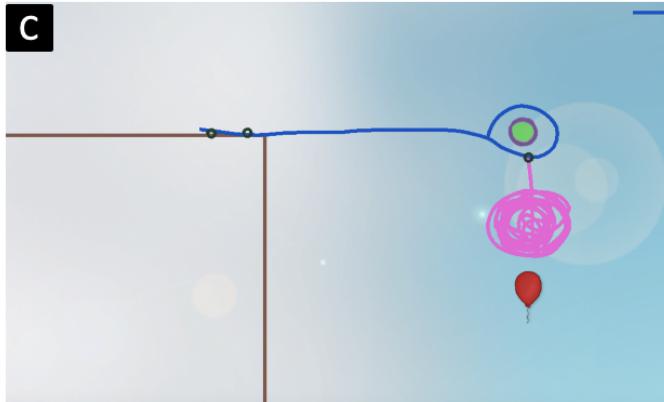
Near Q13 PoT-Springboard 1



Where should you attach a weight so the green ball is *more likely* to reach the balloon after releasing the attached weight?

- A
- B
- C
- All would work

Near Q14 PoT-Springboard 2

A**B****C**

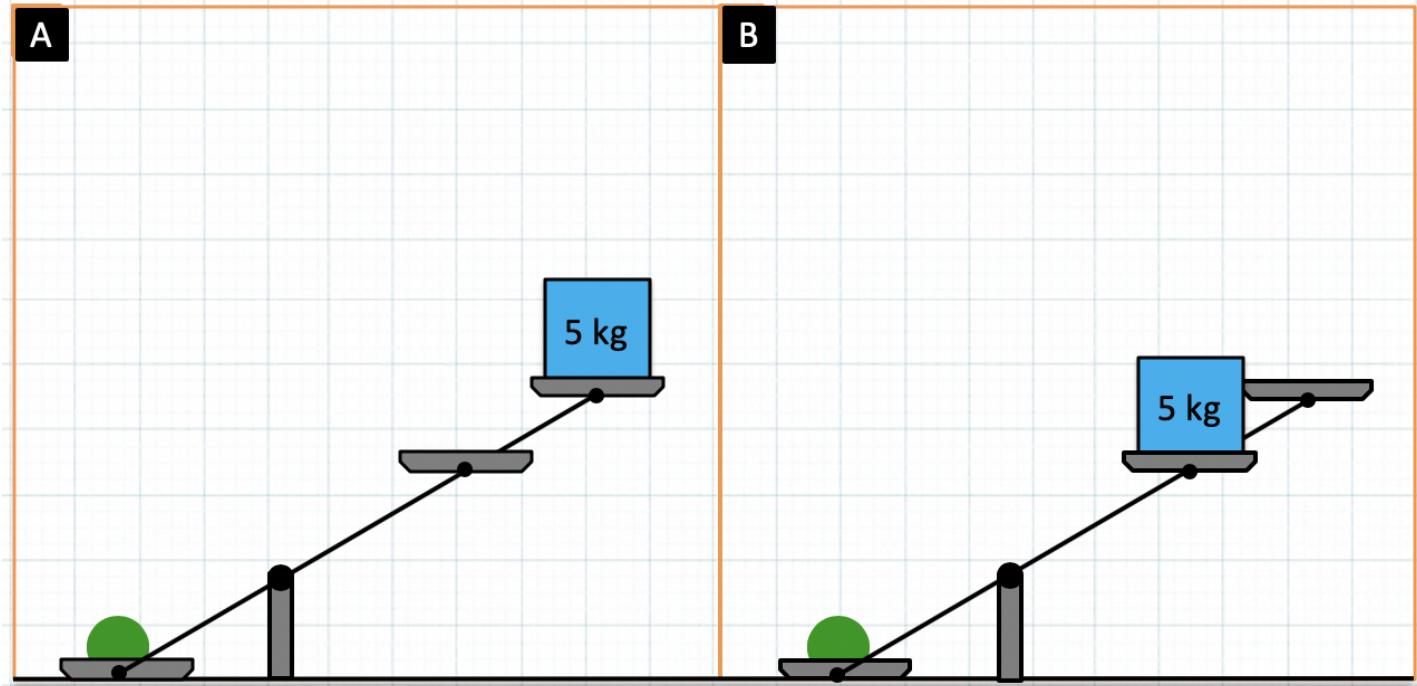
Which solution is *more likely* to get the ball to reach the balloon?

- a) A
- b) B
- c) C
- d) All would work

Which solution is more likely to get the ball to reach the balloon?

- A
- B
- C
- All would work

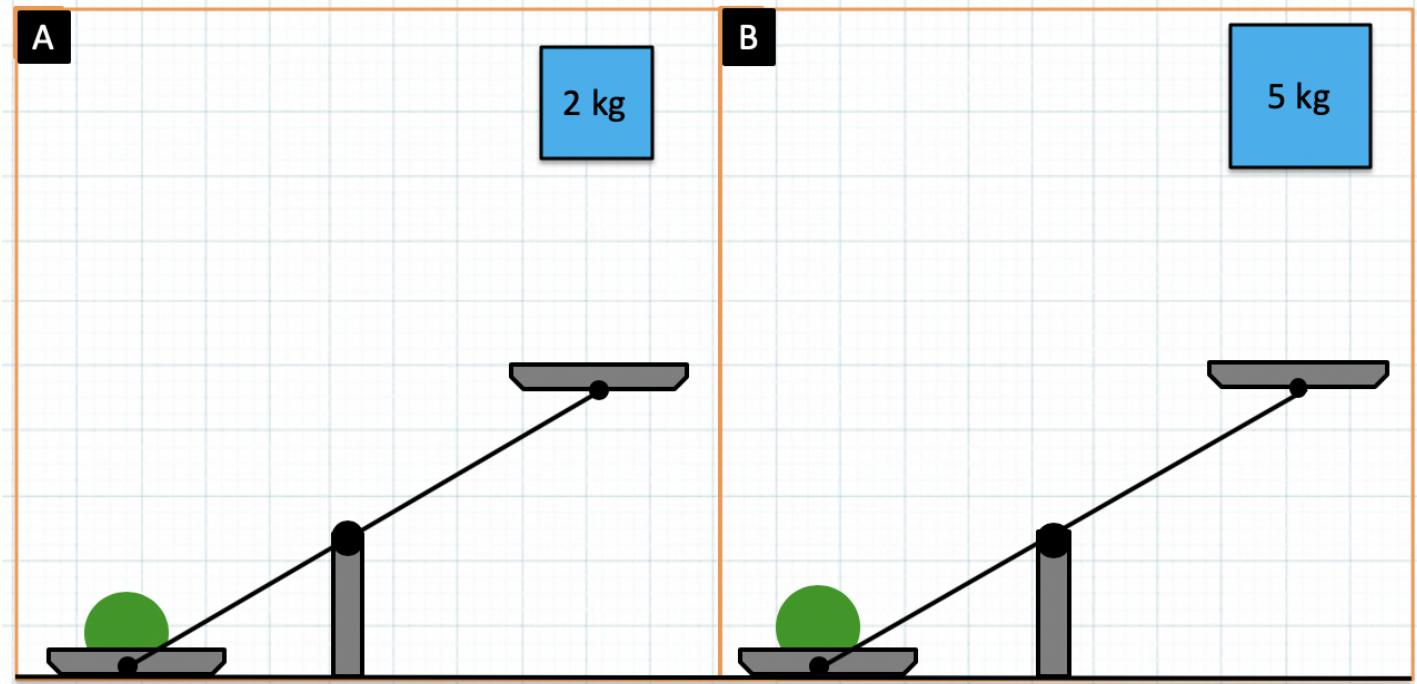
Far Q1 EcT-Lever 1



In Figures A and B, the two levers are identical. Which ball will be launched *higher*?

- The ball in picture A
- The ball in picture B
- The balls will move at the same speed
- More information is needed to answer the question

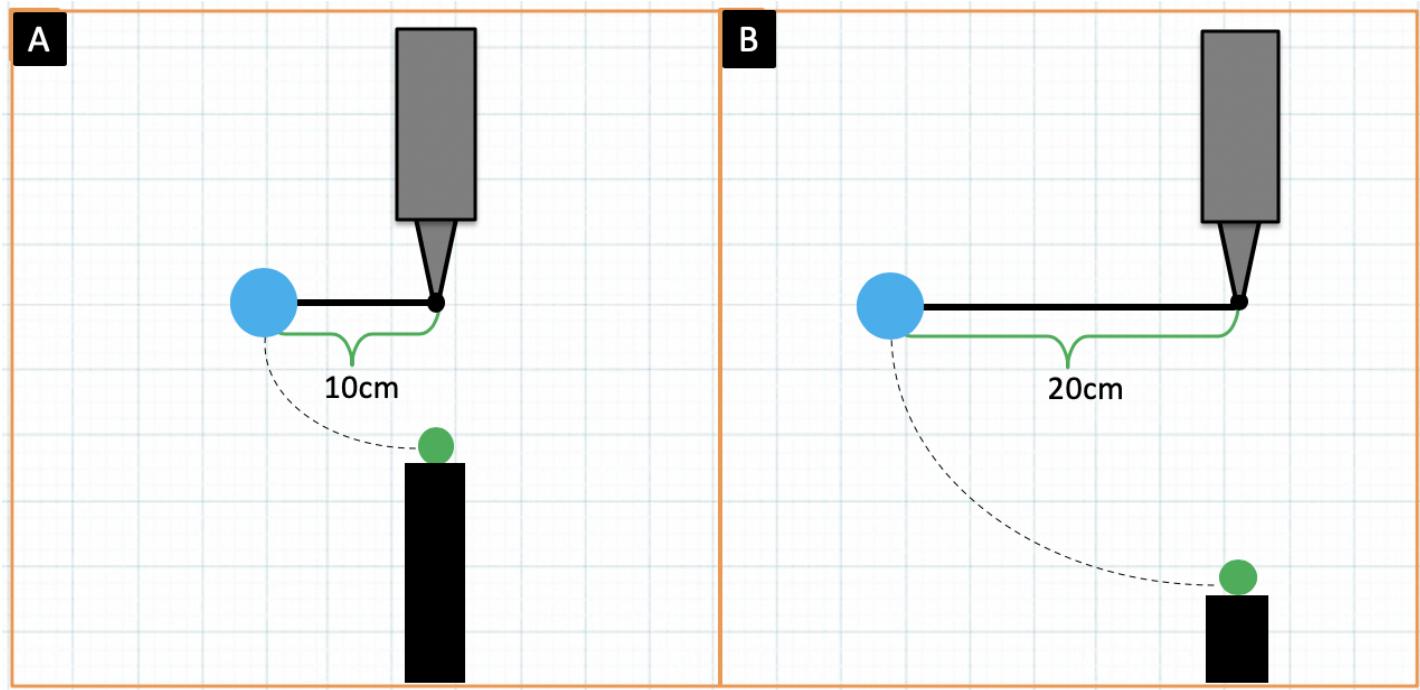
Far Q2 EcT-Lever 2



In Figures A and B, the two levers are identical. Two objects of different mass are being dropped from the same height. Which ball will rise *faster* when it leaves the plate?

- A will rise faster than B.
- B will rise faster than A.
- A and B will rise at the same speed.
- More information is needed to answer the question.

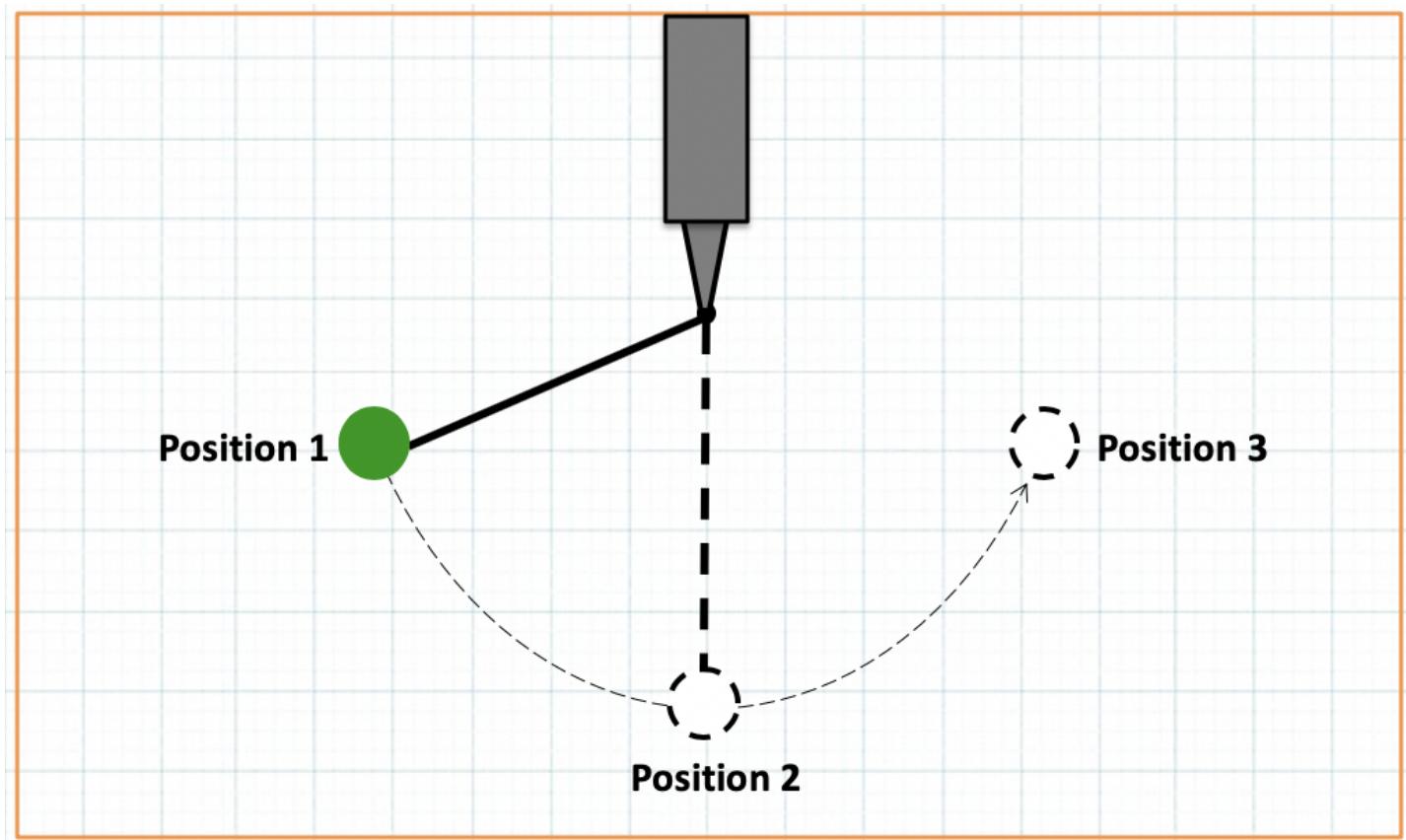
Far Q3 EcT-Pendulum 1



In Figures A and B, the pendulums have different lengths but the same mass. Which pendulum will have the greater speed *just before* it impacts the green ball?

- A will be faster than B because the length of Pendulum A is shorter than B.
- A and B will move at the same speed because both balls have the same mass.
- B will be faster than A because the length of Pendulum B is longer than A.
- More information is needed to answer the question.

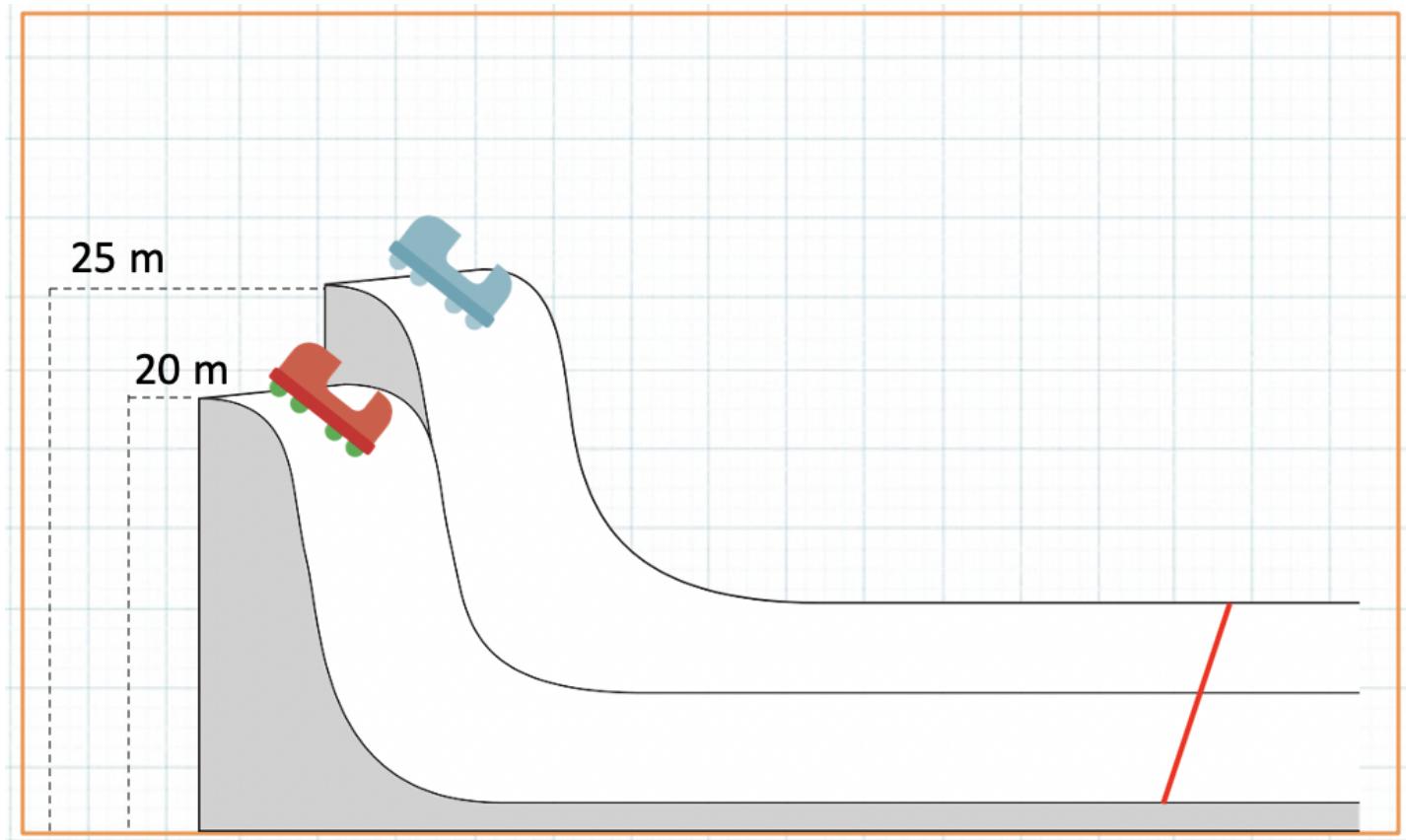
Far Q4 EcT-Pendulum 2



The pendulum swings from Position 1, passes Position 2, and arrives at Position 3. If we use a lighter ball, what is the *highest point* it will reach on its swing?

- Position 2
- Position 3
- Somewhere between Position 2 and Position 3
- Somewhere above Position 3

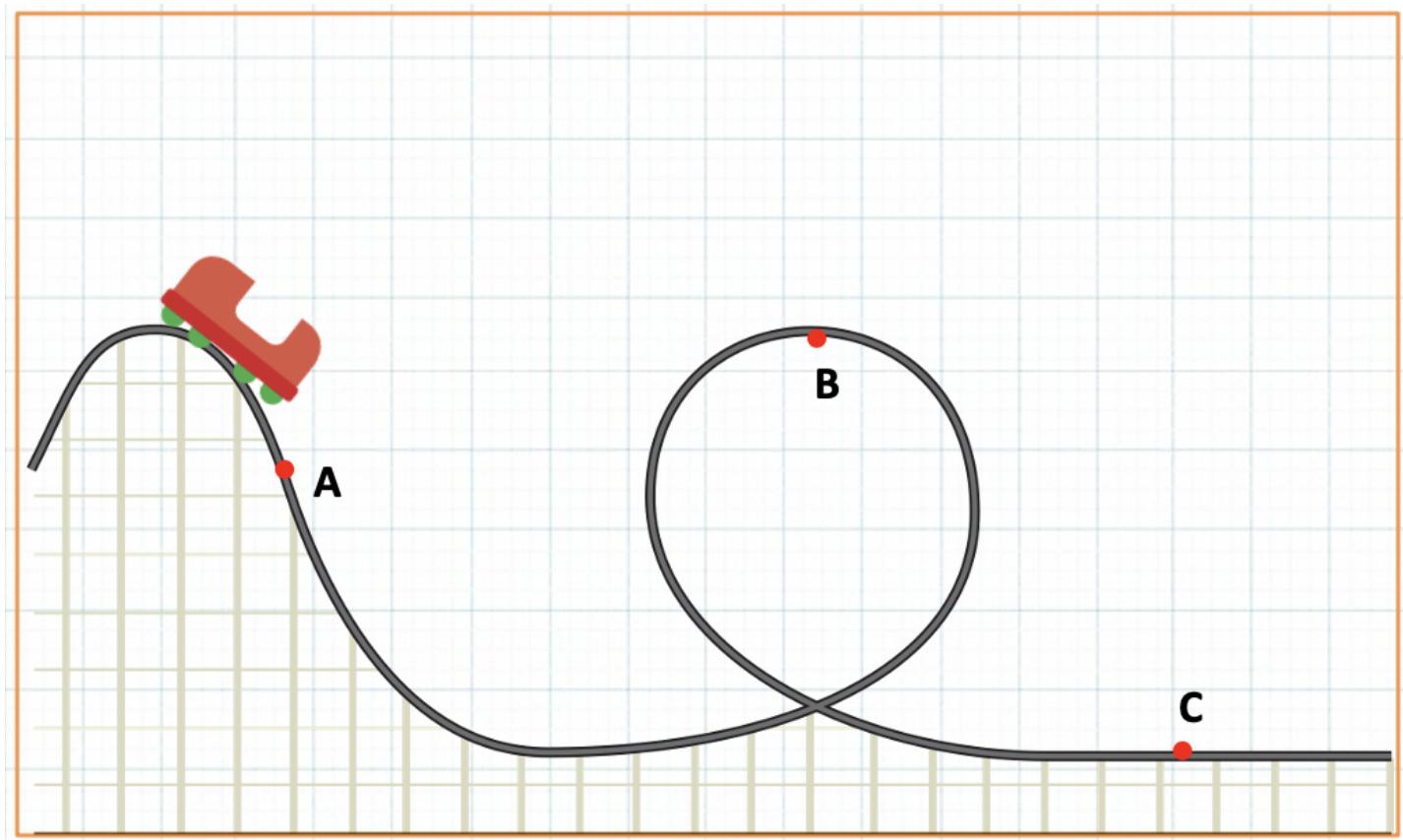
Far Q5 EcT-Ramp 1



Two identical carts are rolling down the ramp. Which cart will have *less speed* at the red line?

- The red cart
- The blue cart
- Both will have the same speed
- More information is needed

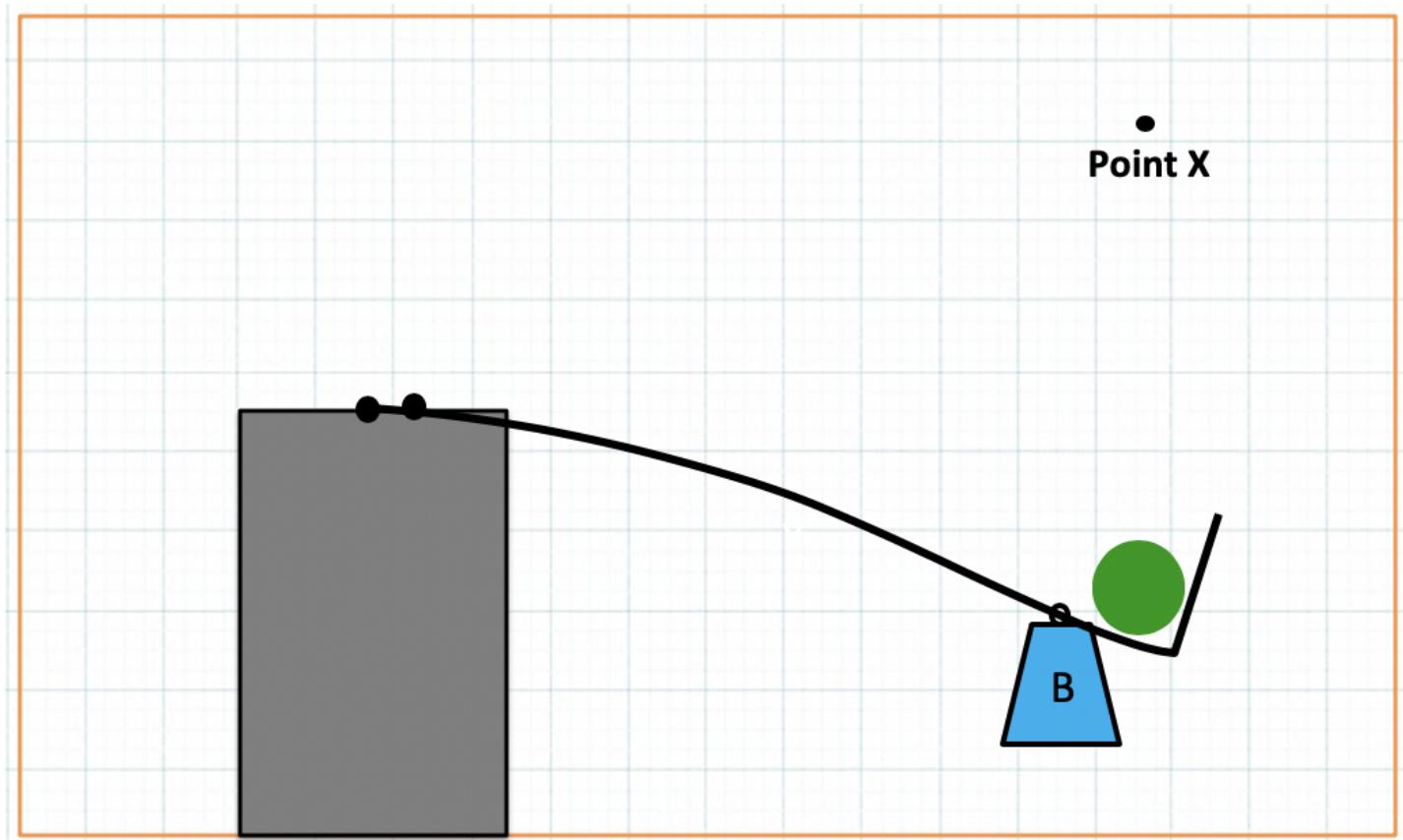
Far Q6 EcT-Ramp 2



The cart rolls down a frictionless rollercoaster. Its kinetic energy is _____.

- greatest at A
- greatest at B
- greatest at C
- always constant

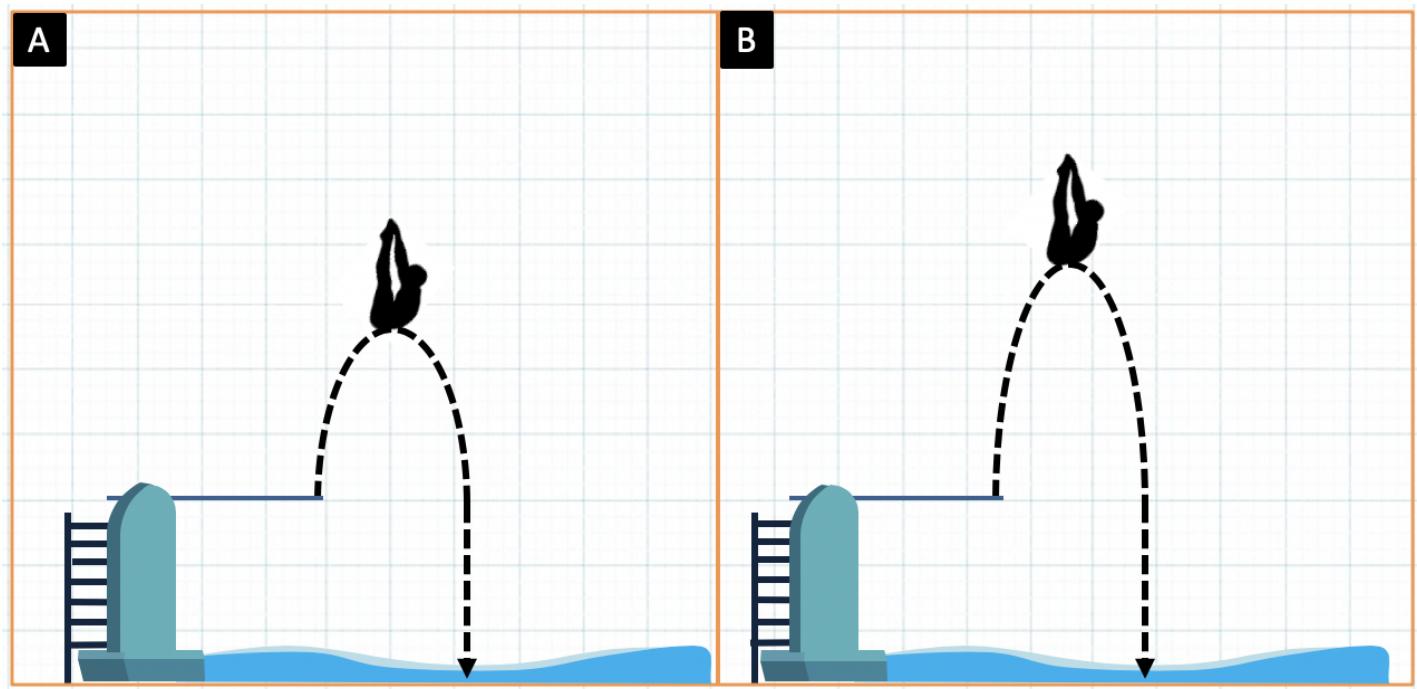
Far Q7 EcT-Springboard 1



A springboard is bent down by weight B. When the weight is released, the green ball flies up into the air to point X. What would make the green ball fly *higher* than point X?

- More information is needed to answer the question
- Increase the mass of the ball
- Decrease the mass of weight B
- Decrease the mass of the ball

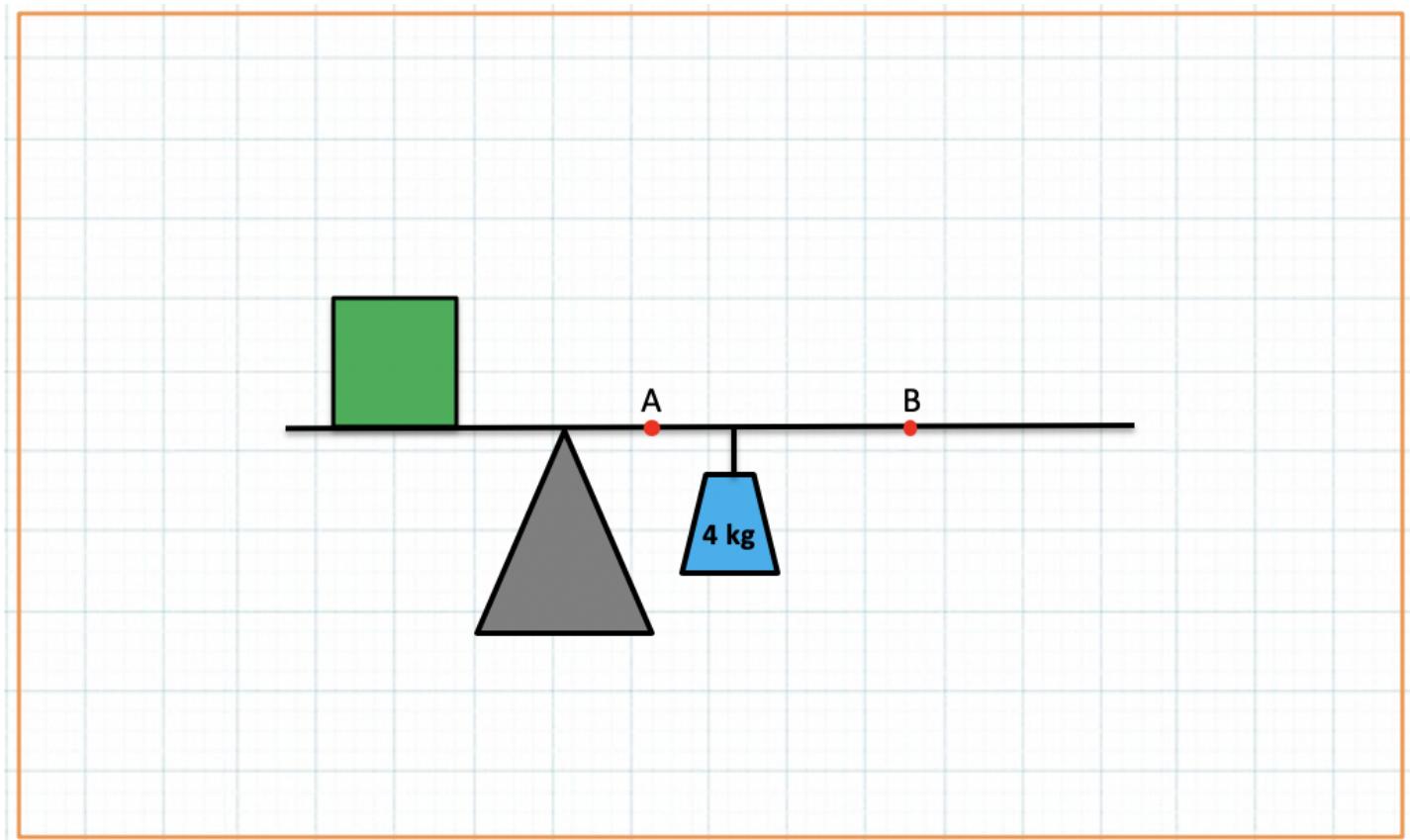
Far Q8 EcT-Springboard 2



Jeremy dove twice from a springboard. The second dive he jumped higher than the first dive. Which dive bent the board *more*?

- Both dives bent the board the same amount because the bend only depends on the mass of the diver.
- The first dive bent the board more than the second dive.
- The second dive bent the board more than the first dive.
- We don't know because he already jumped.

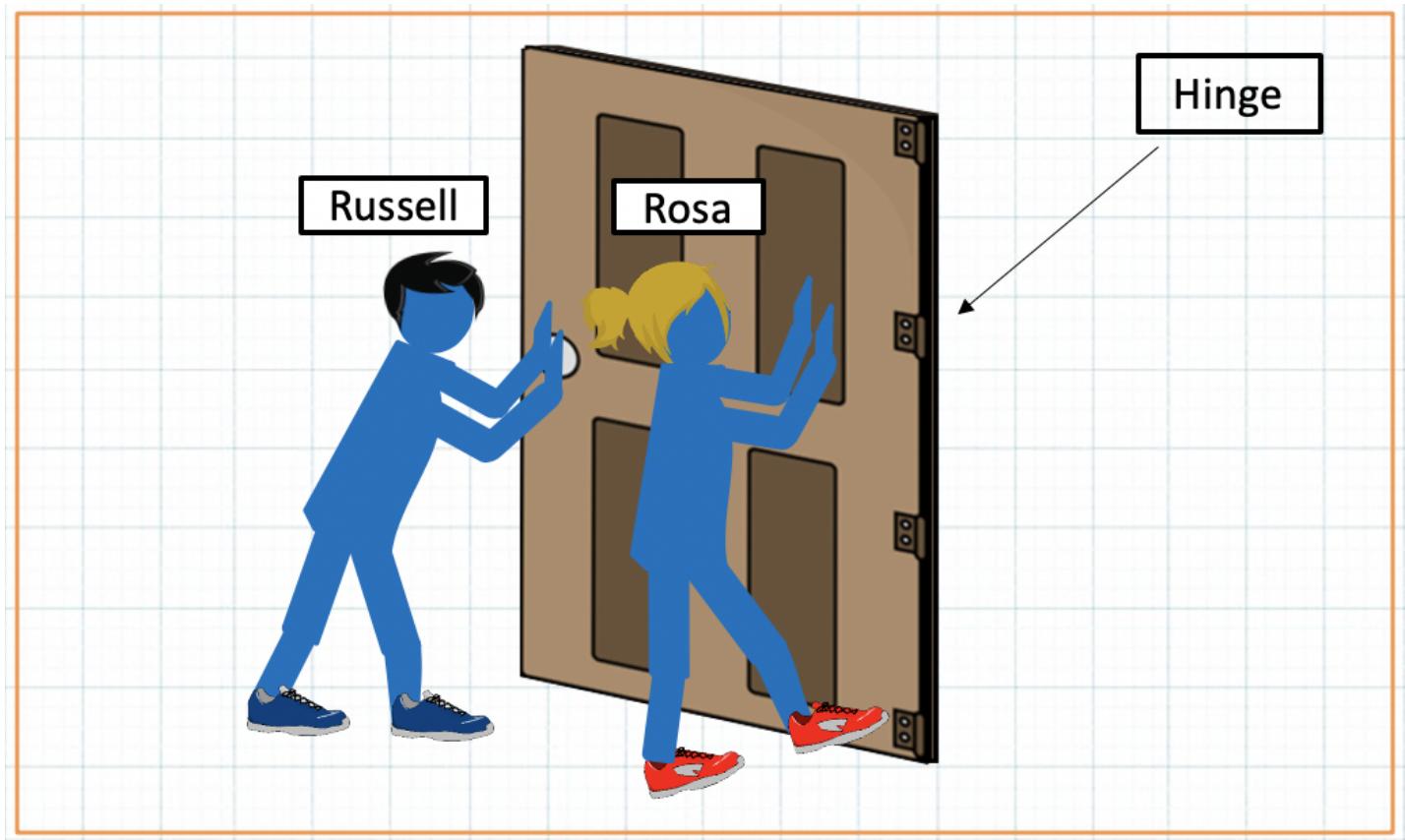
Far Q9 PoT-Lever-Distance



If the lever is balanced in the picture above, which of the following would cause the lever to go unbalanced?

- Replace 4 kg with 8 kg and move it to point A
- Replace 4 kg with 2 kg and move it to point B
- Both
- Neither

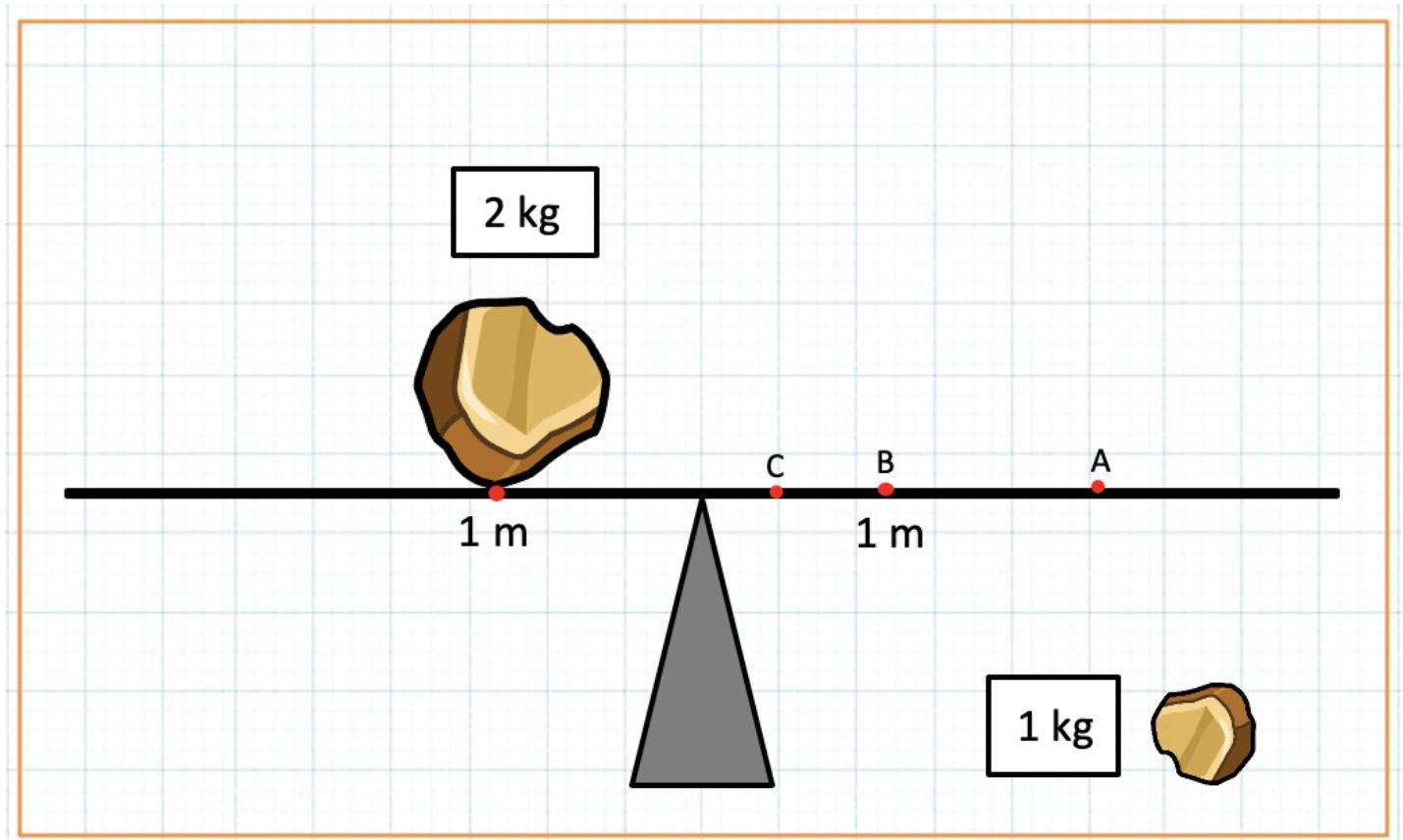
Far Q10 PoT-Lever-Distance 2



Russell and Rosa push a heavy door with the same force but at different positions. Who has the *greatest* effect on the movement of the door?

- Russell
- Rosa
- They both have an equal effect on the door's movement.
- Not enough information

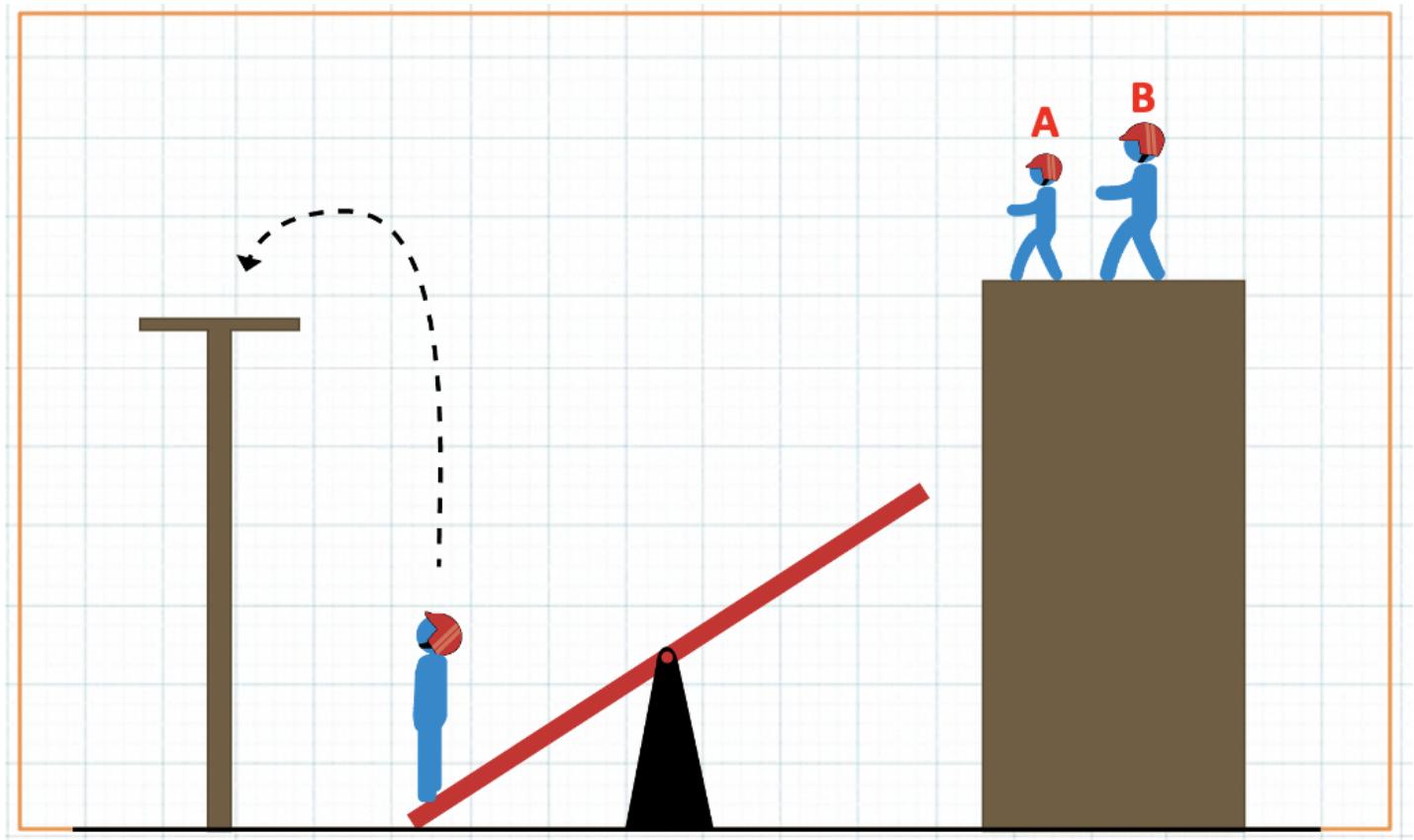
Far Q11 PoT-Lever-Mass



The 2 kg rock is 1 m from the fulcrum. The 1 kg rock is on the ground. How far should you place the 1 kg rock from the fulcrum for the lever to balance?

- Greater than 1 m
- Less than 1 m
- Equal to 1 m
- More information is needed to answer the question.

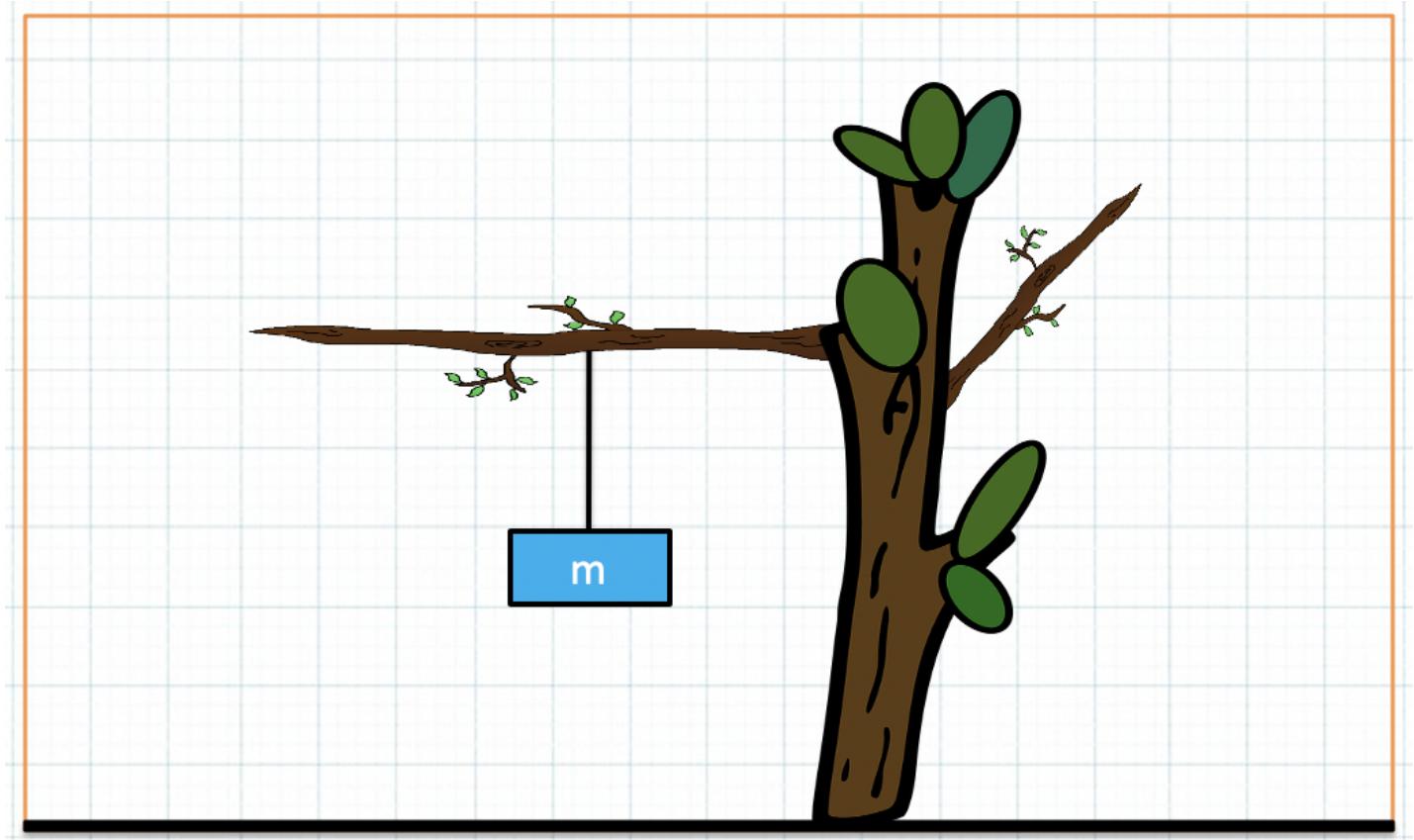
Far Q12 PoT-Lever-Mass 2



An acrobat needs to land on the platform above. At the top of another platform, two acrobats are ready to land on the opposite side of the lever. Which acrobat (A or B) is *less likely* to launch the first acrobat onto the platform.

- A
- B
- Both will have the same effect on the acrobat
- Not enough information

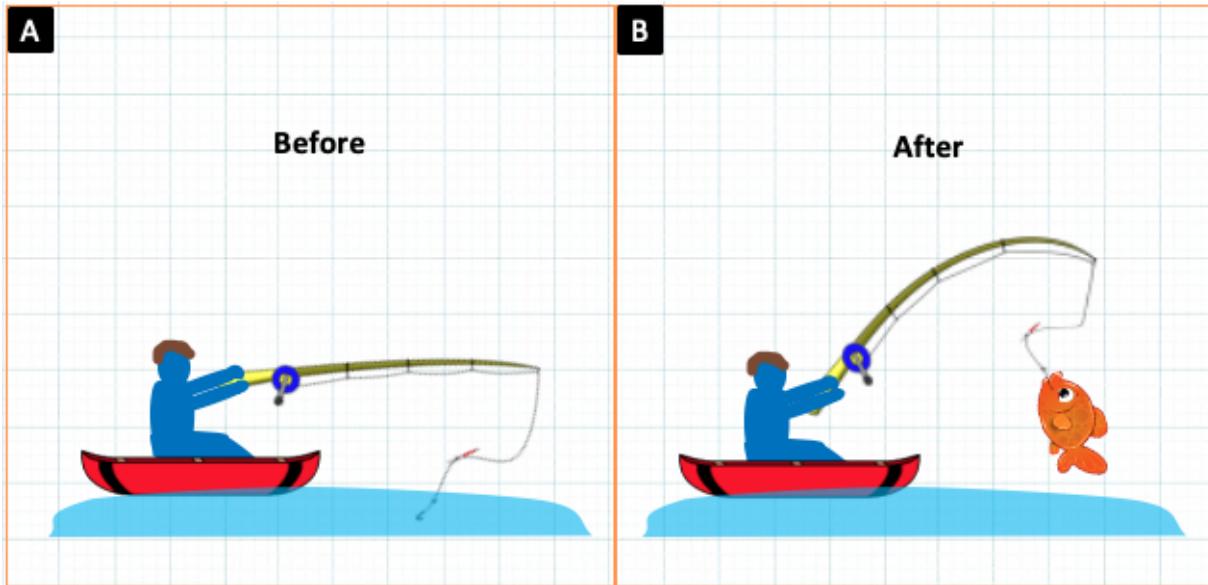
Far Q13 PoT-Springboard 1



An object is hanging on a tree branch. What would make the branch *more likely* to bend?

- By moving the object closer to the tree trunk
- By moving the object farther from the tree trunk
- By making the string shorter
- By making the string longer

Far Q14 PoT-Springboard 2



A person is fishing in a stream. If the fishing pole was longer, it would bend _____. _____.

- More
- Less
- The same
- More information is needed

Game Instructions Video

Watch a short video for the instruction:

<https://www.youtube.com/watch?v=K5tOfzwvazY&feature=youtu.be>

Game Link and instructions

You are done with the survey. Please go back to the Zoom meeting and wait for instructions on what to do next. We will start playing the game when everyone is done with this survey.