

PHYSICS 11 - FINAL EXAM REVIEW -

DYNAMICS • Work, Energy, + Power

Name: _____

① A net force of 6.2 N left is acting on a 1.3 kg bunch of bananas sliding across a level surface with $\mu = 0.38$

a) What is the bananas' acceleration?

b) Sketch a FBD of this situation.

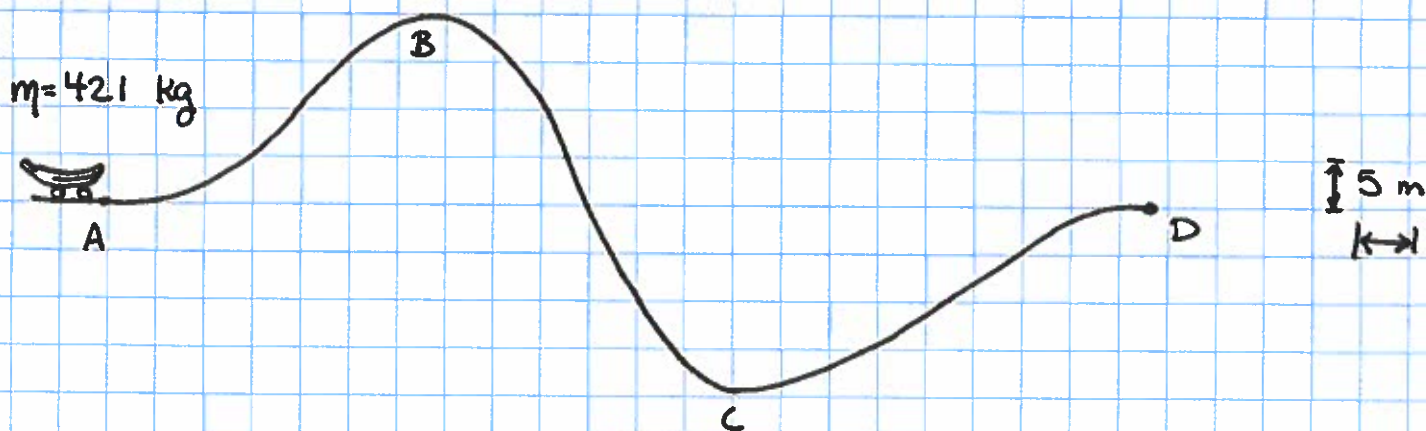
c) What is the applied force on the bananas?

② A ball hits a wall at a speed of 15 m/s , then bounces straight back at 12 m/s .

a) What is the ball's acceleration (magnitude only)?

b) If the ball's mass is 3.6 kg , what force does it exert on the wall?

③ Consider the following roller coaster.



a) The banana car accelerates from rest to 30 m/s from A to B. Losses to friction total 4600 J . How much energy is required to move the car?

b). What is the car's velocity at point C if it loses 5800 J to friction while going downhill?

c) How much work has been done if the car requires an average force of 120 N to move, from point A to D?

③ On Planet Throckmorton, Esker weighs 271 N. The planet's radius is 1472 m. Find:

a) the acceleration of gravity on Planet Throckmorton.

b) the planet's mass.

④ Sketch a FBD for the following situations:

a. A constant upward force accelerating a bucket held from a rope.

b. A light bucket hanging from a pulley with a heavy bucket hanging from the other side.

c. A block resting on an inclined plane.

⑤ Esker is pulling on her leash with a force equal to my frictional resistance. I am 96 kg in my winter clothes and $\mu = 0.36$. The rope is rated to 350 N of tension. Will I need a new rope or a new face?

⑥ A lightbulb produces 62 J of energy every second. It takes 8200 J to run the bulb for one minute.

a) What is the lightbulb's OUTPUT power?

b) What is the lightbulb's efficiency?