Physics 200 Name _____

September 14, 2012

Quiz 1

This is a closed book and closed note quiz.

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# This code creates a cart on a track and then prompts you with some
# questions... so you can animate the cart

from visual import*

# Create a track that is 6 meters long, 10 cm wide and 5 cm high.  It is blue.
track = box(pos=(0,0,0), length=6, width=0.1, height=0.05, color=color.blue)

# Create a vehicle. It is 10 cm long, 6 cm wide and 4 cm high.
# It is above the track and on the right of the track.
cart=box(make_trail=True, pos=(-2.95, 0.06, 0), length=0.1, width=0.06, height=0.04,
      color=color.green)

#originally, when at the left side of the track, the cart was at (-0.95, 0.06,0)

# Set the cart velocity so it travels the length of the track in 3 seconds
x_speed = track.length/3
cart.velocity = vector(x_speed,0,0)

# This is the delta time - small change
dt = 0.01
time = 0

# Check to make sure the time is less than 10 seconds.  If that is true then
# keep running this while loop... if not stop and move to the next command
while time < 10:

    # Limit how fast the program runs - which allows me to see the cart move
    rate(100)

    # We need some physics here... how is the carts position going to change?
    cart.pos = cart.pos + cart.velocity*dt


    # Check where the cart is and run a command...
    if -3 < cart.pos.x < 3:
        True        # Basically don't do anything
    else:
        cart.velocity = -cart.velocity

# Print the position and velocity of the cart at the end.
print("  Finally I am done moving the cart. ")
```

A)

B)

C)

D)