Name _____ # _____ Section_____

## Part B and C Questions - Show All Work
## <u>Kinematics</u>

### Displacement vs. Time
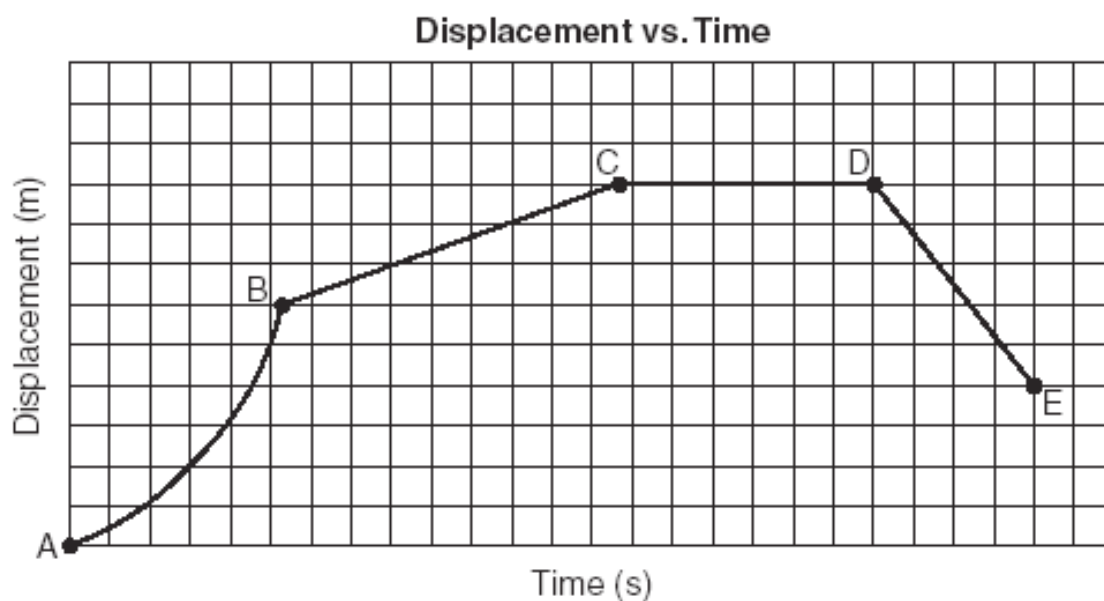


Describe the velocity of the object plotted in the graph above during the following intervals

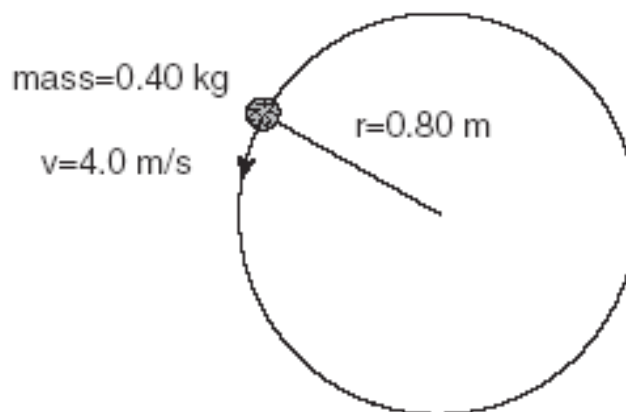**1.** A to B                 **2.** B to C                 **3.** C to D                 **4.** D to E

## <u>Circular Motion</u>

**5.** Draw the instantaneous velocity vector.
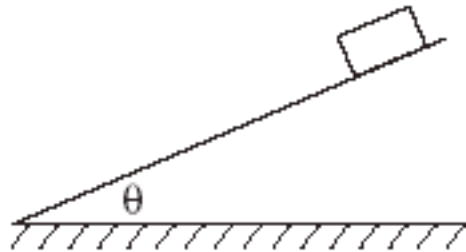
**6.** Draw the centripetal force vector.

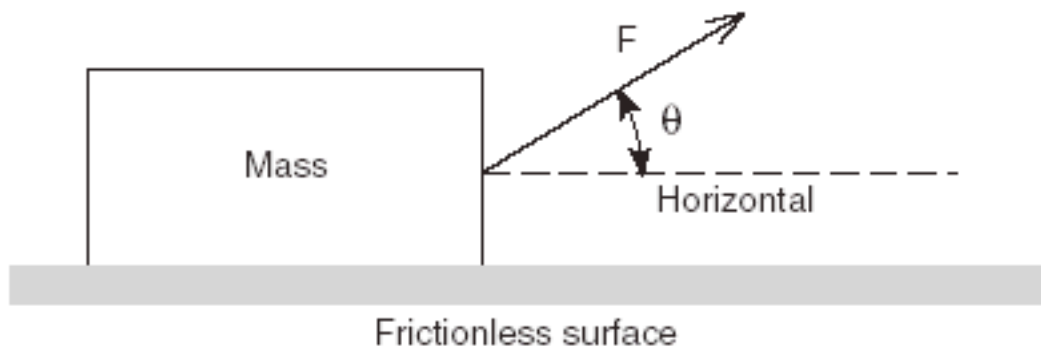mass=0.40 kg

r=0.80 m

v=4.0 m/s

7. normal force

8. friction force

9. weight force

## Components

**10.** Measure and record the angle shown below.

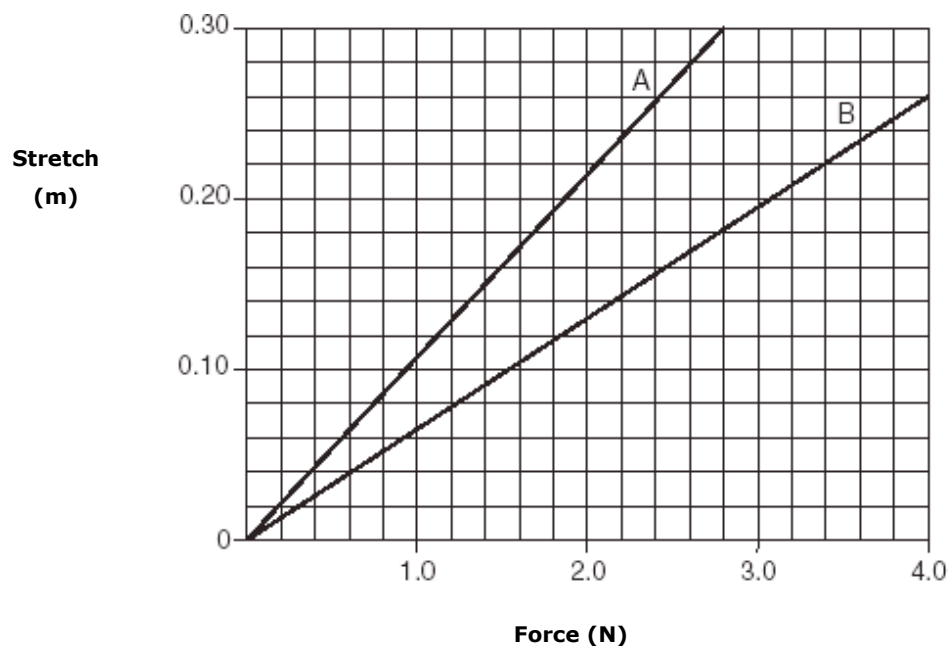**11.** If F = 5 N, how much force is actually responsible for moving this block?

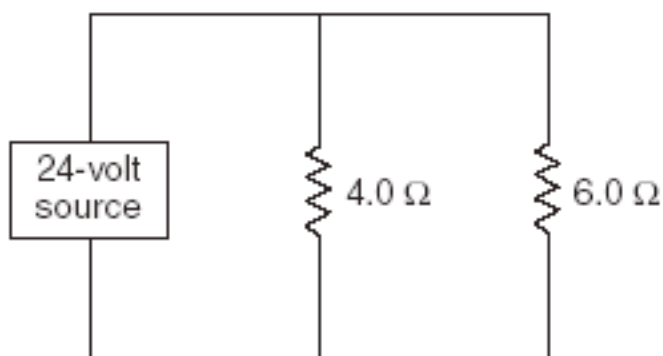## Energy

**Find the spring constant for:**

**12.** Plot A

**13.** Plot B?



Stretch (m) — Force (N)

## Circuit Electricity

**14.** Draw an ammeter into this circuit in a place where it could measure the current in the 6 ohm resistor.

**15.** Draw a voltmeter into the picture in a place where it could measure the voltage in the 4 ohm resistor.



24-volt source  4.0 Ω  6.0 Ω

**16.** What is the total resistance of this circuit? **Regents Rules**

## Relationships
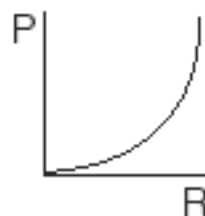
What is the mathematical relationship shown in:
*(Direct?, Direct Square?, Inverse?, Inverse Square?, No Relationship?)*

**17.** Plot 1? _____

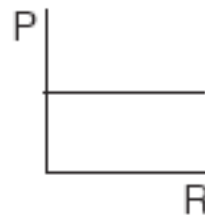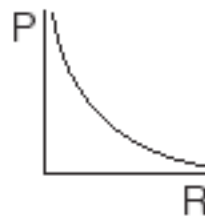**18.** Plot 2? _____
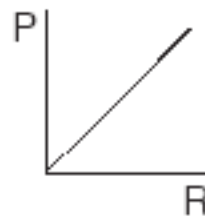
**19.** Plot 3? _____

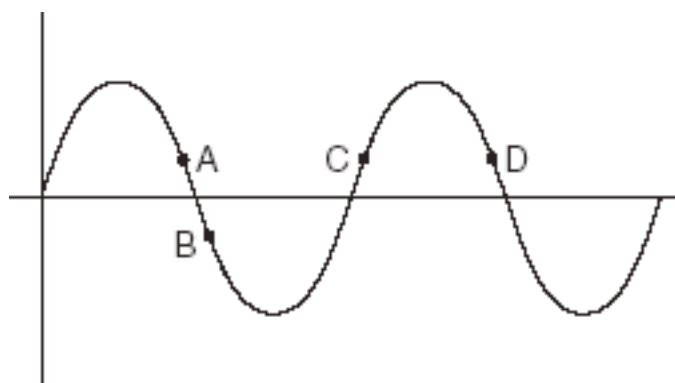**20.** Plot 4? _____

( 1 )

( 3 )

( 2 )

( 4 )

## Wave Characteristics

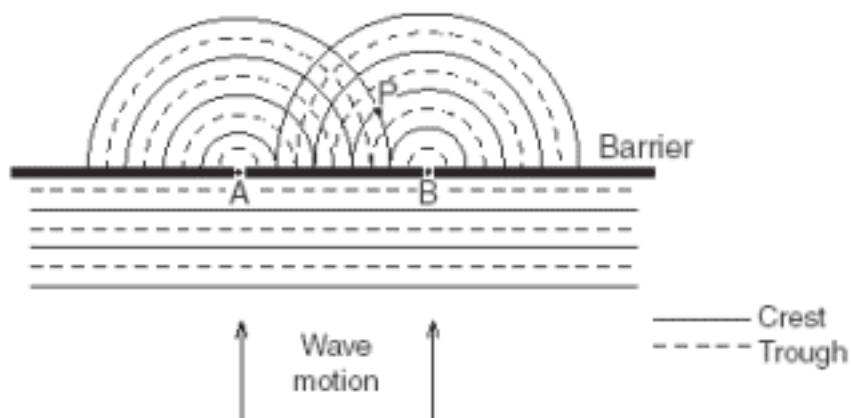**21.** Use a ruler to find the amplitude of this wave.

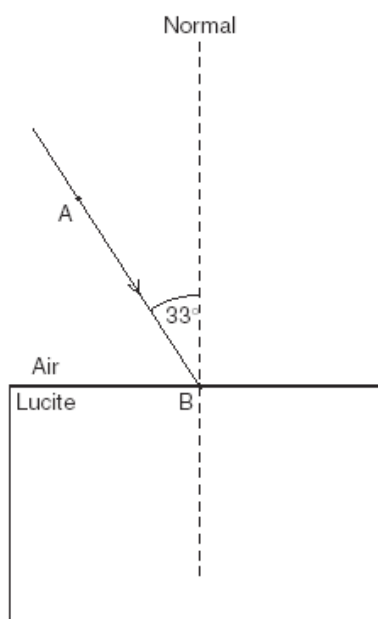**22.** Use a ruler to find the wavelength of this wave.

## Interference

**23.** Carefully draw the central maximum into the picture given.

**24.** Carefully draw the two first-order bright lines.
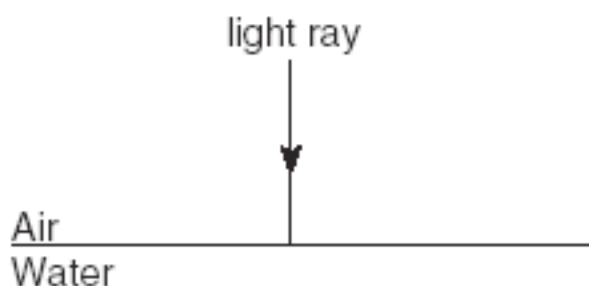
Barrier

Wave motion

———— Crest
- - - - - Trough

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## Refraction

25. Find the angle of refraction for light from air entering into Lucite at an angle of 33 degrees.

26. Carefully draw the refracted ray.

Normal

A

$33°$

Air

Lucite        B

light ray

Air
Water

**27.** Draw an arrow to show how the light ray will enter the water.

# Plotting Data

**28.** Plot the data on the graph provided in the answer sheet. **Draw the best fit line**

**29.** Using your graph, determine the power delivered to the circuit at a current of 3.5 amperes.

_____

| Current (amperes) | Power (watts) |
|---|---|
| 0.75 | 2.27 |
| 1.25 | 3.72 |
| 2.25 | 6.75 |
| 3.00 | 9.05 |
| 4.00 | 11.9 |

**30.** Given the mathematical relationship that exists between these two variables, how would the power change if the current were increased 10 times?

_____

### Power vs. Current for a Variable Resistor

(graph: Power (watts) on y-axis from 0 to 12.0; Current (amperes) on x-axis from 0 to 4.0)