Name _____ # _____ Regents Physics

Easter Takehome (50 pts)

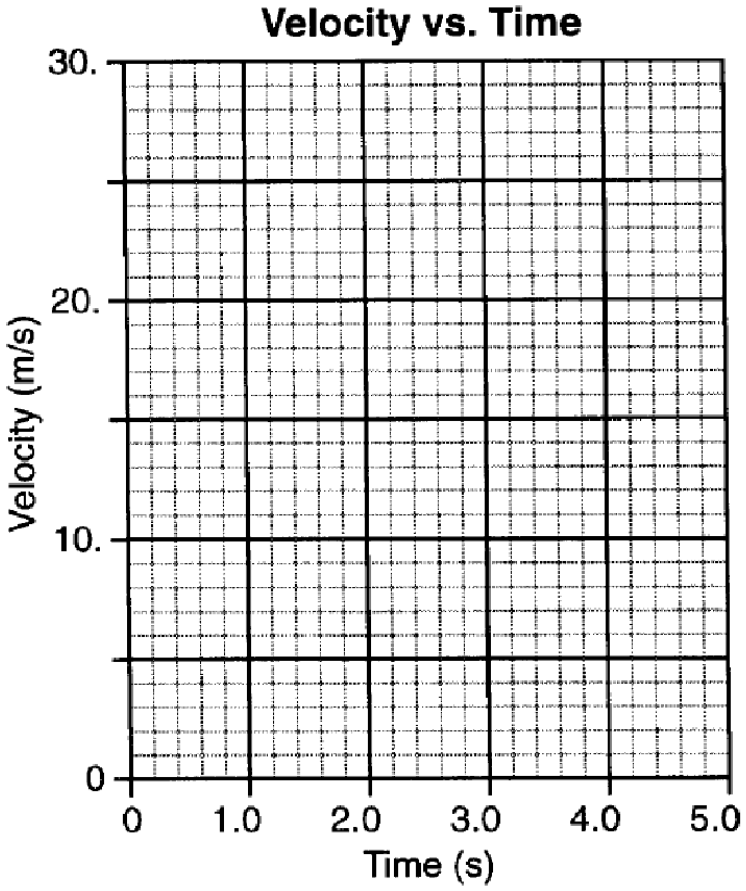
On all questions:

A) You must use a **ruler** for all straight line plots and vectors or you will NOT receive credit

B) [Show all calculations, including the equation and substitution with units.] or NO Credit

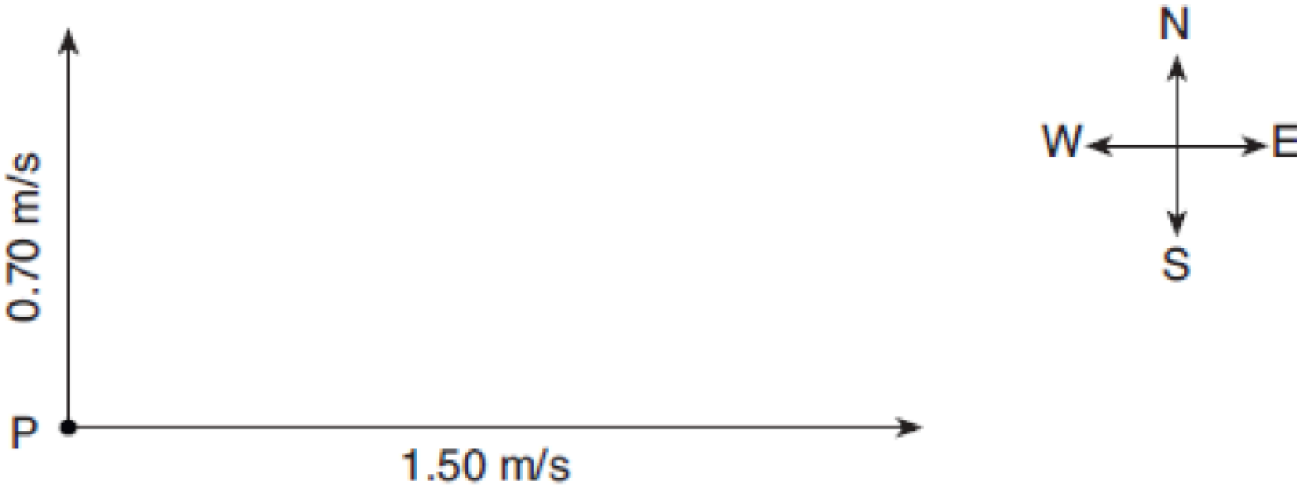
1. Plot the data. Draw the best fit line
2. Use the graph below to determine the acceleration of the object that produced this graph. [Show all calculations, including the equation and substitution with units.]

Time (s)	Velocity (m/s)
0.0	24.0
1.0	19.0
2.0	14.0
3.0	10.0
4.0	4.0



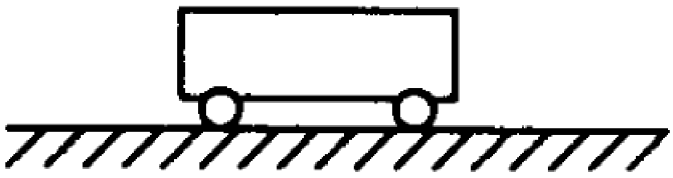
3. Use a **ruler** to draw a vector to represent the resultant velocity.

   Label the vector *R*.



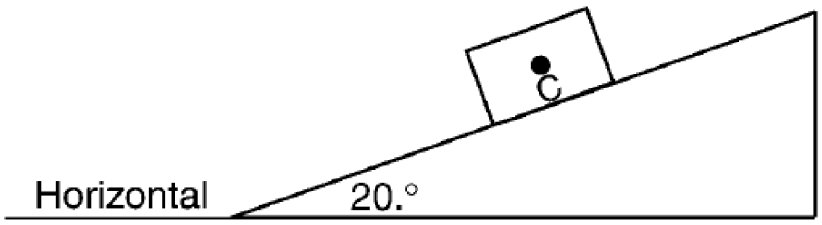
4. A teacher pulls a cart across a horizontal floor by applying a force of 60. newtons at an angle of 35º to the horizontal. 1 cm = 10. N

   a. Draw the force ON the cart with a **RULER** and a protractor. Label the force and angle
   b. With your ruler, draw the horizontal component and label it H
   c. Calculate the horizontal component using trig



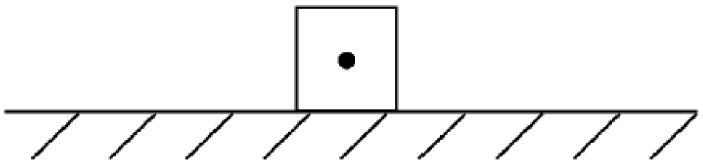
5. A box rests on an incline. Draw an arrow to show the direction of all three forces acting on the block below.

Label all three forces



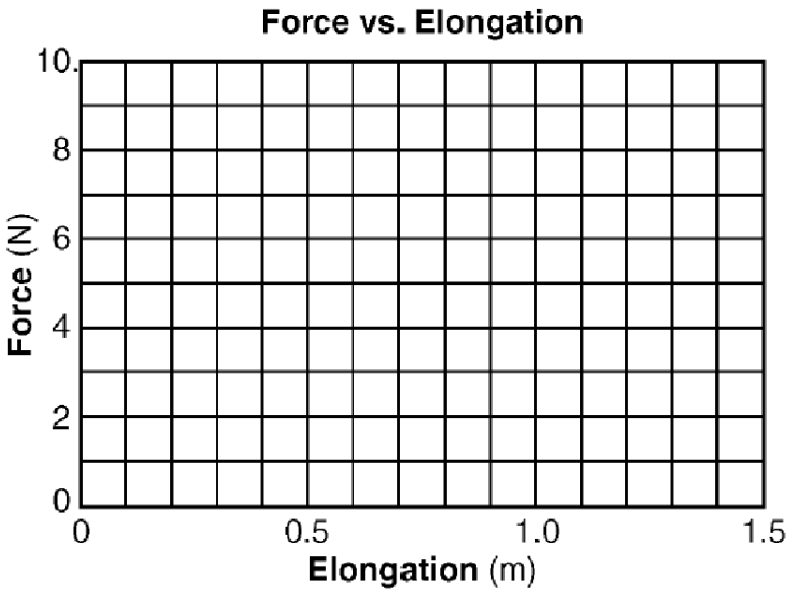
6. A force of 10. Newtons is exerted on a wooden crate initially moving to the right at CONSTANT SPEED across a horizontal wooden floor. The crate weighs 25 Newtons. Draw all 4 forces acting on the block using a scale you create.

Scale Used _____ cm = _____ N



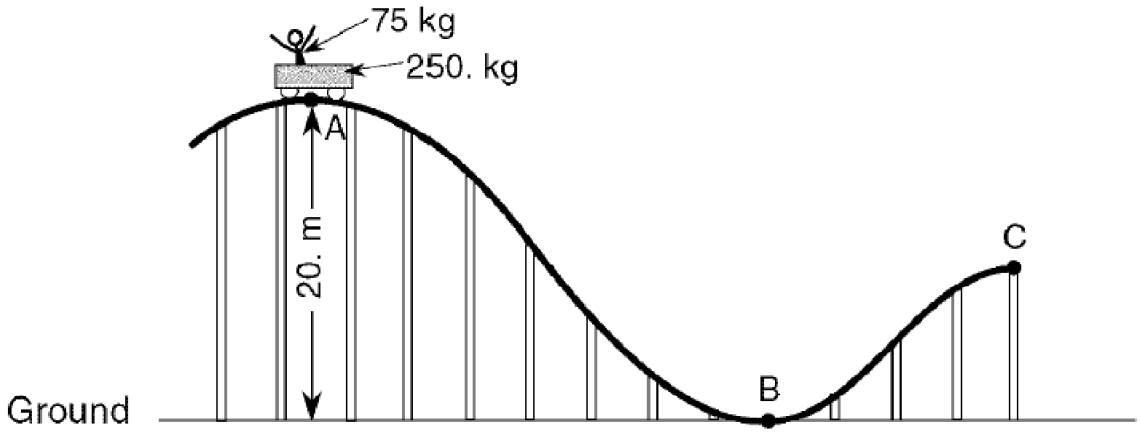
7. A) Plot the data, Draw the best fit line

Force (newtons)	Elongation (meters)
0	0
1.0	0.30
3.0	0.67
4.0	1.00
5.0	1.30
6.0	1.50

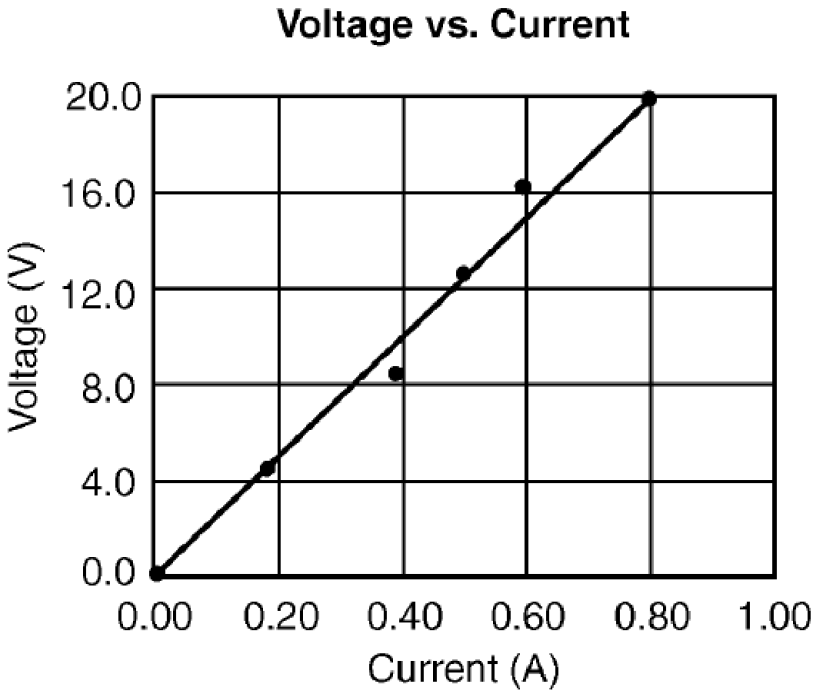


B) Use the slope to find the spring constant

8. A car with a passenger starts at rest at a height of 20. m, what is the velocity of the cart at the lowest point?



9. A) Find the slope of the line below. Regents Rules



B) Does the resistor that produced this data obey Ohm's Law. Explain.

10. Draw four flux lines to show the direction of the magnetic field in the region around the bar magnet below.