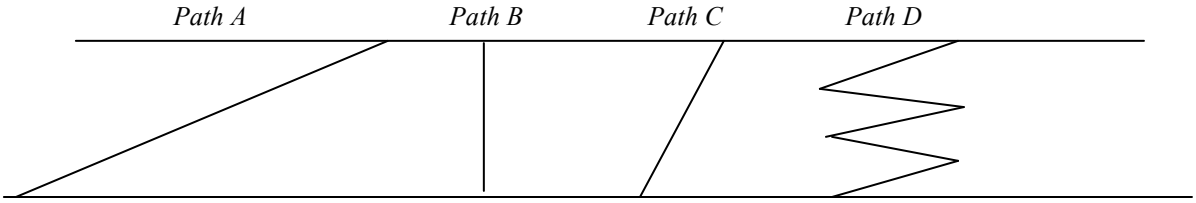
Due 11/8

1. How much work is necessary to accelerate a 2 kg object from rest to 12 m/s?

2. How much work is necessary to lift a 45 N object 18 meters up into the air?

Remember that "x" in the Elastic Potential Energy equation is the distance a spring is compressed or stretched from its relaxed position (also known as the equilibrium or unstretched position).

3. A spring with an unstretched position of 1.2 meters is compressed to a position of 0.8 meters. The spring constant of the spring is 0.12 N/m. If when released it launches a 0.85 kg ball, how fast is the ball launched?



4. The above shows 4 paths that could be taken to get from the ground to a vertical position "h".
   A) If there is no friction on any of the paths, which path will give an object the most potential energy?
   B) If there is no friction, which path requires the most work to move an object?
   C) Which path will require the least amount of force?
   D) Which path will require the most force?
   E) Which path has the greatest distance?
   F) Which path will require the most time?
   G) Which path will use the most power?
   H) Which path will use the least power?
   I) Which path will seem the easiest?
   J) If there IS friction, which path will require the most work?
   K) If there IS friction, which path will seem the easiest?

5. As we were running up the stairs, what factors led to more power?

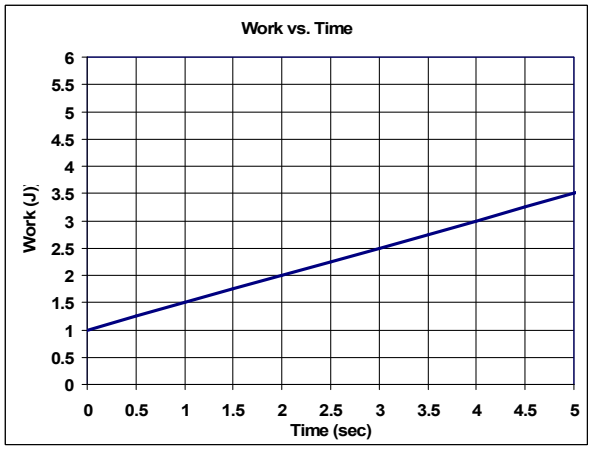
6. A 20 kg object is accelerated to 6 m/s in 10 m by a 50 N force acting parallel to the ground. Find the coefficient of friction for the surface.

7. A ball is moved between two desks of equal height.
   A) What is the change of potential energy for the ball?
   B) What is the net work done on the ball?

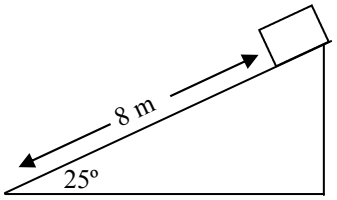
8. A 15 kg object is accelerated from 2 m/s to 8 m/s in 3 seconds. How much power was necessary to do this?

9. A

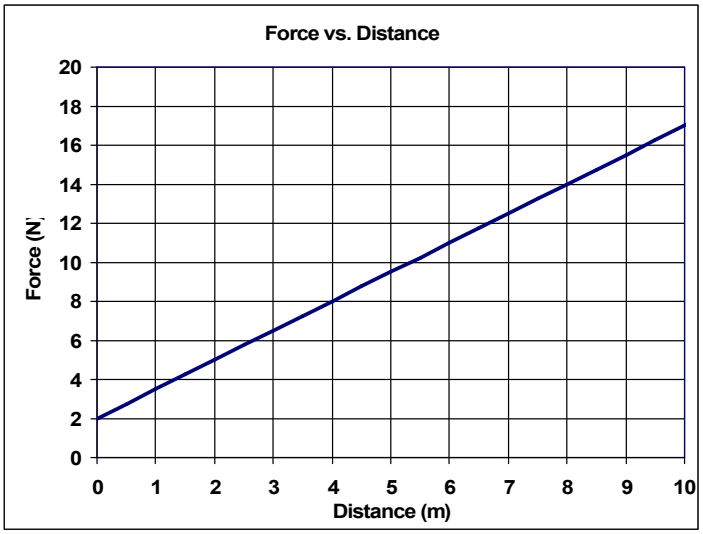
10. Find the power done on the object shown on graph 1.



11. Find the speed of the object at the bottom of the ramp below.



12. If a 2 kg object at rest is acted on by a variable force shown on the graph at the right, how fast is it going after the first 8 seconds? (See hint below)



Don't use the hints if you REALLY want to understand this.

1) *Set up the problem like you normally would (using conservation of energy).*
2) *Use units to tell you how to use the graph.*
   (Way back when I told you that there are two things to look for on any graph.)