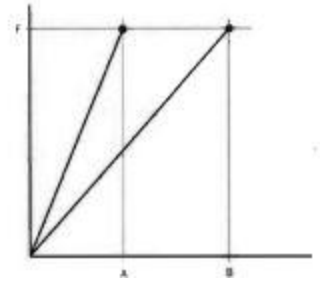


Unit 8 Review Problem Set

1. The above graph was made from data collected during an investigation of the relationship between the amount two different springs stretched when different forces were applied. For each spring, determine the spring constant. $F = 20 \text{ N}$ $A = 0.5 \text{ m}$ $B = 1.1 \text{ m}$



- What is the spring constant for A?
 - What is the spring constant for B?
 - How much work is required to stretch spring A from zero to 1.05 m ?
2. Suppose W is the amount of work done stretching a certain spring from 0 to 20 cm . How much work is done to stretch the same spring from 20 to 40 cm ? (Hint: Draw a graph and compare the area from 0 to 20 with the area from 20 to 40 .)
3. A 6.9 kg brick is falling at a rate of 28.8 m/s toward the earth at a current height of 7 m . What is the total initial energy of the brick?
4. A 500 kg go-cart is traveling at 11 m/s when the driver slams on the brakes. The cart comes to a stop in 10 m . If the same braking force is applied, how far will the cart travel after braking if it were traveling at 47 m/s ?

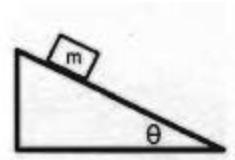
5. A certain spring is found to stretch 0.09 m when a force of 5.4 N is applied to the spring.

a. What is the spring constant of this spring?

b. How much work is done by the force on the spring?

6. A 463 g block is placed on a spring with a spring constant of 107 N/m, compressing it 48 cm. What height does the block reach when it is launched? (Watch your units carefully on this one....)

7. A 22.3 kg box is released from rest on a frictionless ramp (1.25 m above the bottom.) How fast will it be moving at the bottom of the ramp?



8. A student climbs a mountain, increasing her altitude by 1500 m. Find her power if it took her 3 hours to do this.