Week 11 - Work, Energy, and Power

Read Page 148-149 (Work)

TQ1. What is work?

TQ2. If a child applies an upward force on a bag and the bag moves horizontally, how much work is done by the child?

TQ3. What is the equation for work?

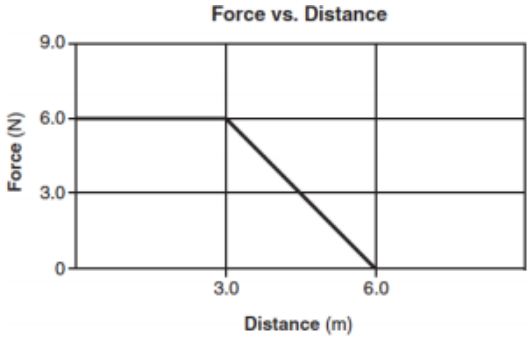
TQ4. What are the units for work?

QQ5. A person pushes a box 4 meters across the floor by applying a force of 150 N. How much work was done?

QQ6. You pull a crate a distance of 4 m with a 20 N force with a rope at an angle of 20˚. How much work was done?

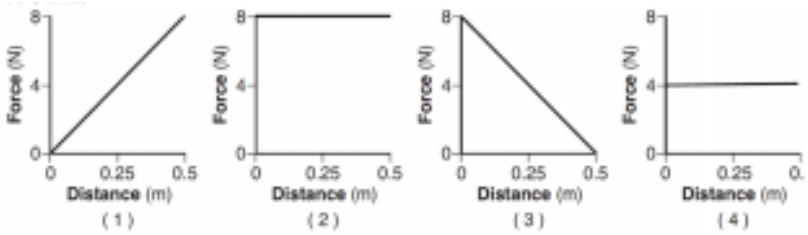
Read Page 151 (Force vs. Distance Graphs)

TQ7. Given a Force vs. Distance graph, how would you find the work?



QQ8. Given the graph above, how much work was done over 6 meters?

CQ9. Which of the following graphs represents the most work?



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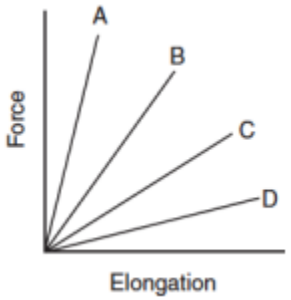
Read Page 152-153 (Hooke's Law)

TQ10. What is the equation for the force of a spring (Hooke's Law)?

TQ11. What is the k and what is the x in the Hooke's Law equation?

QQ12. A force of 20 N compresses a spring 0.30 m from its equilibrium position. Calculate the spring constant for this spring.



CQ13. Which spring in the graph above has the greatest spring constant, k?

QQ14. A vertical spring 0.100 meter long is elongated to a length of 0.119 meter when a 10 N weight is attached to the bottom of the spring. What is the spring constant, k?

Read Page 155 (Power)

TQ15. Watt are the units of power?

TQ16. What is the equation for power?

QQ17. A 400 N student runs up a staircase to a floor that is 5.0 m higher than her starting point in 7.0 s. What is the student's power output?

QQ18. A motor used 120 watts of power to raise a 15 N object in 5.0 s. Through what vertical distance was the object raised?

QQ19. If a cyclist develops 300 W of power while pedaling at a constant velocity of 6 m/s, what is the average force exerted by the cyclist?