

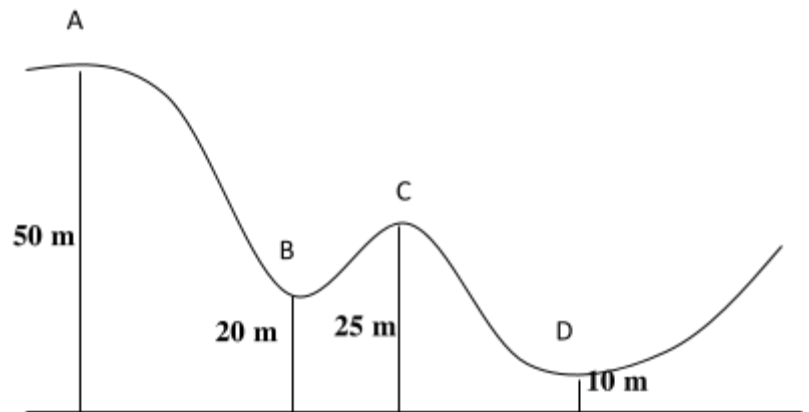
Name: _____

Unit 4 Test Review

1. If the speed of an object triples, what happens to the kinetic energy?
2. If the height of an object triples, what happens to the potential energy?
3. An object is pushed with a force of 300 N. If the frictional force on the object is 40 N and the object was pushed 5 m, how much work was done?
4. A 5 kg object is pushed with a force of 50 N for a distance of 3 m. How fast will the object be moving after it is pushed if it starts from rest?
5. Explain how heat travels through a substance.
6. A 1080 kg car requires 9400 J of work to move from rest to some final speed. Find the final speed.
7. A weightlifter lifts a set of weights a vertical distance of 6 m.
 - a) If a constant net force of 370 N is exerted on the weights upward, how much work is done on the weights?
 - b) The weightlifter then moves the weights 4.2 m across the room. How much work is done?
8. A 1680 kg car accelerates uniformly from rest to 14 m/s in 2 s.
 - a) What work was done?
 - b) What is the power delivered by the engine in this time interval?

9. A 60 kg bobsled is pushed with 400 N of force. It started from rest and sped up to 6 m/s. What is the distance covered by the bobsled?

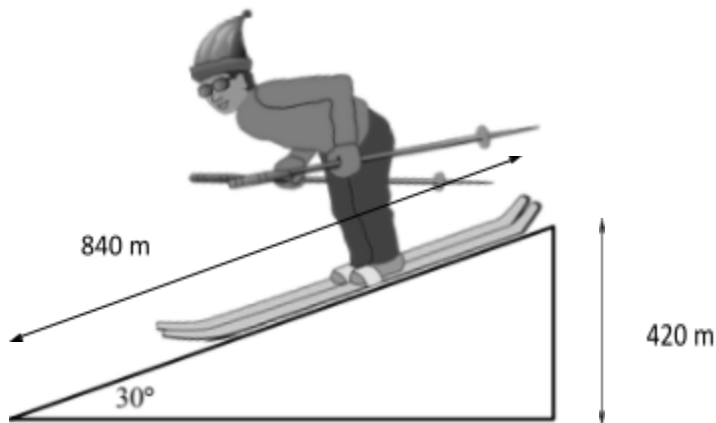
10. A roller coaster starts from rest at the top of the slope. Find the speed of the coaster at points B and C.



11. ****Pre-AP Only**** A 50 kg skier starts skiing down a slope with a height of 420 m. The skier travels 840 m down the slope at an angle of 30° (picture below).

a) If the frictional force is 42 N, what is the work done by friction?

b) What is the skier's velocity at the bottom of the hill?



12. Thinking back to the skate park lab....

a) You have friction turned on. Why did the skater always end up at the bottom of the ramp?
Where did all of the energy end up?

b) Now take the idea in part “a” and discuss what you think the “efficiency of a motor” means.

13. A 20 kg dog is pushed with a force of 40 N for a distance of 4 m. If the dog is initially at rest, what is the final velocity of the dog?

14. A dad lifts his 100 N little girl 2 m onto the counter. What is the potential energy of the little girl?

15. A monkey is swinging from a vine 20 m off the floor with a velocity of 18 m/s. What is the monkey's height when he is swinging with a velocity of 12 m/s?

16. A person is standing on the diving board 10 m above the pool. How fast is the person going when they hit the pool?

17. A ball is thrown at a velocity of 10 m/s from a height of 40 m. What is the velocity of the ball when it reaches the ground?