

# Test Review Key

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|------------------------|--|
| 1. Nuclear <b>B</b>    | A. Any Potential or Kinetic energy.          |
| 2. Thermal <b>D</b>    | B. Due to splitting or combining atoms.      |
| 3. Radiant <b>E</b>    | C. Held in molecular bonds.                  |
| 4. Mechanical <b>A</b> | D. Heat energy.                              |
| 5. Chemical <b>C</b>   | E. Electromagnetic radiation (light energy). |
| 6. Electrical <b>F</b> | F. Moving electrons.                         |

- What Kind of Thermal Transfer?
1. Conduction; 2. Convection; 3. Radiation
- |                                    |   |
|------------------------------------|---|
| <u>3</u> From a light bulb.        | <u>1</u> Putting your hand on a hot car.                    |
| <u>1</u> Holding onto an ice cube. | <u>2</u> A fan cooling you down.                            |
| <u>2</u> Causes ocean currents.    | <u>3</u> If your hand is next to, but not touching a brick. |

- What kind of Energy:  $E_p$ ,  $E_k$ , Work, or None?
- PE An object sitting on the edge of a table.
- KE A bullet shot up into the air before it gets to the top.
- N A ball after it hits the ground and stops.
- W Pushing an object up a ramp.
- PE After pushing an object up a ramp.
- PE What a rock loses as it falls.
- W What it takes to stop or start an object.
- N How much energy an object loses if there is no friction.

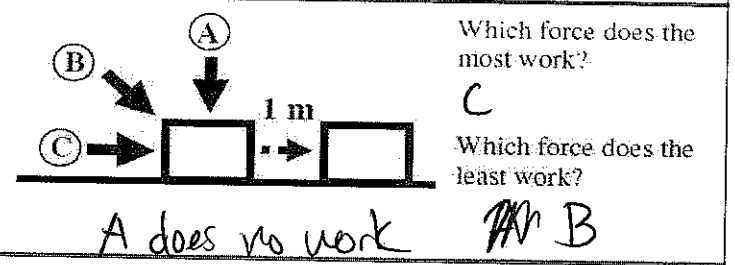
True or False: "An object at rest has potential energy".

*Possibly depending on where the reference, "zero point" is located*

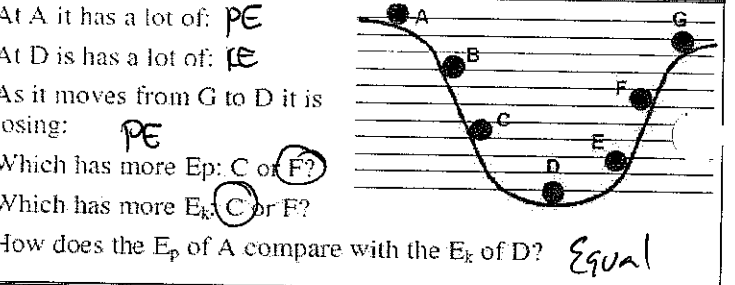
A 4 kg rock is held 2 m above the ground for 3 seconds. How much work was done?

*no movement, no work*

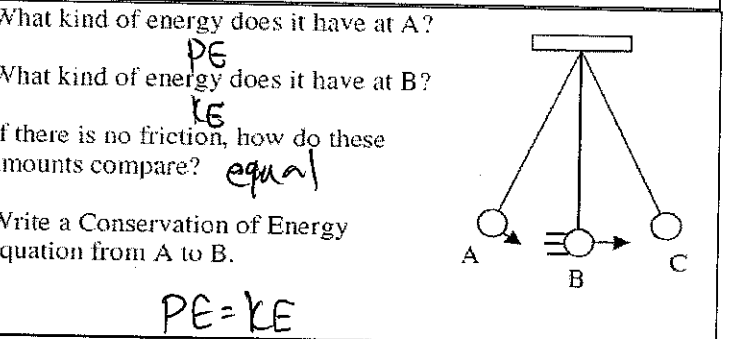
- A 8 kg cart is rolling 5 m/s. Calculate its kinetic energy.
- $KE = \frac{1}{2}mv^2$
- $m = 8\text{ kg}$   
 $v = 5\text{ m/s}$
- $KE = \frac{1}{2} \cdot 8\text{ kg} \cdot (5\text{ m/s})^2$
- $KE = 100\text{ J}$
- A rock is pushed 4 meters by a 10 N force.
- A) How much work was done?  $W = F \cdot d$
- $F = 10\text{ N}$   
 $d = 4\text{ m}$
- $W = 10\text{ N} \cdot 4\text{ m}$
- $W = 40\text{ J}$
- B) If done in 5 seconds, how much power was used?
- $w = 40\text{ J}$   
 $t = 5\text{ sec}$
- $P = \frac{W}{t}$
- $P = \frac{40\text{ J}}{5\text{ sec}} = 8\text{ Watts}$
- C) If it was pushed on a flat surface, what kind of energy did it gain?
- KE



- A 2 kg rock on a 6 meter ledge has how much potential energy?
- $m = 2\text{ kg}$   
 $h = 6\text{ m}$   
 $g = 10\text{ m/s}^2$
- $PE = mgh$
- $PE = 2\text{ kg} \cdot 10\text{ m/s}^2 \cdot 6\text{ m}$
- $PE = 120\text{ J}$



- How much potential energy does the ball have at the top?
- $m = 3\text{ kg}$   
 $g = 10\text{ m/s}^2$   
 $h = 20\text{ m}$
- $PE = mgh$
- $PE = 3\text{ kg} \cdot 10\text{ m/s}^2 \cdot 20\text{ m}$
- $PE = 600\text{ J}$
- How much  $E_p$  does it have half-way down?
- 300 J
- How much  $E_k$  does it have at the bottom just before it hits?
- 600 J
- Find the velocity of the ball at the bottom.
- $KE = \frac{1}{2}mv^2$
- $m = 3\text{ kg}$   
 $KE = 600\text{ J}$
- $v = \sqrt{\frac{2KE}{m}}$
- $v = \sqrt{\frac{2 \cdot 600\text{ J}}{3\text{ kg}}} = 20\text{ m/s}$
- 



- Light bulb A uses 120 J of energy in 2 seconds. How powerful is the light bulb?
- $w = 120\text{ J}$   
 $t = 2\text{ sec}$
- $P = \frac{W}{t}$
- $P = \frac{120\text{ J}}{2\text{ sec}} = 60\text{ Watts}$
- Light bulb B uses 120 J of energy in 12 seconds. How powerful is the light bulb?
- $w = 120\text{ J}$   
 $t = 12\text{ sec}$
- $P = \frac{W}{t}$
- $P = \frac{120\text{ J}}{12\text{ sec}} = 10\text{ Watts}$
- Which light bulb used more energy? Bulb A + B same energy
- Which light bulb is more powerful? Bulb A
- True or false? Something more powerful can do more work or use more energy.
- they can do the same amount of work, but the more powerful one can do the work faster*