

Name: \_\_\_\_\_ Lastname: \_\_\_\_\_

You are allowed to use your book and notebook to answer these questions about energy.

ACTIVITY 1. Match the items in the left column with the ones in the right column.

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|--|----------------------|
| 1. Energy of motion  | a. Solar Energy      |
| 2. Energy from the Sun   | b. Nuclear Energy    |
| 3. Energy due to the position  | c. Geothermal Energy |
| 4. Energy that is produced by the heat of the Earth                    | d. Potential Energy  |
| 5. $\frac{\text{Potential Energy}}{\text{mass} \cdot \text{height}} =$ | e. Kinetic Energy    |
| 6. Energy derived from the nucleus of the atom                         | f. Heat              |
| 7. Energy that results when a temperature changes occur                | g. gravity           |

ACTIVITY 2: Indicate the kind of energy in each item, kinetic, potential or both.

- A plane in flight at 10000 m \_\_\_\_\_
- Water flowing downstream \_\_\_\_\_
- A child swinging on a swing \_\_\_\_\_
- A bouncing ball \_\_\_\_\_
- A car moving on a plane road \_\_\_\_\_
- A rock at the edge of a cliff \_\_\_\_\_

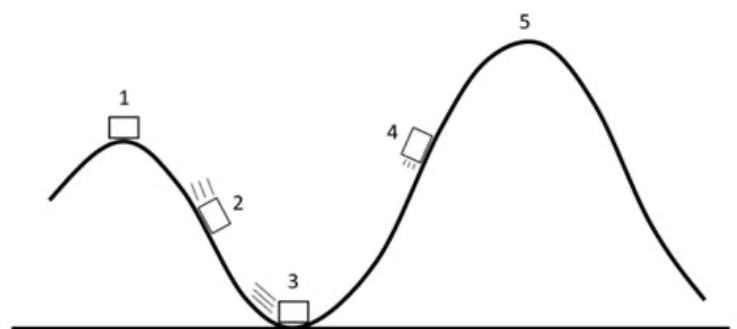
ACTIVITY 3: Calculations. When needed use  $g = 10 \text{ N/kg}$ 

- Calculate the kinetic energy of a bullet of 10 g moving at a speed of 300 m/s.
- If the speed of a ball is doubled, what would be the increase of kinetic energy?
- If the height of an object were to triple, what would be the increase of potential energy?

- d) Calculate the potential energy of a man of 75 kg that is at the top of a 6m high ladder.
- e) A car of 1200 kg has a kinetic energy of 375 000 J. Calculate its speed.
- f) A moving 20 kg object has 160J of kinetic energy. What is its velocity?
- g) Is the expression "the bigger they are, the harder they fall", a generally true statement since, in the absence of air resistance, all the objects fall with the same acceleration due to gravity? Explain your answer.

ACTIVITY 4: About the following roller coaster:

- a) Indicate the point where the kinetic energy is higher.
- b) Indicate the kind of energy that the object will have at 4.
- c) If the kinetic energy in 1 is 0, will the object reach 5?



- d) If the height at 5 is 20m, and the mass of the object is 250 kg, calculate its potential energy.
- e) Use the result of the previous question to calculate the speed in 3.