

**SUMMATIVE ASSESSMENT**  
**FACTORS AFFECTING KINETIC AND POTENTIAL ENERGY**  
**NEWTON SCHOOL OF BRIGHT MINDS INC.**  
SIR MIKE ANGELO A. ALOBA  
S.Y. 2021-2022

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

GRADE & SECTION: \_\_\_\_\_ SCORE: \_\_\_\_\_/20

**I. MULTIPLE CHOICE.** Read each item carefully. Encircle the letter of the correct answer.

\_\_\_\_\_ 1. Which of the following quantities has the greatest influence on the amount of kinetic energy of a car while traveling on a highway?

- A. mass
- B. size
- C. speed
- D. weight

\_\_\_\_\_ 2. Which of the following pairs of quantities are the factors that affect kinetic energy?

- A. force and distance
- B. mass and height
- C. mass and speed
- D. time and height

\_\_\_\_\_ 3. Which of the following does not affect the amount of potential energy of an object?

- A. mass
- B. speed
- C. height or location
- D. strength of gravity

\_\_\_\_\_ 4. The following applies the concept of potential energy EXCEPT:

- A. water in a dam
- B. a person playing the guitar
- C. a rock sitting at the edge of a cliff
- D. tree branches high up in a tree

\_\_\_\_\_5. Which of the following does not affect the amount of potential energy of an object?

- A. mass
- B. speed
- C. height or location
- D. strength of gravity

\_\_\_\_\_6. What happens to the kinetic energy of an object if its speed is doubled?

- A. twice as much
- B. thrice as much
- C. increases four times
- D. decreases four times

\_\_\_\_\_7. Which of the following statements is TRUE about potential energy?

- A. It is dependent on the speed of an object.
- B. It does not depend on the mass of the object.
- C. It does not depend on the strength of gravity.
- D. It is affected by the mass and location of an object with respect to the ground.

\_\_\_\_\_8. An object from a certain height falls freely. Which of the following happens to PE and KE when the object is half on its way down?

- A. loses PE and gains KE
- B. gains PE and loses KE
- C. loses both PE and KE
- D. gains both PE and KE

\_\_\_\_\_9. How do you compare the PE of the moving object at the highest point compared to its KE?

- A. PE is greater than KE
- B. PE is equal to KE
- C. PE is lesser than KE
- D. KE is greater than PE

\_\_\_\_\_10. Which of the following does not demonstrate potential energy?

- A. a bullet fired from a gun
- B. a child at the top of a slide
- C. a car parked at the top of a hill
- D. river water at the top of a waterfall

II. **FACT OR BLUFF.** Read the following statements carefully and write **FACT** if it is true and **BLUFF** if it is false on the blank provided before each number.

\_\_\_\_\_ 11.) The rolling boulder crashing down the mountain is an example of potential energy.

\_\_\_\_\_ 12.) Mass and velocity are the factors that can affect kinetic energy of an object while only the height of the object can affect the potential energy.

\_\_\_\_\_ 13.) If you stretch a rubber band and then release it, that is an example of kinetic energy.

**For items 14 and 15. Write your answer in no more than 2-3 sentences per each question on the space provided.**

14. Why is it important to know the factors that affect kinetic and potential energy? Give at least one importance (4 points).

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15. How do Kinetic Energy and Potential Energy apply to everyday life? Give at least one example (3 points).

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**Rubrics for Grading (for items 14 and 15):**

- The concepts were used and applied accurately, with no grammatical error and with sophisticated connections with relevant concepts **(3 points)**
- Some concepts were used accurately, with 1-2 grammatical errors and has limited connections with relevant concepts **(2 points)**
- Only one concept was used accurately, with 3-5 grammatical errors and has limited to no connections with relevant concepts **(1 point)**

**Table of Specification for Summative Assessment**

| Topic   | Learning Outcomes   | Number of Items | Type of Test    | Item Location |
|---|---|-----------------|-----------------|---------------|
| <b>Factors that Affect Potential and Kinetic Energy</b> | Identify the factors that affect potential and kinetic energy.                            | 5               | Multiple Choice | 1             |
|   |   |                 |                 | 2             |
|   |   |                 |                 | 3             |
|   |   |                 |                 | 5             |
|   |   |                 |                 | 10            |
|   |   | 3               | True or False   | 11            |
|   |   |                 |                 | 12            |
|   |   |                 |                 | 13            |
|   | Explain the factors that affect potential and kinetic energy.                             | 5               | Multiple Choice | 4             |
|   |   |                 |                 | 6             |
|   |   |                 |                 | 7             |
|   |   |                 |                 | 8             |
|   |   |                 |                 | 9             |
|   | Recognize the importance of knowing the factors that affect potential and kinetic energy. | 2               | Essay           | 14            |
|   |   |                 |                 | 15            |

**ANSWER KEY:**

1. C
2. C
3. B
4. B
5. B
6. A
7. D

8. A
9. A
10. A
11. BLUFF
12. BLUFF
13. FACT
14. Answers may vary
15. Answers may vary

**FORMATIVE ACTIVITIES ON FACTORS AFFECTING KINETIC AND POTENTIAL ENERGY**  
**NEWTON SCHOOL OF BRIGHT MINDS INC.**

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S.Y. 2021-2022

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***Assessment for Learning***

**Activity No. 1: Anything Unclear?**

Write one or two points about the factors affecting kinetic and potential energy (in 3 to 5 sentences) that are not clear to you. (5 points)

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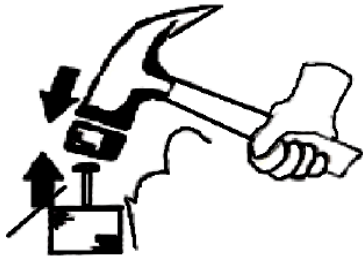
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### Activity No. 2: What Have I Learned?

Analyze the picture below. Determine if it shows potential or kinetic energy. Write **POTENTIAL** if the situation is an example of potential energy and **KINETIC** if not below each sentence. Write your 1-sentence justification. (2pts each)



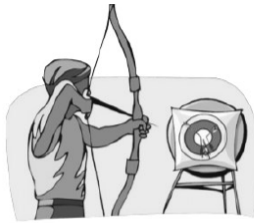
1. pushing the hammer into the nail

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2. a boy walking in the street

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3. the man holds the bow and arrow

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4. the arrow approaching the dart board

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## Assessment As Learning

**PERFORMANCE ASSESSMENT**  
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**INSTRUCTION:** Write an 500-word essay about the situation given below. Be sure to be guided by the rubrics.

***Consider a roller coaster ride at an amusement park.*** How does the concept of kinetic and potential energy apply to the roller coaster's motion throughout the ride? In your answer, explain how the kinetic and potential energy of the roller coaster changes at different points in the ride, and describe how these changes in energy can affect the experience of the riders. Be sure to provide specific examples and consider any safety measures that may be in place to ensure the roller coaster's safe operation.

Your essay will be graded based on this rubric. Consequently, use this rubric as a guide when writing your essay and check it again before you submit your essay:

| Areas                    | 4   | 3  | 2   | 1   |
|--------------------------|---|--|---|---|
| <b>Focus and Details</b> | There is one clear, well focused topic. Main ideas are clear and are well supported by detailed and accurate information.   | There is one clear, well focused topic. Main ideas are clear but are not well supported by detailed information.                                     | There is one topic. Main ideas are somewhat clear.  | The topic and main ideas are not clear.                   |
| <b>Organization</b>      | The introduction is inviting, states the main topic, and provides an overview of the paper. Information is relevant and presented in a logical order. The conclusion is strong. | The introduction states the main topic and provides an overview of the paper. A conclusion is included.  | The introduction states the main topic. A conclusion is included.   | There is no clear introduction, structure, or conclusion. |
| <b>Purpose</b>           | The author's purpose of writing is very clear, and there is strong evidence of attention to the audience. The author's extensive knowledge and/or experience with the           | The author's purpose of writing is somewhat clear, and there is some evidence of attention to the audience. The author's knowledge and/or experience | The author's purpose of writing is somewhat clear, and there is evidence of attention to the audience. The author's knowledge and/or experience with the topic is/are | The author's purpose of writing is unclear.               |



|   |   |   |   |   |
|---|---|---|---|---|
|   | topic is/are evident.   | with the topic is/are evident.  | limited.  |   |
| <b>Word Choice</b>  | The author uses vivid words and phrases. The choice and placement of words seems accurate, natural, and not forced.                         | The author uses vivid words and phrases. The choice and placement of words is inaccurate at times and/or seems overdone.  | The author uses words that communicate clearly, but the writing lacks variety.  | The writer uses a limited vocabulary. Jargon or clichés may be present and detract from the meaning.  |
| <b>Sentence, structure, grammar, mechanics and spelling</b> | All sentences are well constructed and have varied structure and length. The author makes no errors in grammar, mechanics, and/or spelling. | Most sentences are well constructed and have varied structure and length. The author makes a few errors in grammar, mechanics, and/or spelling, but they do not interfere with understanding. | Most sentences are well constructed, but they have a similar structure and/or length. The author makes several errors in grammar, mechanics, and/or spelling that interfere with understanding. | Sentences sound awkward, are distractingly repetitive, or are difficult to understand. The author makes numerous errors in grammar, mechanics, and/or spelling that interfere with understanding. |
| <b>Teacher's Comment</b>                                    |   |   |   |   |