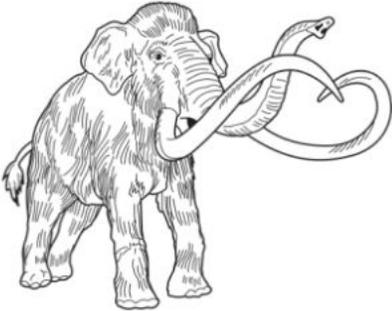


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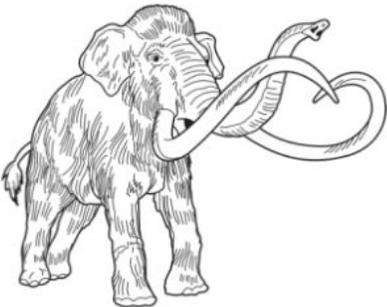
## **UNIT 1 EXAM**

1. An extinct (no longer living) animal called a mammoth is shown below. Which statement is an INFERENCE about the mammoth? [1]



- (1) the mammoth's tusks are curved and pointed
- (2) the mammoth stands on four legs
- (3) the mammoth's tusks might have been used for protection
- (4) the mammoth has two tusks

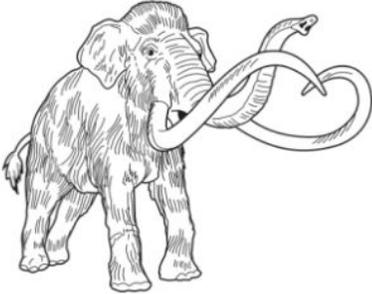
2. An extinct (no longer living) animal called a mammoth is shown below. Which statement is a qualitative observation about the mammoth? [1]



- (1) the mammoth's tusks are curved and pointed
- (2) the mammoth stands on four legs
- (3) the mammoth's tusks might have been used for protection
- (4) the mammoth has two tusks

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3. An extinct (no longer living) animal called a mammoth is shown below. Which statement is a quantitative observation about the mammoth? [1]



- (1) the mammoth's tusks are curved and pointed
- (2) the mammoth stands on four legs
- (3) the mammoth's tusks might have been used for protection
- (4) the mammoth's body is covered in hair

4. Which statement is a qualitative observation? [1]

- (1) the plant will grow berries
- (2) the plant is very pretty
- (3) the plant is poisonous
- (4) the plant has purple flowers

5. Which statement is a quantitative observation? [1]

- (1) Ms. Shepard's caramel macchiato is iced.
- (2) The volume of Ms. Shepard's caramel macchiato is 12 ounces.
- (3) Ms. Shepard thinks the grande caramel macchiato tastes bad because the ratio of ingredients isn't correct.
- (4) Ms. Shepard's caramel macchiato is brown and white.

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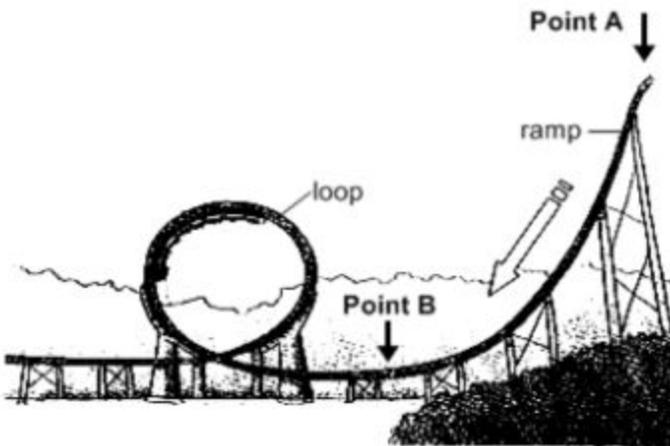
6. Which statement is an inference? [1]

- (1) It is 6:45 pm.
- (2) Since it is getting darker, the sun must be setting.
- (3) The sky is turning orange.
- (4) The temperature is slowly decreasing.

7. Which statement best describes the energy changes that occur while a child is riding on a sled DOWN a steep, snow-covered hill? \* [1]

- (1) Kinetic energy decreases and potential energy increases.
- (2) Kinetic energy increases and potential energy decreases.
- (3) Both potential energy and kinetic energy decrease.
- (4) Both potential energy and kinetic energy increase.

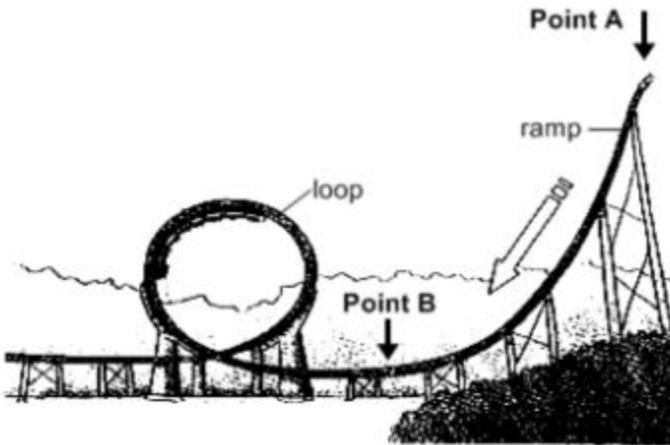
8. At which location on the roller coaster is POTENTIAL energy the highest? \* [1]



- (1) Point A
- (2) Point B
- (3) Halfway between Point A and Point B
- (4) This information cannot be obtained from this diagram

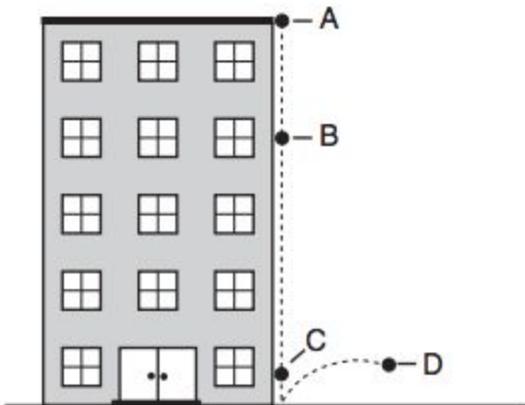
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9. At which location on the roller coaster is KINETIC energy the highest? \* [1]



- (1) Point A
- (2) Point B
- (3) Halfway between Point A and Point B
- (4) This information cannot be obtained from this diagram

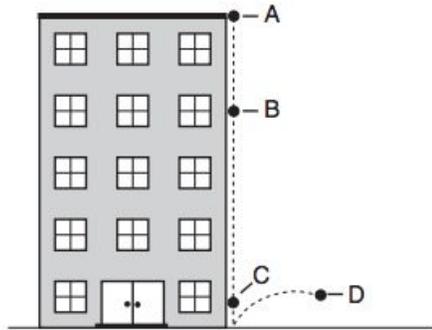
10. A ball is dropped from the roof of a building. Points A, B, C, and D in the diagram represent positions of the ball as it falls. At which position will the ball have the GREATEST KINETIC energy? \* [1]



- (1) A
- (2) B
- (3) C
- (4) D

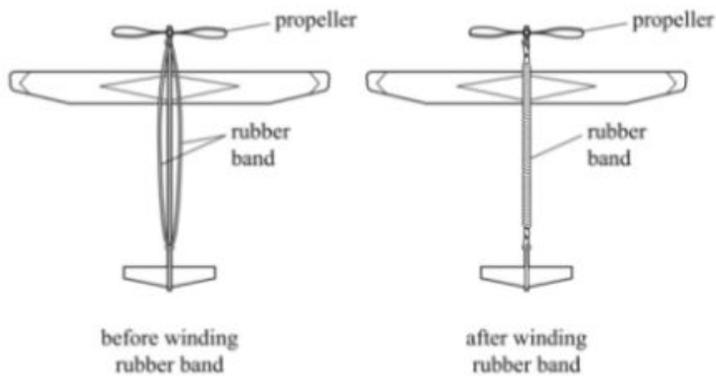
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11. A ball is dropped from the roof of a building. Points A, B, C, and D in the diagram represent positions of the ball as it falls. At which position will the ball have the GREATEST POTENTIAL energy? \* [1]



- (1) A
- (2) B
- (3) C
- (4) D

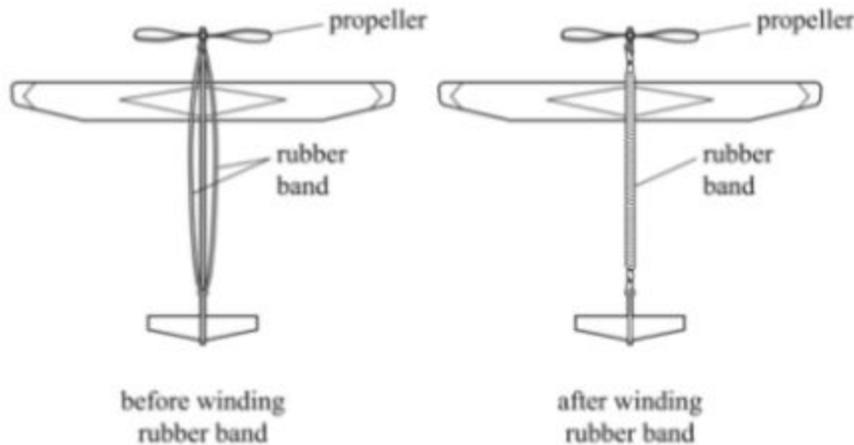
12. The diagram below shows a model airplane. Which type of energy is stored in the rubber band when it is turned? \* [1]



- (1) Thermal energy
- (2) Kinetic energy
- (3) Chemical energy
- (4) Potential energy

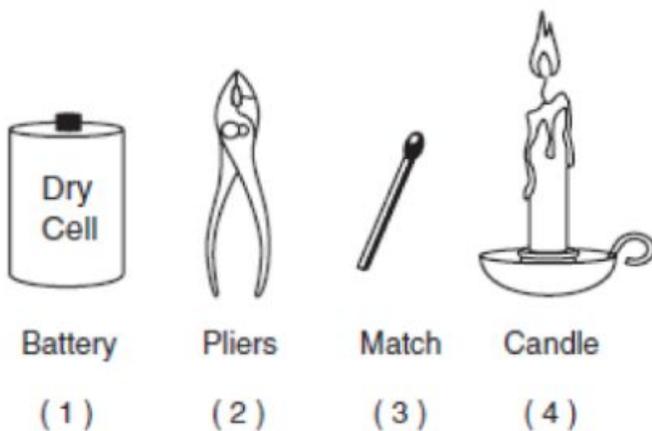
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13. The diagram below shows a model airplane. Which energy transformation occurs in a rubber band powered model airplane when it is flown? \* [1]



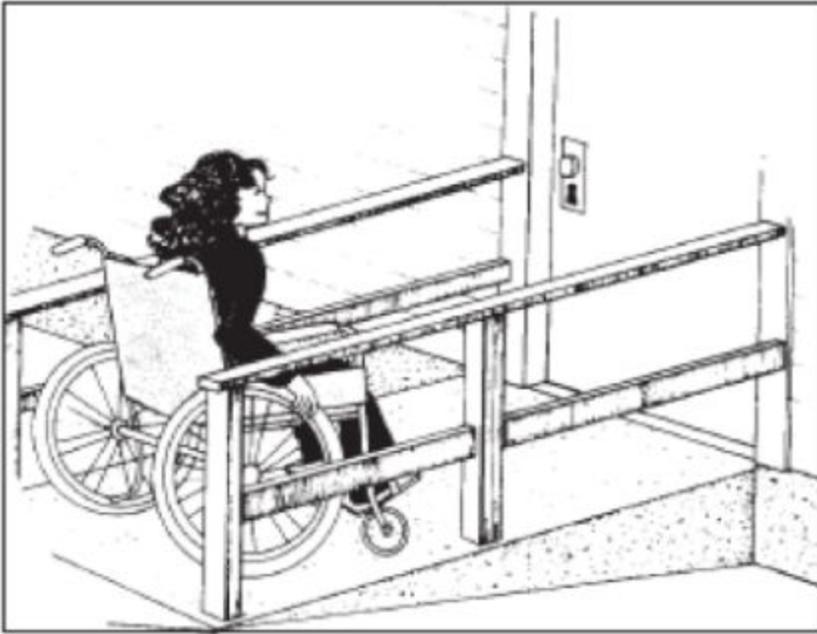
- (1) Thermal energy stored in the rubber band is transformed into chemical energy used by the propeller.
- (2) Potential energy stored in the rubber band is transformed into mechanical energy used by the propeller.
- (3) Kinetic energy stored in the rubber band is transformed into thermal energy used by the propeller.
- (4) Chemical energy stored in the rubber band is transformed into potential energy used by the propeller.

14. Look at the objects in the diagram below. Which object represents a simple machine? \* [1]



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15. The diagram above shows a student approaching the door to a building. Which two simple machines are being used to enable the student to reach the door? \* [1]



- (1) inclined plane and pulley
- (2) lever and wheel-and-axle
- (3) pulley and lever
- (4) wheel-and-axle and inclined plane

16. Which Simple Machines are in the Scissor? \* [1]



- (1) Screw, Lever, and Wedge
- (2) Wheel and Axle, Pulley and inclined plane
- (3) Wheel and Axle, Lever, Screw, and Inclined plane
- (4) Pulley and Lever

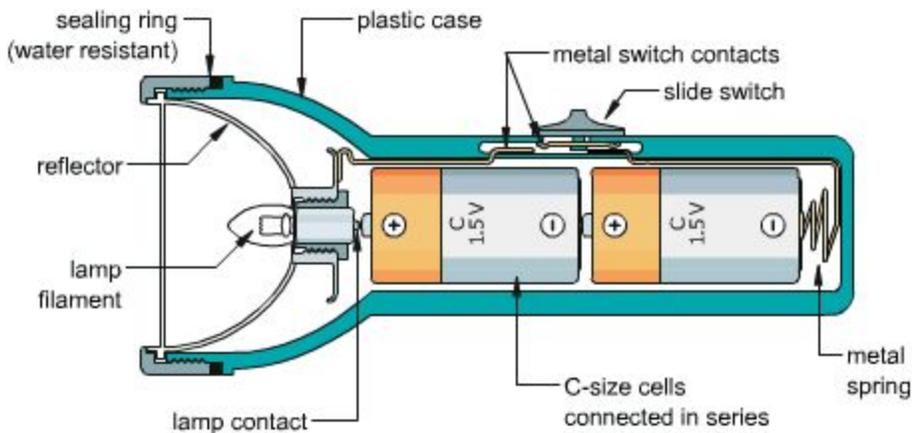
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17. Why is the scissor classified as a compound/complex machine? \* [1]



- (1) The scissor makes cutting paper easier for the person using it.
- (2) The scissor is made up of two or more simple machines.
- (3) The scissor has moving parts.
- (4) The scissor is a machine.

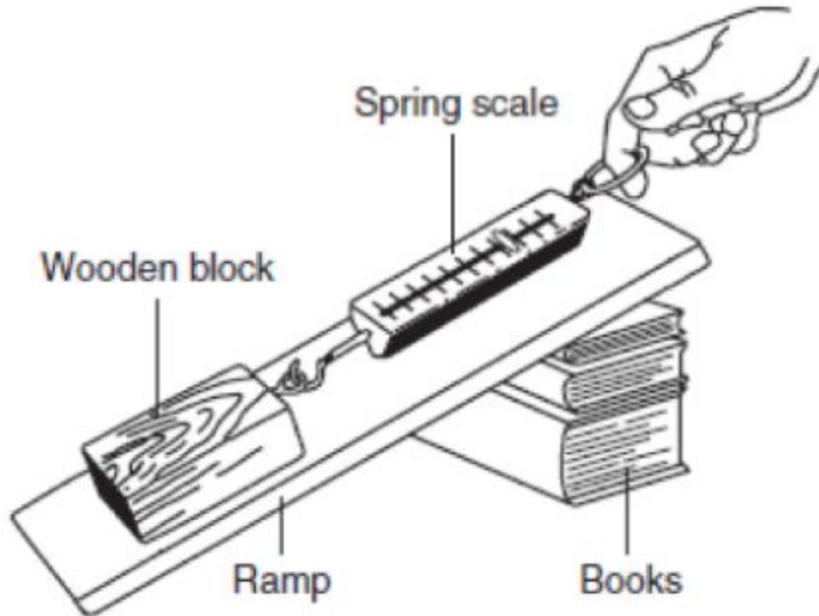
18. Which sequence of energy transformations occurs after a battery-operated flashlight is turned on? \* [1]



- (1) electrical --> light --> chemical
- (2) electrical --> chemical --> light
- (3) chemical --> light --> electrical
- (4) chemical --> electrical --> light

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19. The diagram below shows a student using a spring scale to pull a wooden block up a ramp that is resting on a stack of books. Which change would cause more friction and require more force to pull the wooden block up the ramp? \* [1]



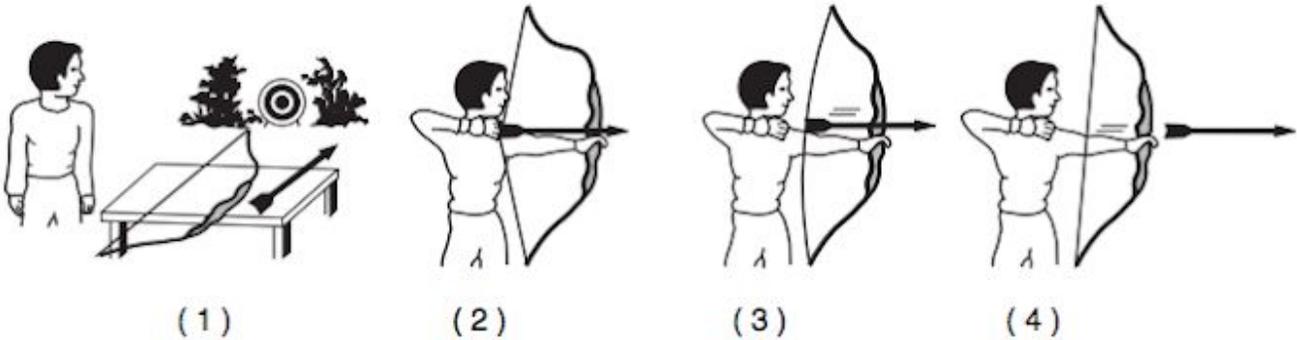
- (1) have the student use two hands.
- (2) reduce the mass of the wooden block.
- (3) Restack the books so the thinnest book is on the bottom.
- (4) Glue sandpaper to the surface of the ramp.

20. Which word best completes the blank? The wheels and gears of a machine are greased (made more slippery) in order to DECREASE \_\_\_\_\_. \* [1]

- (1) potential energy
- (2) efficiency
- (3) output
- (4) friction

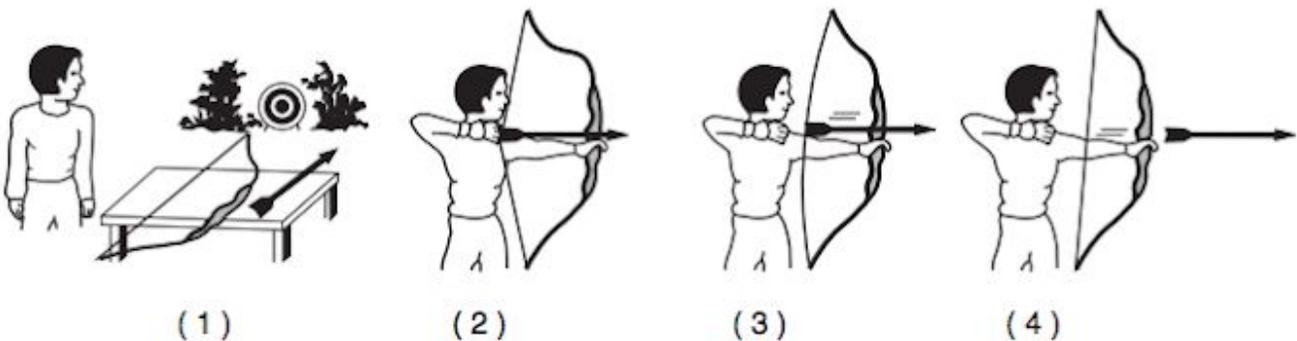
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21. A person uses a bow to shoot an arrow at a target. In which diagram does the bow and arrow have the GREATEST amount of POTENTIAL energy? \* [1]



22. How could a person shooting a bow and arrow INCREASE the amount of kinetic energy in the arrow? Describe ONE thing the person can do to the bow. \*

*Please write your response in a full sentence. Your response will be scored with the following rubric: 2: complete sentence, fully correct response 1: complete sentence, partially incorrect response OR not a complete sentence, correct response 0: fully incorrect response [2]*



Please record your answer in the space provided on your paper answer sheet.

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23. Which of the following is a CLAIM a student could make based on the data you collected during the ball and ramp task? \*

*Please refer to your ball and ramp task data to answer this question. [1]*

- (1) There is no pattern in the data I collected.
- (2) I claim that we dropped the ball down the ramp 3 times at 4 different points of the ruler.
- (3) As you decrease the release point of the small bouncy ball, the distance the ball travels also decreases.
- (4) As you increase the release point of the small bouncy ball, the distance the ball travels decreases.

24. Which of the following is relevant EVIDENCE a student could provide to support the claim you selected in question 23? \*

*Please refer to your ball and ramp task data to answer this question.*

- (1) 6, 13, 12, 4
- (2) As you decrease the release point of the small bouncy ball, the distance the ball travels also decreases.
- (3) When we dropped the ball from 30 cm, it traveled to an average of 5.5 cm. When we dropped the ball from 26 cm, it traveled to an average of 4.2 cm. When we dropped the ball from 22 cm, it traveled to an average of 3.8 cm. When we dropped the ball from 18 cm, it traveled an average of 3.5 cm.
- (4) As you increase the release point of the small bouncy ball, the distance the ball travels decreases.

25. Which of the following are relevant CONCEPTS a student could provide to support the claim you selected in question 23 and the evidence you selected in question 24? \*

*Please refer to your ball and ramp task data to answer this question. [1]*

- (1) energy
- (2) friction and light energy
- (3) open circuit and closed circuit
- (4) potential energy and kinetic energy

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26. Describe at least TWO energy transformations that happen when you complete the circuit of an energy ball. (Your response should include at least THREE types of energy (energy 1 --> energy 2 --> energy 3)) \*

*Please write your response in a full sentence. Your response will be scored with the following rubric: 2: complete sentence, fully correct response 1: complete sentence, partially incorrect response OR not a complete sentence, correct response 0: fully incorrect response [2]*

*Please record your answer in the space provided on your paper answer sheet.*

27. In order to increase the potential energy of a ball or marble, describe at least ONE change you would need to make to the object either bounce higher, or complete a loop of a roller coaster with more success. \*

*Please write your response in a full sentence. Your response will be scored with the following rubric: 2: complete sentence, fully correct response 1: complete sentence, partially incorrect response OR not a complete sentence, correct response 0: fully incorrect response [2]*

*Please record your answer in the space provided on your paper answer sheet.*