

Dear Students, Please do not write on me. Thank you. Sincerely, your Exam

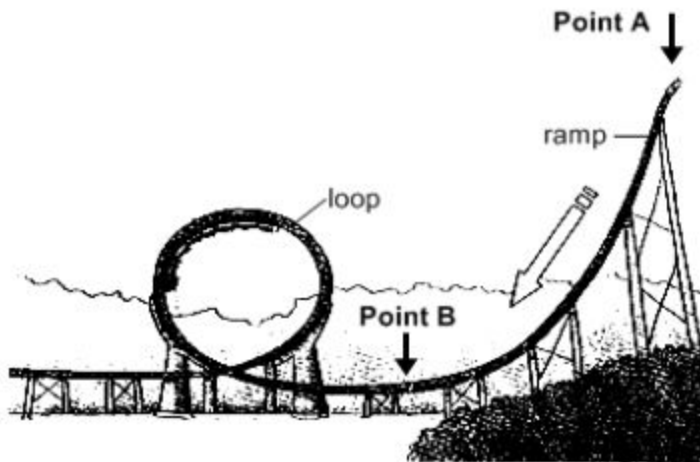
UNIT 1 EXAM

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

1 point

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

Diagram for Q #2



2. At which location on the roller coaster is potential energy the highest? *

1 point

- (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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3. 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 point

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

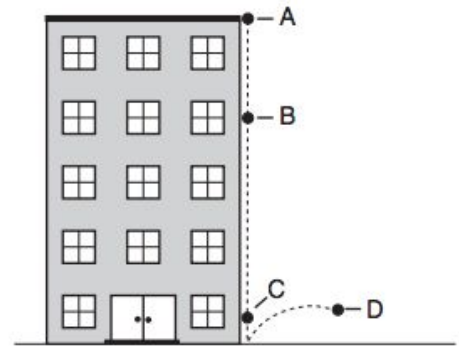
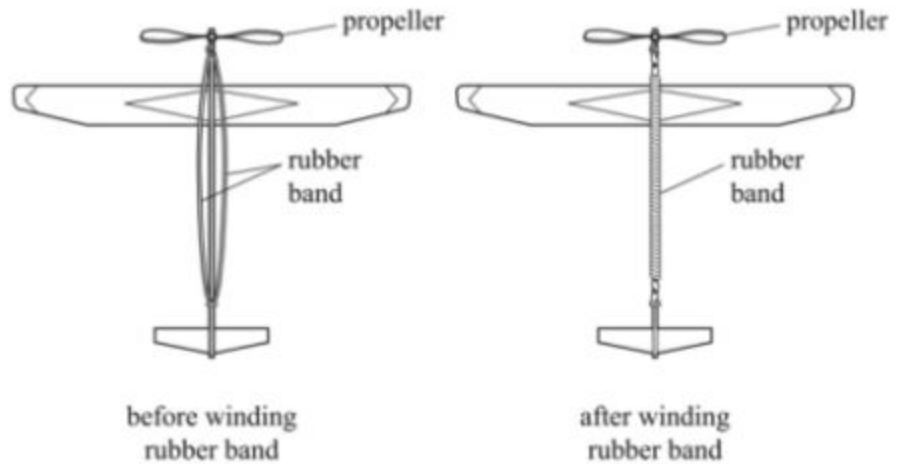


Diagram for Q #4 & 5

4. The diagram to the right shows a model airplane. Which energy transformation occurs in a rubber band powered model airplane when it is flown? *

1 point



- (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.

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5. The diagram above shows a model airplane. Which type of energy is stored in the rubber band when it is turned? * (See question 4 on the previous page!)

1 point

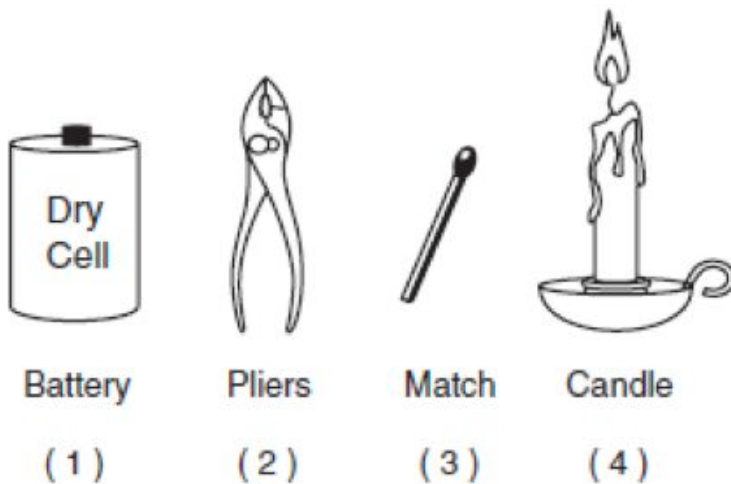
- (1) Potential energy
- (2) Thermal energy
- (3) Kinetic energy
- (4) Chemical energy

6. Which sequence of energy transformations occurs after a battery-operated flashlight is turned on? *

1 point

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

Diagram for Q #7



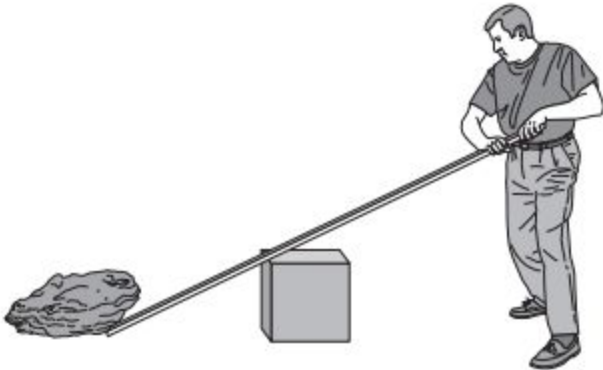
7. Look at the objects in the diagram above. Which object represents a simple machine? *

1 point

- (1)
- (2)
- (3)
- (4)

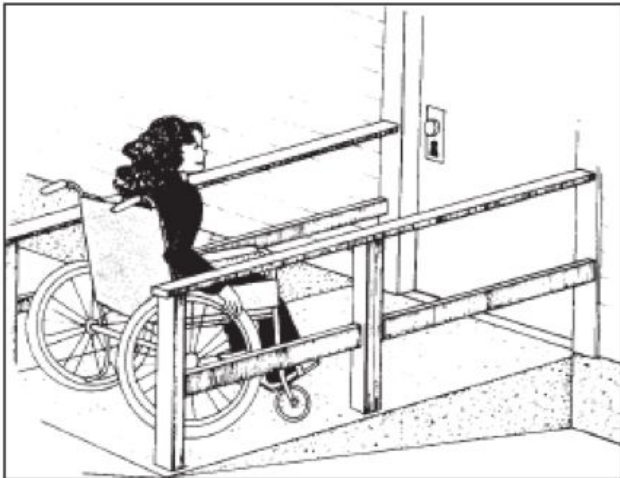
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8. The diagram below represents a person using a lever. The person applies force to the lever to change the rock's *
1 point



- (1) flexibility
- (2) weight
- (3) size
- (4) position (location)

Diagram for Q #9



9. 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? *

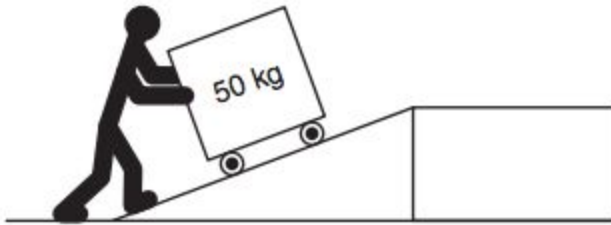
1 point

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

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10. The diagram below represents a person pushing a box up a ramp. Which two simple machines are being used in the diagram? *

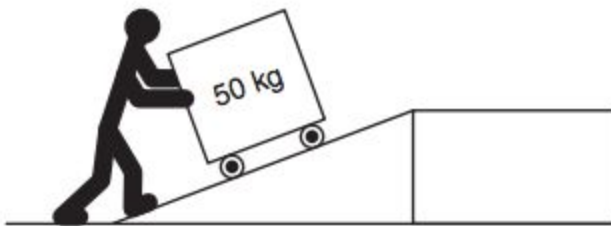
1 point



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

11. Which force will DECREASE if the surface of the ramp is made smoother? *

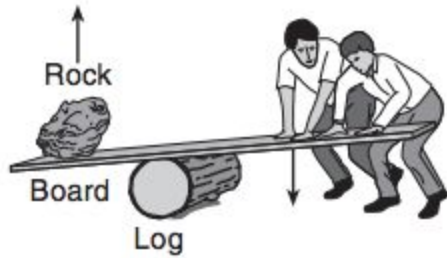
1 point



- (1) gravity
- (2) magnetism
- (3) electricity
- (4) friction

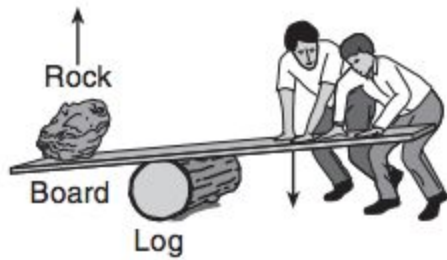
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12. Which force must the people overcome in order to lift the rock? *
1 point



- (1) gravity
- (2) magnetism
- (3) electricity
- (4) friction

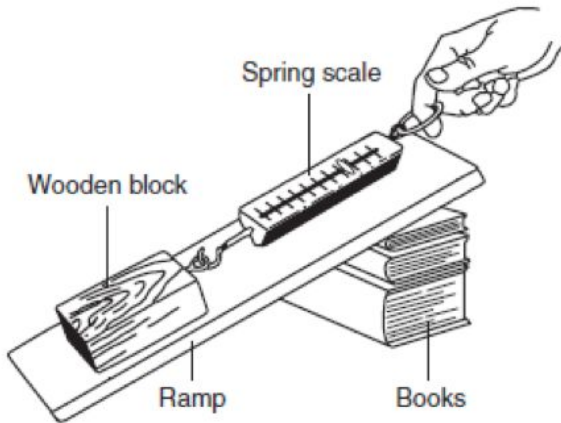
13. Which simple machine did they make using the board and the log? *
1 point



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

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Diagram for Q #14



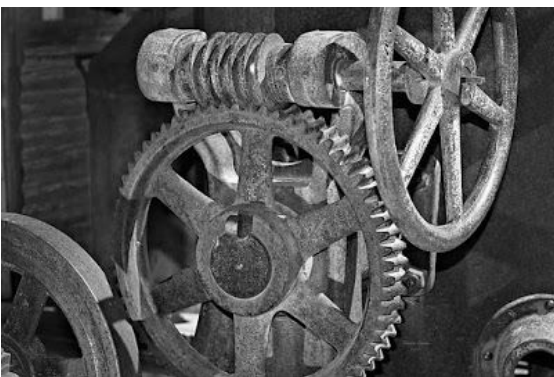
14. The diagram above shows a student using a spring scale to pull a wooden block up a ramp that is resting on a stack of books. Which change would require more force to pull the wooden block up the ramp? *

1 point

- (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.

15. The wheels and gears of a machine are greased in order to DECREASE *

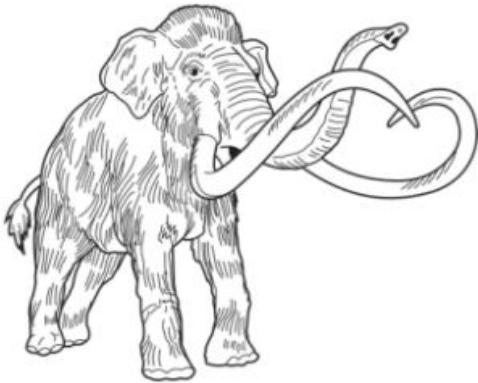
1 point



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

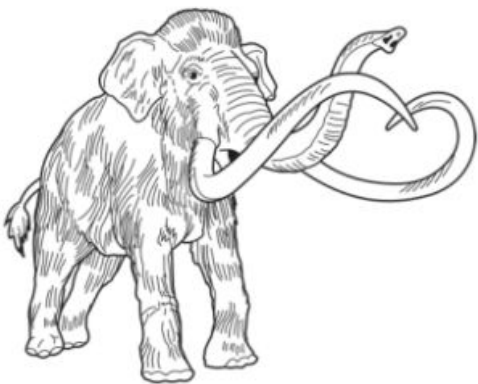
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16. An extinct (no longer living) animal called a mammoth is shown below. Which statement is a quantitative observation about the mammoth? *
1 point



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

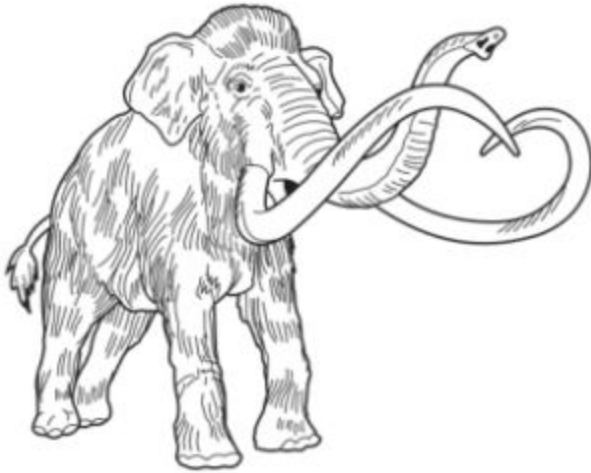
17. An extinct (no longer living) animal called a mammoth is shown below. Which statement is an INFERENCE about the mammoth? *
1 point



- (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

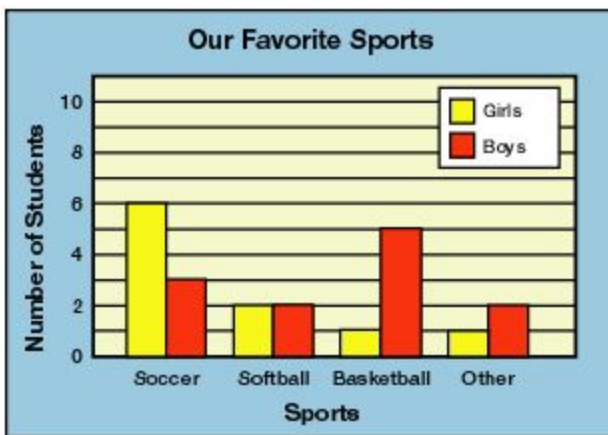
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18. An extinct (no longer living) animal called a mammoth is shown below. Which statement is a qualitative observation about the mammoth? *
1 point



- (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

19. How many girls chose soccer as their favorite sport? *
1 point



- (1) 2
- (2) 6
- (3) 8
- (4) 10

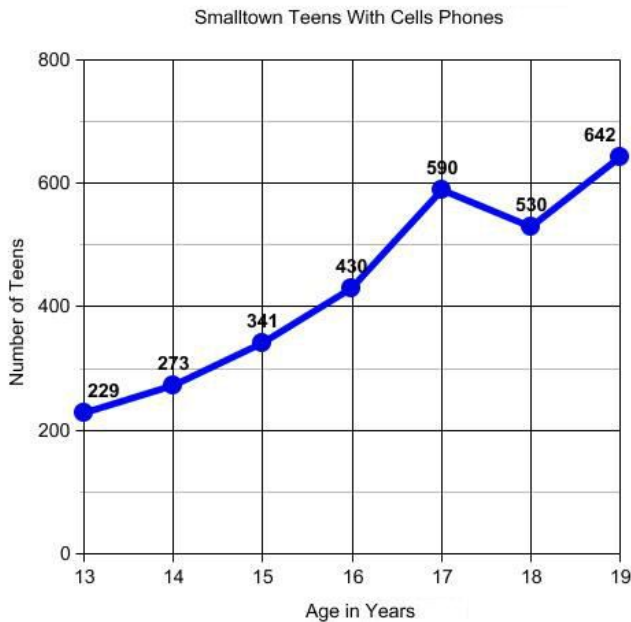
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20. How many boys chose basketball as their favorite sport? *
1 point



- (1) 2
- (2) 6
- (3) 7
- (4) 5

21. How many 16 year olds have a cell phone? (I know there is a typo in the title! Just ignore it!) *
1 point



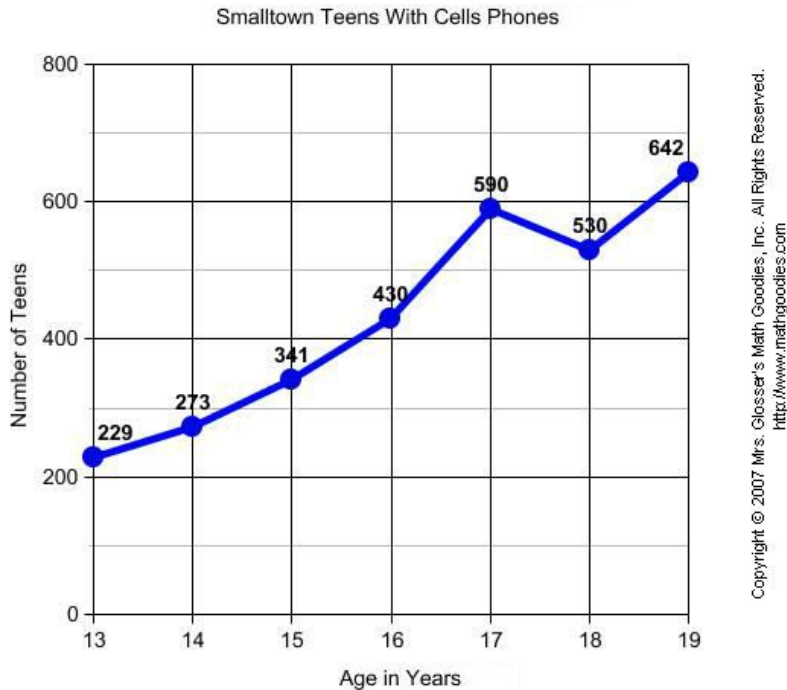
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- (1) 273
- (2) 341
- (3) 430
- (4) 642

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22. Which age has the most number of teens with cell phones? *

1 point



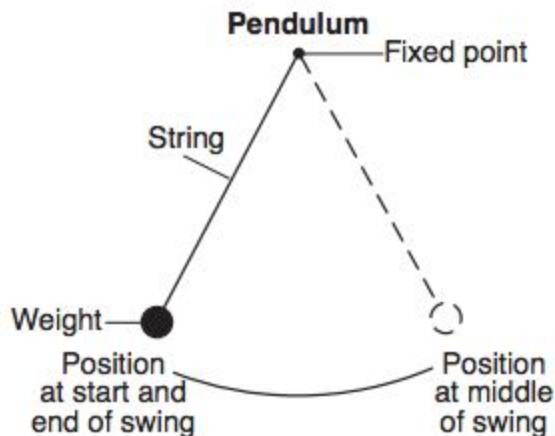
- (1) 19
- (2) 18
- (3) 13
- (4) 15

Text for #23

The diagram represents a pendulum, which is a weight attached by a string to a fixed point and allowed to swing freely back and forth. Eryca, Joseph, Ava and Matthew did an experiment in which they timed, in seconds (s), how long it took for the pendulum to complete one swing (back and forth) for five different string lengths. They changed the length of the rope: 20 cm, 40 cm, 60 cm, 80 cm, 100 cm. They measured the time it took for each rope length to complete one swing. The collected data one time for each rope length. The results are shown in the data table. During their experiment they made sure to keep the type of string the same. They also used the same weight and Ava was the only one to time the pendulum's swing.

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Diagram and data for pendulum experiment



String Length (cm)	Time to Complete One Swing (s)
20	0.9
40	1.3
60	1.6
80	1.8
100	2.0

For Question 23, complete the IDD on your answer sheet.

If you don't have time to type your responses into the iPad, please type ON PAPER in your iPad.

23A. What is the testable question for this experiment? *

1 point

23B. What is the INDEPENDENT VARIABLE for this experiment? *

1 point

23C, D, E, F, G. What are the levels for the INDEPENDENT VARIABLE in this experiment? *

1 point

23H. How many TRIALS were done for this experiment? *

1 point

23I. What is the DEPENDENT variable for this experiment? *

1 point

23J. What is ONE constant variable for this experiment? *

1 point

24. Make a LINE graph on your answer sheet in the space provided. *

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Please type ON PAPER in your iPad since you cannot make a line graph on the form. 5 points