Warm Up

Pull up the test and review the questions you got wrong.

If you did not take the test, you will be taking it during class today so take this time to study and prepare.

What is Kinetic and Potential Energy?

What is ENERGY?

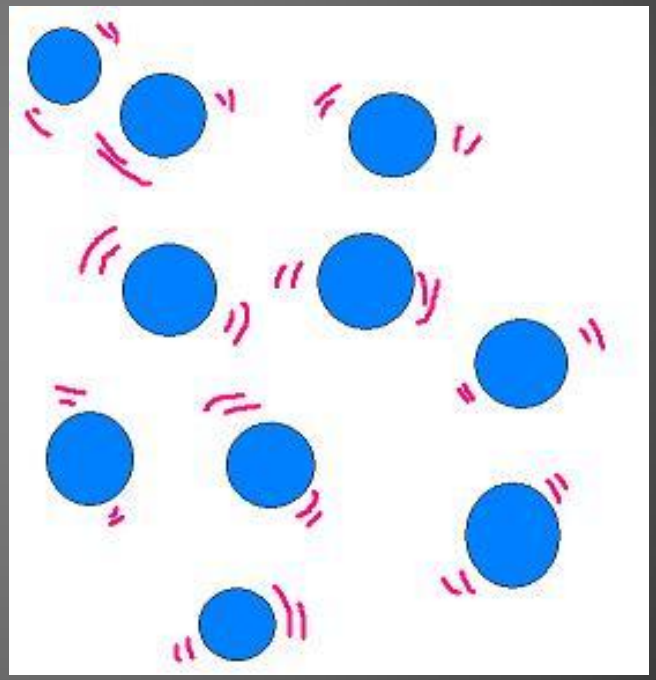
- Energy is the ability to do work.
- Everything that happens in the world uses energy even if we can’t see it.

Law of Conservation of Energy

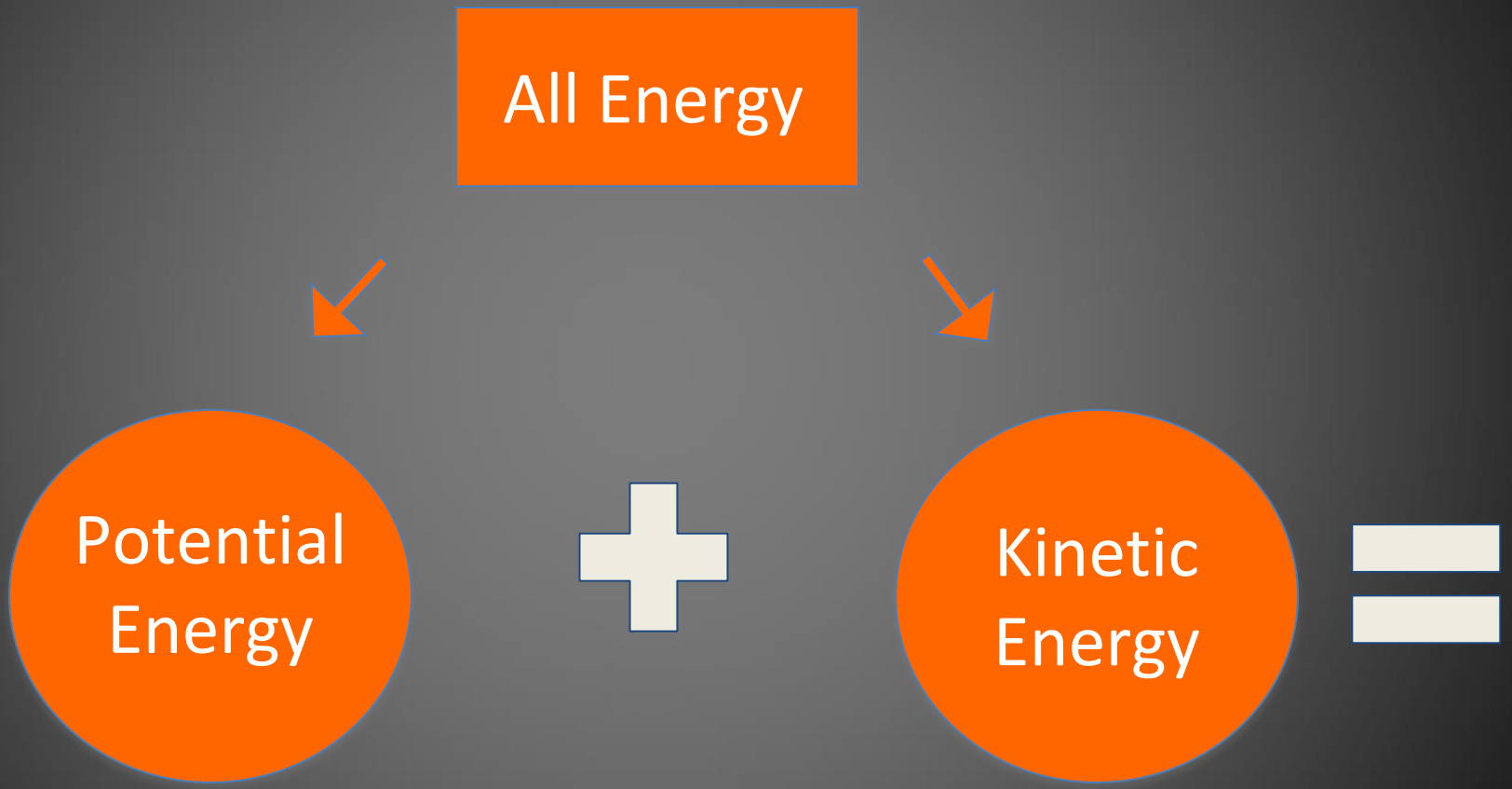
- Energy is NEVER created or destroyed, it is only ever STORED or TRANSFERRED into other forms of energy.

Remember:

ALL matter is made up of particles that NEVER stop moving, this is energy.



How is all energy divided?

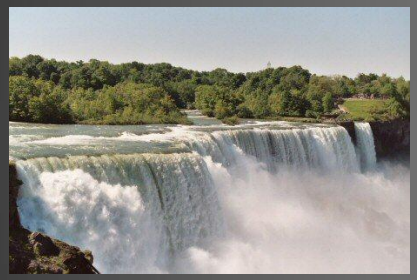


Potential Energy is…

- The energy stored in an object.
- "Potential" simply means the energy has the ability to do something useful later on.

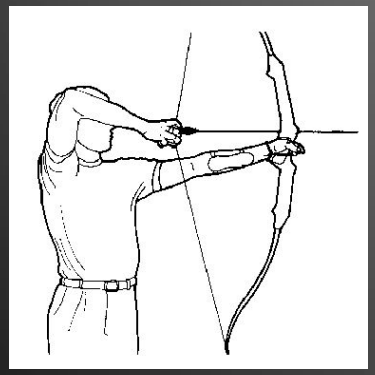
Examples of Potential Energy:

A stretched rubber band..



Water at the top of a waterfall..

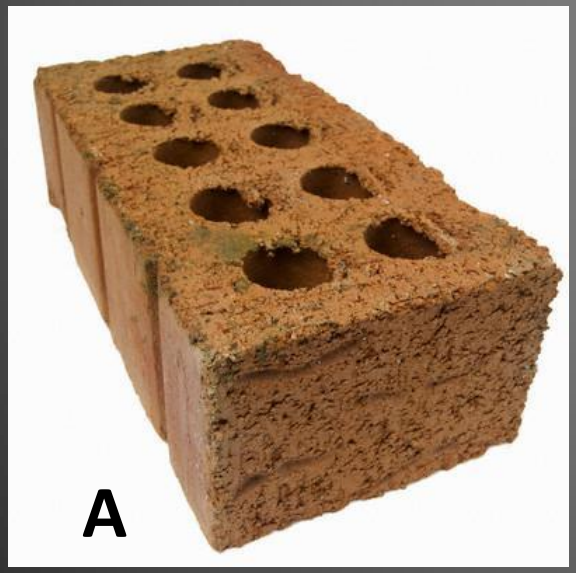
Yo-Yo held in your hand..



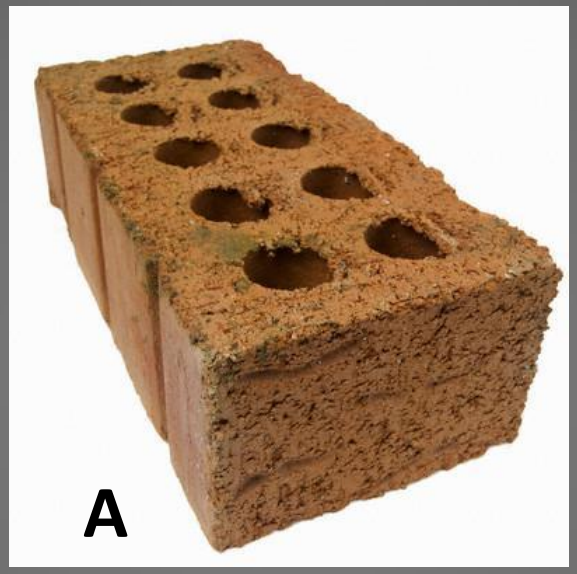
A drawn Bow and Arrow…

- The higher an object or the more mass it has, the more potential energy it has.

Which object has more potential energy?



ANSWER



This brick has more mass than the feather; therefore more potential energy!

Changing an object's height can change its potential energy.

- If I want to drop an apple from the top of one of these three things, where will be the most potential energy?

ANSWER

- The higher the object, the more potential energy!

Potential Energy Converted to Kinetic Energy…

- When an object begins to move, the energy now transfers from potential to kinetic.

Kinetic Energy Is…

- The energy of a moving object.
- "Kinetic" means movement!
- When stored energy is being used up, it is making things move or happen.

Examples of Kinetic Energy:

- The greater the mass and speed of an object, the more kinetic energy there will be.

When these objects move at the same speed, which will have more kinetic energy?

ANSWER

The semi- truck has more mass; therefore, more kinetic energy!

- An object has the MOST kinetic energy when it’s movement is the GREATEST.

- An object has the LEAST potential energy, it has the MOST kinetic energy.

A water bottle is knocked off a desk. When does the bottle have the MOST kinetic energy?

A. At the top of the fall.

B. In the middle of the fall.

C. At the bottom of the fall.

- C. At the bottom of the fall.

- It has the most kinetic energy when its movement and speed are greatest, which is at the bottom of the fall right before it hits the ground.

- When an object has the LEAST potential energy is when it has the MOST kinetic energy.

BrainPop

Roller Coasters

- When does the train on this roller coaster have the MOST potential energy?

- AT THE VERY TOP!

- The HIGHER the train is lifted by the motor, the MORE potential energy is produced.

- At the top of the hill the train has a huge amount of potential energy, but it has very little kinetic energy.

- As the train accelerates down the hill the potential energy is converted into kinetic energy.

- There is very little potential energy at the bottom of the hill, but there is a great amount of kinetic energy.

- When does the train on this roller coaster have the MOST kinetic energy?

(When is it moving the fastest?)

(When does it have the LEAST potential energy???)

- At the bottom of the tallest hill!

- Animated Roller Coaster

Notes

- All energy is divided into two types: potential and kinetic.
- **Potential Energy:** The energy stored in an object.

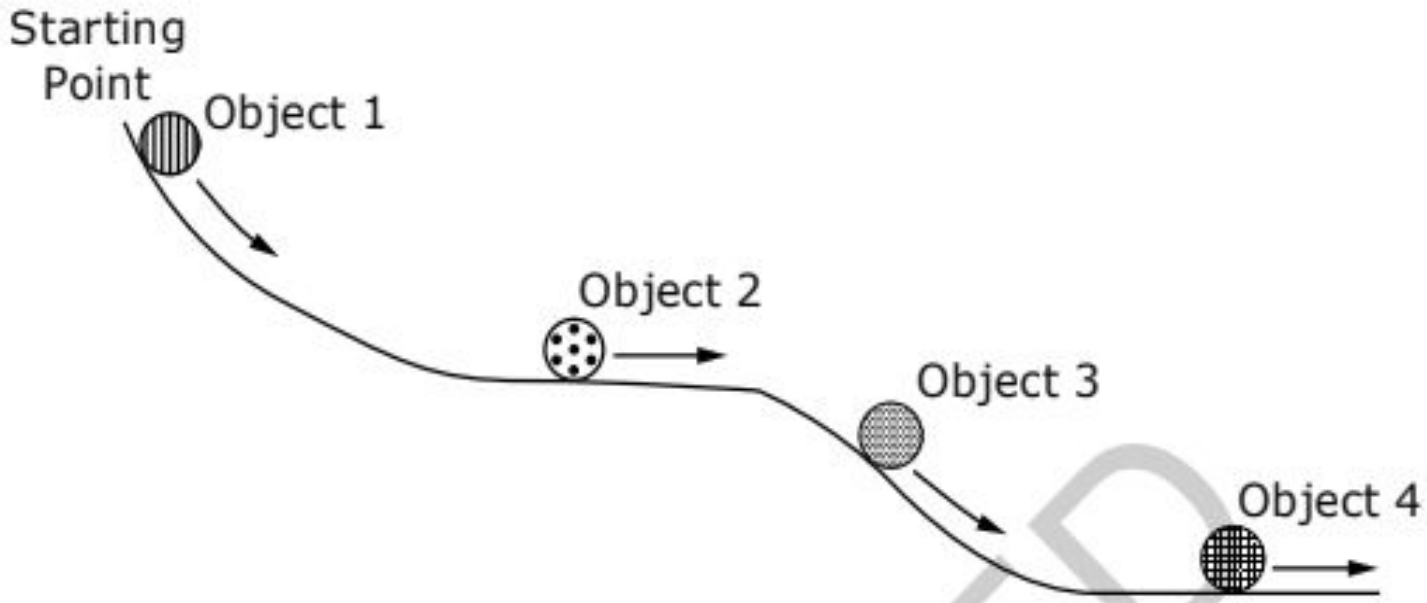
- **Kinetic Energy:** The energy of a moving object.

- Energy is never created or destroyed. It is always stored or transferred.

Review

Quizlet

16 The diagram below shows four different objects that all start at the same place and move along the same path.



Which ***best*** describes the motion of these objects?

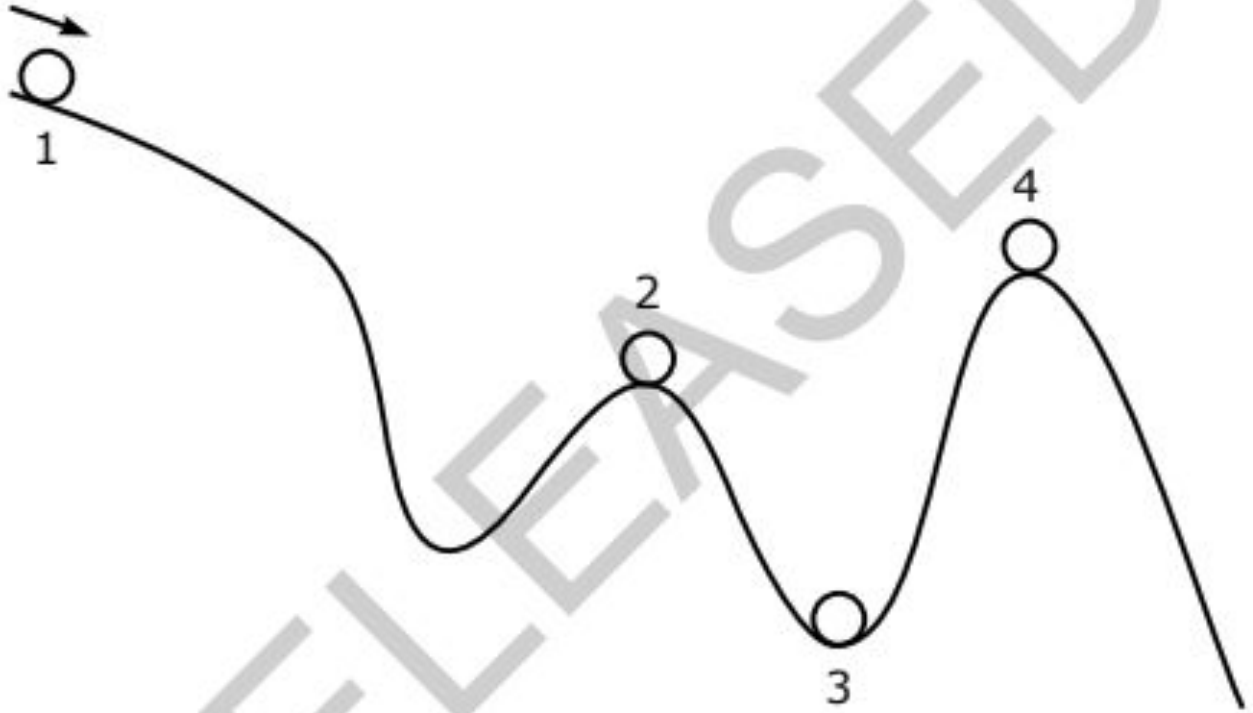
A Both Objects 2 and 3 are at a higher elevation than Object 1.

B Both Objects 1 and 2 are at a lower elevation than Object 4.

C Object 4 has traveled farther than the other objects.

D Object 1 has traveled farther than the other objects.

29 The diagram below shows the path of a marble.



At which position does the marble have the ***most*** kinetic energy?

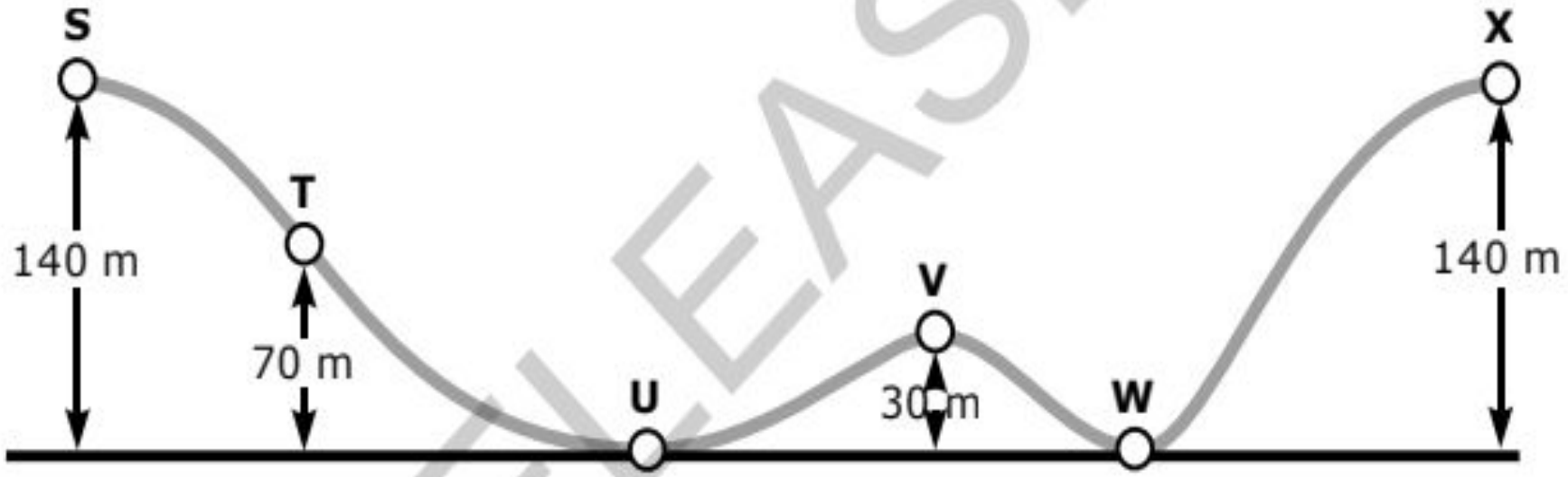
A 1

B 2

C 3

D 4

The diagram below shows the path of an object.



The object is placed on point S and released toward point X. At which point will the object have the same amount of potential energy as it does when it is at point S?

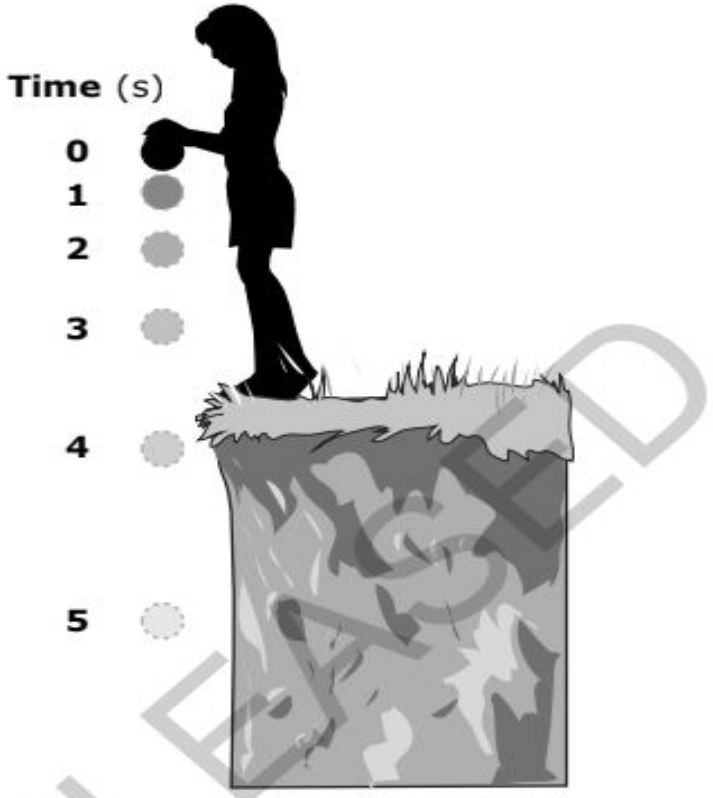
A T

B U

C V

D X

35 The diagram below shows the motion of a ball while being dropped.



What happens to the energy of the ball from when t = 0 s to when t = 5 s?

A Potential energy decreases and kinetic energy increases, but the total amount of mechanical energy remains the same.

B Potential energy increases and kinetic energy decreases, but the total amount of mechanical energy remains the same.

C Potential energy and kinetic energy both increase, and the total amount of mechanical energy increases.

D Potential energy and kinetic energy both decrease, and the total amount of mechanical energy decreases.