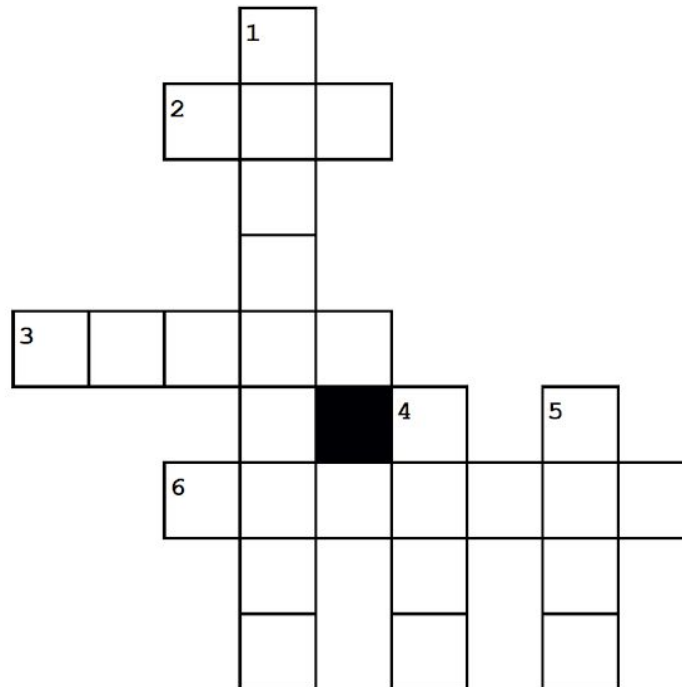


## Introduction

Have you ever wondered why a bouncy ball always bounces off objects or walls? This is because of energy transfers which happen all around us every day. There are many different methods in which energy can be transferred, including sound, light, and heat. Many factors play into this, like the speed, energy, and mass of the object. Water, for example, flows because of kinetic energy, which we use in managing water.

# Energy transfer



### Across

2. Which would have more kinetic energy? A dog running, or a cat laying down on a couch. (just put dog or cat in the crossword puzzle)
3. If you hear something really loud, it is transferring a lot of energy through \_\_\_\_\_.
6. If a car is moving really fast, what type of energy does it have?

### Down

1. What has a lot of energy when it's on top of something tall?
4. If something is really hot, it is transferring a lot of energy through \_\_\_\_\_.
5. Which option would have more potential energy? A bird on top of a house, or a ball that is on the ground. (just put ball or bird in the crossword puzzle)

## Science Concepts

Potential energy is energy that is stored when an object is placed in a certain position. You have potential energy when you stand on the top of a hill. A Yo-Yo has potential energy when you are holding it in your hand. Even a book you are holding above your head has potential energy because it could fall on your head.

Another type of energy is Kinetic Energy. Kinetic Energy is the word we use to describe the energy of objects in motion. When we run, kick a ball, or even play on a swing, we have kinetic energy. It does not matter in what direction the object is moving, kinetic energy is always positive. What does matter is the mass of the object. Kinetic energy will be different if an object weighs more or less.

Heat energy is transferring kinetic energy from one object to another. The faster molecules in an object move, the more heat energy it has. If you have a cup of hot chocolate, the molecules are vibrating in it, moving very quickly because it is hot. If you put an ice cube in the cup, the heat from the hot cocoa will slowly transfer to the ice cube, making the molecules in the ice move faster. This causes the ice cube to melt because the temperature rises. Energy can be transferred through temperature. One example of this is the sun, which radiates heat to warm the Earth and provide energy to plants for example.

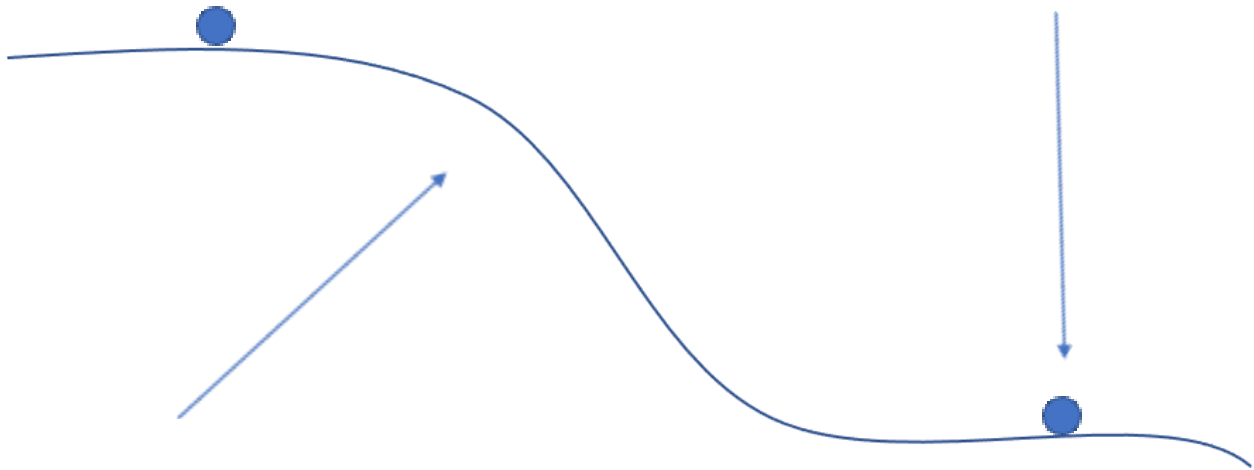
One of the ways that energy can be transferred is through sound. The amount of energy in the sounds we hear during the day can vary a lot. The sound energy coming from dropping a pencil on the ground is going to be a lot smaller than the energy of a jet flying by. The louder a sound is the higher amount of energy it will have.

## Plan and Carry Out:

Marble 1 will roll down the slope and collide with marble 2

Marble 1

Marble 2



Decline slope

Collect Data: Create several drawings of the demonstration in the space provided.

Analyze Data: Label your drawing from the previous section and answer the following questions.

When does the potential energy from the roller coaster turn into kinetic energy?

Does the waterfall have higher potential or kinetic energy?

Which part of the demonstration had higher kinetic energy? Label where the marble had high kinetic energy in your drawings.

Which part of the demonstration had higher potential energy? Label where the marble had high potential energy in your drawings.

What changes did you observe in marble 1 after the collision?

What was the motion of marble 2 before and after the collision?

Explain:

Why did the motion of both marbles change?

Did the type of energy change during the demonstration? Explain your answer.