

TRANSFER OF ENERGY EXPERIMENT

SCIENCE BEHIND THE EXPERIMENT

There are two types of energy – potential energy and kinetic energy

Kinetic Energy (KE)	Potential Energy (PE)
Kinetic energy is a form of energy that results from an object's motion.	Potential energy is a form of energy that results from an object's position or arrangement of parts. It is stored energy that can become kinetic energy.
There are many types of motion that use kinetic energy: translation (moving from one place to another), rotation, and vibration.	It includes potential electrical, chemical, and nuclear energy. The energy used by an object to move is stored energy...potential energy.
The measurement of kinetic energy in an object is calculated based on the object's mass and velocity. It is measured in Joules.	The measurement of potential energy in an object is calculated based on the object's mass and its height or distance. It is measured in Joules.
The potential energy an object has stored is converted into kinetic energy as the object moves. The farther and faster the object moves, the more PE is transferred to KE	

INSTRUCTIONS FOR THE EXPERIMENT

For this experiment you need a ruler with a center groove and five marbles of the same size. If you want to expand your 'research' or if your student asks follow-up questions you might want marbles of various sizes.

BASIC MATERIALS

5 same size marbles	Ruler with center groove
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METHOD

1. Place the ruler on a flat surface.
2. Place 3 of the marbles near the end of the ruler..
3. Place 1 marble at the head of the ruler.
4. Talk with your students about what you will be doing. Ask them what they think will happen when 1 marble is flicked at the 3 marbles.. What will happen when 2 marbles are flicked at the 3 marbles. Ask them to guess how many marbles will be kicked away in each case. This last question is their hypothesis. Have them write their guess on the worksheet under hypothesis.
5. Have them flick the 1 marble. How many of the 3 marbles are kicked away? Record in the worksheet under observations.
6. Place 2 marbles at the head of the ruler. Have them flick both marbles. How many of the 3 marbles are kicked away? Record in the worksheet under observations.
7. Have the child fill-in the rest of the worksheet.

my EXPERIMENT

HYPOTHESIS

I predict if 1 marble is flicked at 3 marbles then _____ marble(s) will be kicked out from the group. If 2 marbles are flicked at 3 marbles then _____ will be kicked out from the group.

OBSERVATIONS:

TABLE: NUMBER OF MARBLES KICKED OUT FROM THE GROUP

	Number of marbles kicked out		
Marbles Flicked	Trial 1	Trial 2	Trial 3
1			
2			

DRAWING MY OBSERVATIONS

Draw a picture of one marble flicked at 3 marbles



OBSERVE YOUR PENNY WITH A HAND LENS JUST BEFORE THE WATER SPILLS

Draw a picture of 2 marbles flicked at 3 marbles.



CONCLUSION

The number of marbles kicked out from the group when flicking one or two marbles:

(circle the answer that matches your results the best)

Was the same as my prediction

Was very close to my prediction

Did not match my prediction at all

DISCUSS THESE QUESTIONS WITH YOUR STUDENTS

1. Explain why one flicked marble only kicked away one marble.
2. Why did 2 flicked marbles kick away 2 marbles?
3. Where did the potential energy come from? What was the kinetic energy?
4. If you flicked 3 marbles, how many of the end marbles would be kicked away?

Explain to the students that flicking the marbles gives them potential energy. Two marbles have more potential energy than one marble. Each marble has enough kinetic energy to push away one marble. One marble flicked, therefore, can push away one marble. Two marbles flicked can push away 2.