



# Hockey Science



*Raccoon Creek Explorers Activity #16*

## **Supplies:**

- Shallow pan or baking dish
- Enough water to fill pan
- Freezer
- Milk jug caps
- Small piece of felt
- Glass marble
- Any other small rough and smooth items of different weights
- Paper and writing utensil



## **Vocabulary:**

*Friction:* The resistance that one surface or object has when moving over another. The force that opposes the motion of objects.

*Force:* A push or pull on an object resulting from an objects interaction with another objects.

*Resistance:* An opposing or slowing force.

*Hypothesis:* An educated prediction about the outcome of the research question.

## **Background:**

Have you ever watched hockey and wondered how the puck moves so fast? When two objects rub against each other it creates heat and resistance. Try rubbing your hands together quickly. You can feel the heat it creates and your hands warm up. This is friction. When the hockey puck slides against the ice there is a force pushing against the puck trying to slow it down, however because this rubbing creates heat, the top layer of the ice melts and forms a thin layer of water. This thin layer greatly reduces friction allowing the puck to slide easier. If objects have grooves and bumps it creates more resistance, thus having more friction. This is why hockey pucks are smooth. They don't get caught on other objects as easily when smooth.

In this experiment we will observe how friction effects different objects.



## Let's Get Started:

- 1.) Fill dish with water and stick in freezer till water is frozen
- 2.) Make 2 charts on the paper, one for predictions and one for the results. List the objects used on the chart and make 2 columns, one for slide and the other for not slide. Make with an "X" on the predictions chart which objects you predict will slide on the ice and which ones you think will not slide.
- 3.) Push each object individually across the ice and observe how each object slides.
- 4.) Mark with an "X" on the results chart which objects actually slide and which actually didn't.

## Reflect:

Which tend to have more friction, rough or smooth objects?

Which tend to have more friction, heavier or lighter objects?

Did your hypothesis match your results?

## Apply:

What are some other examples of friction?

How important is friction in our daily lives? What would happen without it?

What are other ways to reduce friction besides ice?

## Wrap-Up:

As you have learned, all objects have different friction forces. Some are smooth and slide easily on ice, where as rougher objects won't slide as fast or won't slide at all. Other objects are heavy so they slow down faster when pushed on the ice because of their increased force pushing against the ground. Friction is an important force that allows cars to stop when breaking, or even helps your shoes stick to the ground. It is dangerous to walk or drive on ice because friction is limited and you slip easier without traction.

