



*Western Upper Peninsula Center
for Science, Mathematics and Environmental Education*

A partnership of

Copper Country & Gogebic-Ontonagon Intermediate School Districts and Michigan Technological University
Serving schools and communities in Houghton, Baraga, Gogebic, Ontonagon and Keweenaw Counties

Gravity and Forces

Grade Pre K - K

Duration: 1-1.5 hours

Supplies

- Bag of plastic balls
- Gravity sign

Gravity (10 min)

Throw a handful of snow- have students observe what happens. Why does it come back down? Gravity. Show word written on card stock. What is gravity?

Have students jump as high as they can and try to stay in the air. Why don't they stay up? They can't fly and GRAVITY pulls them back down.

Pass out a plastic ball to each student. Have them spread out and throw it in the air. Why does it come back down? GRAVITY Try to throw it higher. What makes it go higher? You use more FORCE

Force (5 min)

Have students line up shoulder to shoulder and throw the ball across the field. The person that threw the ball the farthest used the most force.

Tower building (10 min)

Use snow to build a tower as high as you can without it falling over. What causes it to fall over? GRAVITY

After the students build the tower, they can use a force to knock it over. Which force? Most likely PUSH

Activities that focus on Push/Pull (25 min. total)

Supplies

- Two sleds

- Timer

Push/Pull (5 min)

How can we get the sled to move? (Pulling it will probably be the largest response)

Have a student pull the sled. Was it easy or hard to move the empty sled? Sit in the sled or have a student sit in the sled. How does that change? It's harder to move a sled with more mass (weight) in it. You have to use more FORCE

What is the opposite of pull? Push

Someone could push on the back of the sled to help move it.

Push/Pull Relay (10 min) (I have two sleds for my group and you said you could bring two for your group)

Divide students into two teams and line them up. The first person in line will pull the sled with one person sitting in it down to a designated spot (maybe the teacher could stand there) and then turn around and PUSH the sled back (with a person in it). When they get back to the line the person push/pulling goes to the end of the line and the person in the sled does the push/pulling of the next student in line. Continue relay until all students have a turn.

Was it easier to push or pull the sled?

Snowshoe across field (10 min)

As the students are snowshoeing across the field I have them stop at the power pole or the goal posts and tell them to push them over. Which force are they using? (Push) Why isn't it moving? Some things you can attempt to push or pull, but you can't exert enough force to make them move. What COULD make the pole or post move? (Large machinery, etc.)