



Toboggan Science

Program Purpose:

To have learn about physics and have fun too!

Program Length: up to 1 hour

Age: All

Maximum Number of Participants:

Group size – any

Number on toboggan – Large: 5 or less, Small: 3 or less

Preparation:

Make sure the toboggans are in good condition and waxed.

Equipment:

- Stopwatch
- Measuring Tape
- Orange Flag (to start)
- Toboggan
- People

Introduction:

Go over rules.

1. No Horse playing - One strike and your done
2. Please don't walk in the toboggan trough
3. No leaning to sides while going down run
4. Only five people max on long toboggans and three max on short
5. MUST KEEP AHOLD OF FEET!

With first toboggan show how to sit and lock in properly. First person's feet go in straight, not crossed. Second person bends their legs around the first person and places their feet between the first person's knees. All sequential people bend the legs around the person in front of them, placing their feet over the previous person's knees. Depending on leg length their feet may end up two people in front of them.

After they have gone down a couple times, start asking them questions as to what could make the toboggan go faster or further.

- Does the size of a toboggan affect its speed?
- Does the number of passengers on a toboggan affect its speed?

Have them hypothesis as to the outcome. Possibilities:

- A large toboggan will go faster than a small one.
- A small toboggan will go faster than a large one.
- They will both travel at the same speed.
- A toboggan with one passenger will go faster than a toboggan with more than one passenger.

- A toboggan with more than one passenger will go faster than a toboggan with one passenger.
- A toboggan will travel at the same speed no matter how many people are on it.

Choose a location to finish timing at; end of wooden run or to where someone is standing.

Using a consistent distance, time the speed of the toboggan carrying from one to as many passengers as each will toboggan will hold. Record your times on the chart below. Three runs may be needed for each number. Find the average time for each run. Look over the data, what kind of conclusions can be observed? What variables had the most affect?

Possible Conclusions:

- A large toboggan goes faster than a small one.
- A small toboggan goes faster than a large one.
- They both travel at the same speed.
- A toboggan with one passenger goes faster than a toboggan with more than one passenger.
- A toboggan with more than one passenger goes faster than a toboggan with one passenger.
- A toboggan travels at the same speed no matter how many people are on it.

Variables:

- Amount of snow on run
- Accurate release time
- Accurate recording by timer
- Weight of passengers (estimate)
- Position of passengers on toboggan (leaning)

Appendix A Toboggan Run Rules

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Over the years thousands of youth and adults have enjoyed the Upham Woods Toboggan Run. We want to maintain our very good safety record by requesting that everyone abide by the following safety rules.

Safety Rules:

1. Upham staff must approve the conditions on the toboggan run. If conditions are changing on run the group leader should make their campers aware that some groups might not get the opportunity to use the toboggan run.
2. Toboggan run must be operated by Upham Staff.
3. A visiting adult carrying an orange safety flag and wearing an orange vest will supervise crossing the road at the Nature Center gate and road entrance to the run.
4. An “all clear” must be given by Upham staff member at top of run and by a designated adult at the bottom of the run before toboggan is released into the run. An “all clear” indicates that no object or person is in the run.
5. Those waiting to go down run must stay in line on the designated waiting ramp. Horseplay on the ramp will not be tolerated.
6. All campers and adults must wear gloves while on a toboggan.
7. Only Upham Woods Toboggans will be allowed on toboggan run.
8. At any time, no one should walk in the toboggan run track.
9. Anyone not following the directions of the Upham Woods staff will not be allowed to go down the run.

Small Toboggan	Number of People	1	2	3	4 (small people)
	1 st Run				
	2 nd Run				
	3 rd Run				
	Average				

Large Skinny Toboggan	Number of People	1	2	3	4	5
	1 st Run					
	2 nd Run					
	3 rd Run					
	Average					

Large Wide Toboggan	Number of People	1	2	3	4	5
	1 st Run					
	2 nd Run					
	3 rd Run					
	Average					