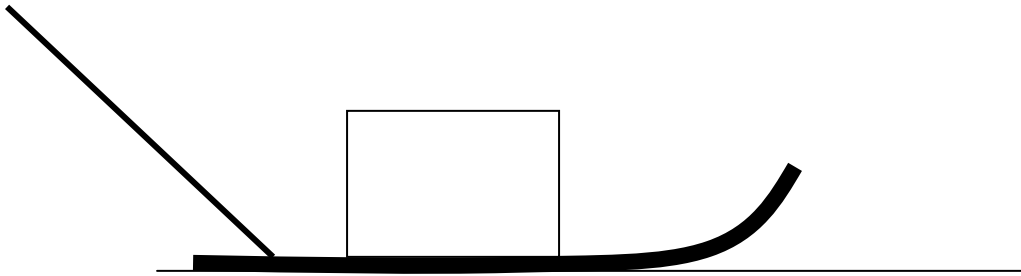


Prelab 4

You have a 125 kg sled on really nice frictionless ice. There is a stick placed on the back of this sled so that you, with your spiky ice boots can push on the sled from behind. There is a really amazing force sensor in the stick so that you can tell how hard you are pushing on the sled. The angle the stick makes with respect to the sled is not fixed.



You perform three runs of an experiment, measuring the acceleration of the sled and the force you applied. The data is shown in the table below. Every time you ran the experiment you found that you applied the same force. However, you also found that the acceleration was different for each run. From a photo of the first run, it was observed that the angle the stick made with the sled was 15 degrees.

| Run | Force | Angle | Acceleration |
|-----|-------|-------|----------------------|
| 1 | F | 15 | 0.39 m/s^2 |
| 2 | F | ? | 0.28 m/s^2 |
| 3 | F | ? | 0.20 m/s^2 |

- 1) How do you account for the “discrepancies” in the acceleration? Explain clearly.

- 2) One of the students contends that the force sensor must be broken because the acceleration is different every time. Do you agree or disagree. Explain.