# Lab 6: Forces – Part 2

Experiment for Physics 211 and 225 Lab at CSU Fullerton.

## What You Need to Know

## What You Need to Do

### Part 1 – Normal Force

Is weight a contact force? If yes, then does an object have a weight when it is flying through the air? If no, then explain why you think it’s not.

Part 1 - Free Body Diagram 1



Referring back to **Checkpoint 3** and based on what happened to the reading when you tilted the probe, is the probe reading the weight or the normal force? If you think it’s the normal force, explain why you think the normal is changing. What is it dependent on? If you think it’s the weight, explain why you think the weight is changing.

Part 1 - Free Body Diagram 2

### Part 2 – Two Objects, Horizontal Surface

|  |  |  |
| --- | --- | --- |
|  | **Part 2** | **Part 3** |
| **Cart Mass** |  |  |
| **Hanging Mass** |  |  |
| **“a” – Trial 1** |  |  |
| **“a” – Trial 2** |  |  |
| **“a” – Trial 3** |  |  |
| **Average “a”** |  |  |
| **“T” Hanging** |  |  |
| **“T” Cart** |  |  |
| **%** |  |  |

Table 1 – Part 2 and 3 Data

Part 1 - Normal Force Equation

Part 2 - Tension and Normal Force Equations

Part 2 - Free Body Diagram

The tension values should have come out exactly the same for either side of the pulley (as mentioned at the beginning of this section). Why do you think they didn’t? Is it just a systematic error, bad data taking, or is it something else?

### Part 3 – Two Objects, Angled Surface

Part 3 - Free Body Diagram



Explain in detail (not just “because we changed the angle”) why your acceleration value came out less than the one from Part 2 – Two Objects, Horizontal Surface. HINT: The answer is in your F.B.D. of the cart.

Part 3 - Tension and Normal Force Equations

How does the normal force on the cart from Part 2 – Two Objects, Horizontal Surfaceand Part 3 – Two Objects, Angled Surface differ? What caused them to be different?

### Part 4 – External Force, A Person

Part 4 - Free Body Diagram

### Part 5 – External Force, A Fan

Part 5 - Free Body Diagram

Table 2 – Part 5 Data

|  |  |  |
| --- | --- | --- |
| **m** | **a** | **Fext.** |
|  |  |  |

Part 4 - Normal Force Equation

### Part 6 – External Force With Multiple Objects

Table 3 – Part 6 Data

|  |  |  |
| --- | --- | --- |
| **ameas.** | **acalc.** | **%** |
|  |  |  |

Part 6 - Free Body Diagram

## Conclusion

Follow the lab report guide to write a conclusion on this lab.

Conclusion