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| **Physics concept / measurement being targeted and definition of this concept** | **Modification(s) made that affects this measurement** | **How modification affects change in measurement** |
| **Mechanical Advantage:**  The ratio of the force produced by the machine to the force applied to it  Original: 6.24  Modified: 24.95 | **Increasing the diameter of the drive wheel by using CDs as wheels instead of smaller LEGO wheels**  **Using a skinnier axle** | Mechanical advantage increased due to the larger diameter of the wheel. This is because the large diameter of the drive wheel will increase the pulling distance which in turn means the car will be under power for a greater time.  Pulling distance = turns x pi x diameter drive wheel  Mechanical advantage increases because the number of turns of string will increase as the drive axle diameter is smaller which will result in a greater pulling distance.  Turns = string length/ pi x diameter of drive axle |
| **Pulling Distance:** |  |  |
| **Total Distance:** |  |  |
| **Static Coefficient of Friction:** |  |  |
| **Kinetic Coefficient of Friction:** |  |  |
| **Spring Constant:** |  |  |

**References:**

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