Worksheet I: Observations and testing on track

Using different shapes installed to the base of the car, record your observations on the motion of the car on the track.

|  |  |  |  |
| --- | --- | --- | --- |
| **Shape** |  | **Predictions** | **Time recorded** |
| **Tall block** | https://lh6.googleusercontent.com/xsHuY093Zz7yHjNjPBouUzAuEo7N9D_1TowwGtt3bygF01tGDfbCIRPYhYp_uuw5nqpvHV7uy6thryckjdDvh1k5RKNpO4WWK9Nyn7MrGCrGV8OEWTcNTxv1d3TF9Wq2W88ohXwr |  |  |
| **Short block** | https://lh5.googleusercontent.com/qwqgcXGXYv8FdhYGPE_BISLBJ5XHg8cJVBJopLIaJkF7ndEbv5qypdi3AbeAYUvOwz0sUJhD5-UppLqj8f0b-KMjxS7SYm_wgq_7bNaJgagzkw4QZQ_BlzXaZ8cIgSxPBw-Y7Cxz |  |  |
| **Short wedge** | https://lh3.googleusercontent.com/M0lDNRblIWzaKCMJvbzkzlZ9fR8_Wc20NWXOfU6S3s7vtUrb9mjBJU4D0RWPipn7iMUOqThUOs6HPHRlH2VQfO82x3CBa6m1baIl59foRCZ849l2vjHtD7rB9zJMY2WDtFZwjq1j |  |  |
| **Tall wedge** | https://lh6.googleusercontent.com/ha60HXCTBwfqG05W9uh8aR5zRTstlGZTHU3utamOnsivRwBRArVKT-oArKNHuJqWhDtwplTuUQtktj4d7Sh1nFhkWzvHL_DuDWhrmxxhYw9Lg-T0QcmjZpSJ_WYTDYST_v32tkO0 |  |  |
| **Short trapezoid** | https://lh6.googleusercontent.com/OqaakOVvsvL9-YD97l95am7kKc4BwYNcY4xHkSzhltGGzMkaa1f8qFpY_c_YdLEcdN4GQ3X9TPJo3NhpxfwHHzG5ZsWAMm_Sp1W38fTZf9kwVFa-VpRfIjNUjHgJX2cxlwkKwPuK |  |  |
| **Tall**  **trapezoid** | https://lh6.googleusercontent.com/uYkJ3o_AW2wsPzmsqqgYffONg2-SIRm9ypRWAdrWAiHuotuNwcIriE4cmsb-muOHJz1DVMBhoSZK9wOM5B8dsyaOmZjZAo_GOHHOSCRM3LcByZ6QOaU6XsEQQ7dcZrI4_LmUCT6K |  |  |
| **Semi circle** | https://lh5.googleusercontent.com/cDjyvARBPbPCkA539E0IIqC43_ohXWB-gwhWZlqzfsn4BKDPdZoNH-4R4Gt2QWhKwLsCnXI1amuueC6z2zQSsuvtHifDHqNnXjJTz1JChhSUGgkXjc0gbCT7nJNPOmHqmmfmLPH6 |  |  |

Worksheet II: Brainstorm solution with CAD

You will use your “engineering toolkit” with aerodynamics and CAD to design a shell of the soap box derby to solve the problem.

1. What are the requirements and constraints?
2. Based on previous testing (track), which shapes are more efficient?
3. Sketch a possible design solution here:
4. Use the 123D Design software to sketch your design on the computer. Save your file with your name.

Save your file often!

1. Export file as 3D .STL file with the following options checked: Fine, Export as ASCII