

## IT'S ABOUT TIME CONTEST

### Objective:

Build a mechanical (non-electrical) timing device that makes repeating motions and has a specific period. (Period is the time it takes to make one complete, repeating motion).

### Rules:

- Work in teams of two students (no more, no less!). Sign up your team.
- When teams sign up, each team will be randomly assigned a different period from this list: 0.50 s, 0.55 s, 0.60 s, 0.65 s, 0.70 s, 0.75 s, 0.80 s, 0.85 s, 0.90 s, 0.95 s, 1.05 s, 1.10 s, 1.15 s, 1.2 s, 1.25 s, 1.3 s.
- NO commercial counters, timepieces, or parts of counters or timepieces. NO electric or electronic devices. NO chemicals, flames, or explosives. Any other materials may be used.
- Your whole timing device, with all its parts and materials (such as sand or water), must fit inside a standard file box (15" by 12" by 10"). The device can be taken apart to fit inside the box, but you must be able to do this quickly. You do not need to bring the device in a file box, you just must demonstrate that it can fit inside a file box.
- You may NOT hang your device from a door, table, chair, etc. You may NOT hold your device up. If your device needs to be hung up or held up, you must build a holder into your device. The entire device, including anything holding it up, must fit inside the file box.
- Timing devices will be impounded at the start of the period on test day – no working on your devices during class.
- NO Late Projects! If at least one partner is present on test day, your project is due on test day! If both partners are absent, you can bring in the project the next day, but the best grade you will get is a 70%. Late projects cannot compete with on-time projects.

### Scoring:

- To test your device, you will start your device running, and then your teacher will start counting the number of repetitions while timing for 30 seconds. At the end, your device's Actual Period 1 will be found by dividing 30 by the number of repetitions.
- Then you will reset your device and start it again. Your teacher will count the number of repetitions in 90 seconds for this trial. At the end, your device's Actual Period 2 will be found by dividing 90 by the number of repetitions.
- Your score will be found as follows:

$$\text{Score} = 100 - \frac{|\text{Actual Period 1} - \text{Assigned Period}|}{\text{Assigned Period}} * 100$$
$$- \frac{|\text{Actual Period 2} - \text{Assigned Period}|}{\text{Assigned Period}} * 50$$