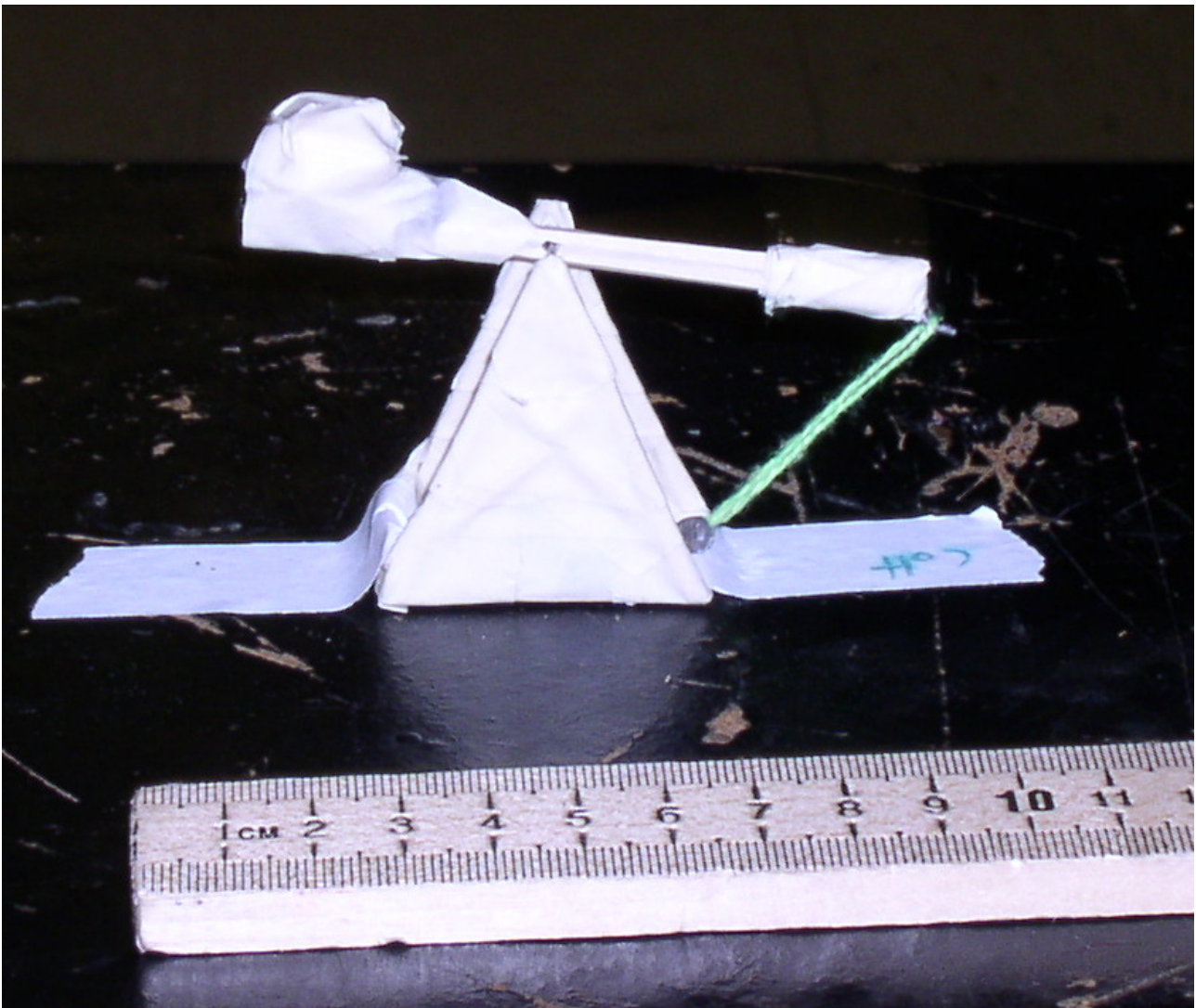


# Miniature Trebuchet Project



A. **Goal**  
Student will design and build a miniature catapult that will launch a projectile a horizontal distance greater than 5 times the length of the arm.

B. **Grade**  
Grade for all functioning projects meeting requirements will be calculated as:

$$\text{Grade} = \{100 - [(\text{shortfall in cats}^* \text{ on shot \#1}) + (\text{shortfall in cats}^* \text{ on shot \#2}) + (\text{shortfall in cats}^* \text{ on shot \#3})]\}$$

\*cats are units of length equal to 1/10 of catapult arm

- C. **Specifications**
- 1) Each student will design and build their own catapult.
  - 2) Catapult must be lever-type which propels the projectile using the force of a falling body such as a weight. Human forces like stomping or hitting do **not** qualify as “falling body.”
  - 3) Spring\* or elastic launchers are prohibited; regardless of material. [\*A spring is defined as any material that stores energy when its shape is deformed and releases energy when its shape is restored.]

- 4) Catapult may be constructed from wood, metal, plastic, or any combination of these. In 2009 kits and building toys (like Lego or Kinex or Meccano) are also permitted on the condition that no parts used are designed for this purpose (ie. You cannot use a toy trebuchet as your trebuchet).
- 5) Catapult frame dimensions must be less than: 30 cm long, 30 cm wide, and 30 cm tall not including the arm. The arm of the catapult can be a maximum of 30 cm in length.
- 6) All tests will be performed in the classroom; the **student** is responsible for measuring and accounting for ceiling height.
- 7) Distance will be measured from front-most point of catapult (established when it is set and ready to shoot.)
- 8) Each student will fire their catapult 3 times after a **maximum** of 2 “warm up” shots; warmup shots done at student’s discretion.
- 9) You may not raise your catapult on books or table for this option.
- 10) Catapult must have students name **conspicuously** displayed.
- 11) Students may not borrow catapult parts from other students nor change their design on due date.
- 12) Student must dispose of catapult within 3 calendar days of project due date or their grade is reduced by 10%. Catapults on or near school property are not considered “disposed” and will receive penalty.

**D. Due Date**

Catapults are due at the beginning of class on \_\_\_\_\_.

**E. Addendum**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_