

TRIAL EVENT

Helicopter Egg Drop

1. **DESCRIPTION:** A team will construct a device which uses a helicopter blade to safely transport a raw chicken egg from a specified height to the floor.

A TEAM OF UP TO: 2

IMPOUND: Yes

APPROXIMATE TIME: 20 minutes

2. **EVENT PARAMETERS/CONSTRUCTION:**

- a. Competitors will design and build the device prior to the competition.
- b. Nothing may be attached to the egg other than the tape or string used to secure the egg from falling out of the device.**
- c. No shock absorption devices, protective materials, or cushioning materials may be used to protect the egg during the fall of the device.
- d. Only the helicopter blade may be used to modify the effect of free fall.
- e. No energy producing mechanisms of any type can be used to propel the helicopter or slow the drop of the device. Only the effect of wind resistance on the rotating blade may slow the fall of the device.
- f. The entire device must fit into a 50 cm x 50 cm x 50 cm cube.
- g. Helicopters not meeting these parameters will be ranked below those who do.

3. **THE COMPETITION:**

- a. The entire helicopter must be impounded before the start of the event. No modifications are allowed after impoundment other than to attach or extract the egg from the helicopter. The device will be released from impound when the team has finished competing. Please note that after a device leaves the impound area **NO** appeals can be filed or processed.
- b. Once teams enter the event area to compete, they cannot leave or receive outside assistance, materials, or communication until they are finished competing.
- c. At the beginning of the competition the event supervisor will provide each team with a raw grade A large chicken egg. If the egg is broken after it has been inspected and accepted by the student at any time before the drop, another egg may be received with a negative 10 second penalty added to the final score.
- d. There will be only one drop for each helicopter. The helicopter will be dropped from a height designated by the supervisor. The height of the drop will be announced on the day of the tournament. The drop height will be between 3-10 meters. Recommended heights are: Regional 3-6 meters; State 4-7 meters; National 5-10 meters.
- e. Each helicopter will be timed from the time the helicopter leaves the students hand until the time it touches the floor. It is suggested that three separate timers be used and the final time will be the average of the three times.
- f. After the drop the student is responsible for extracting the egg from the helicopter and handing it to the event supervisor for inspection. Those helicopters whose egg did not survive will be ranked below those that do (including eggs broken by students during extraction of the egg from their device).
- g. A broken egg is defined as a crack leaving a wet spot on a paper towel.

4. **SCORING:**

- a. Teams will be ranked by the amount of time it takes from the time the device is dropped to the time it lands on the floor. Highest time wins.
- b. The tie-breaker is the mass of the lightest helicopter (without the egg).
- c. The helicopters whose egg did not survive will be ranked below those that do.

NATIONAL SCIENCE EDUCATION STANDARDS: Abilities of Technological Design