

# 4-H Hands-on Science



# Inquiry Card

## The Clover-copter

### Type of Inquiry:

Experimental Design



### Process Skills:

Observing, questioning, predicting, hypothesizing, selecting, measuring, recording, gathering data, experimenting, reviewing, analyzing, explaining, reporting.

### The Scenario:

The roto-copter is a small object made of paper with two wings (post-it notes) and some weight at the bottom (a paper clip). When it's dropped, it spins as it falls to the ground similar to a maple seed. In this version, the young scientists will create one that looks like a four-leaf clover. They will brainstorm ideas on how they can change variables to affect the flight of their clover-copter.

### Open-Ended Inquiry Question:

- If I change the \_\_\_\_\_, what will happen to the \_\_\_\_\_?

### Instructions:

1. Build one model of the clover-copter to demonstrate the way it works.
2. Provide 10-minutes of play time to the young scientists asking them to create a clover-copter that behaves differently from yours.
3. Use the Steps-to-Inquiry to invite the young scientists to record their observations and questions.
4. From their observations and questions, determine the variables and select them.
5. Have them write their questions from the variables and come up with a hypothesis.
6. Let them conduct their experiment, record their data, analyse it and come up with a conclusion.

### Possible Dependent Variables:

Speed, flight time, trajectory, number of turns.

### Possible Independent and Controlled Variables:

Number of wings, size of the wings, shape of the wings, position of the wings, number of paper clips, initial height, way to throw it.



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