

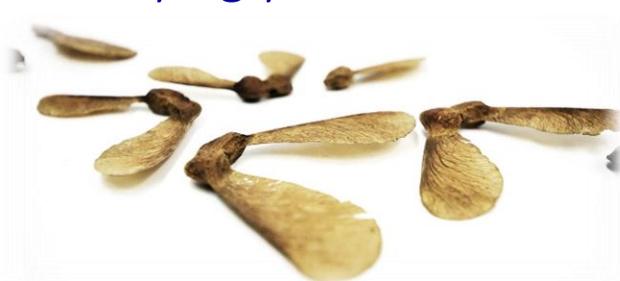


Helicopter Seeds

Propellers, maple copters, whirlybirds, twisters, whirligigs, spinning jennys.... What do all these have in common? They are all names for special kind of seed called a helicopter seed, named for its amazing aerodynamic design!



Experiment with the physics of this incredible plant adaptation by creating and flying your own helicopter seed model!



WHAT ARE HELICOPTER SEEDS?

Helicopter seeds are just what they sound like- A type of flying seed! They are so named because they spin through the air as they fall – like helicopter propellers.

WHY DO HELICOPTER SEEDS FLY?

The technical term for this winged seed is *samara*, which refers to a specialized fruit that is designed to travel long distances from its parent tree. Trees that produce helicopter seeds tend to have some of the largest, widest canopies. Because of this, for a seedling to grow, it can't simply fall to the ground beneath the tree because it won't get much sunlight. The winged samaras are an adaptation certain trees have developed to transport their fruit to sunnier, more hospitable growing places! As they fall and spin away from the tree, they can travel to soil outside of the shady area cast by the tree's canopy, ensuring better germination conditions. Depending on the wind, some samaras can travel more than a mile before landing on the ground!

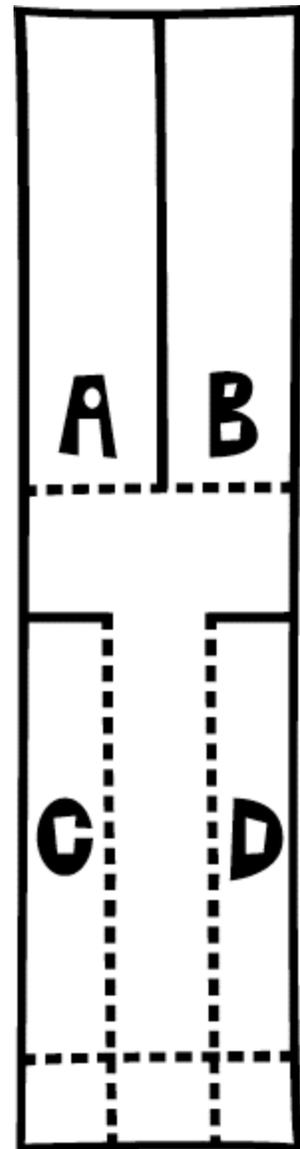
HOW DO HELICOPTER SEEDS FLY?

Helicopter seeds have long wings that balance the weight of their seeds. When the seed falls and spins, the air moving over the wide end of the wing moves faster than the air closer to the seed, giving the seed a lift that keeps it aloft. Veins on the edge of the wing generate turbulence to help it cut through the air. They also form a small vortex – like a tiny tornado – atop their wings! That tornado lowers the pressure above the seed, which generates even more lift.

BONUS!

The wings of the seeds have another great advantage- Once the helicopter seed lands, the wings help it to stand upright between blades of grass or other foliage! This helps it have a better chance of embedding itself into the soil below.

HELICOPTER SEED MODEL TEMPLATE TO PRINT:



MAKE AND FLY YOUR OWN HELICOPTER SEED MODEL!

Follow the steps below, then fly your seeds outside and see where they land!

MATERIALS

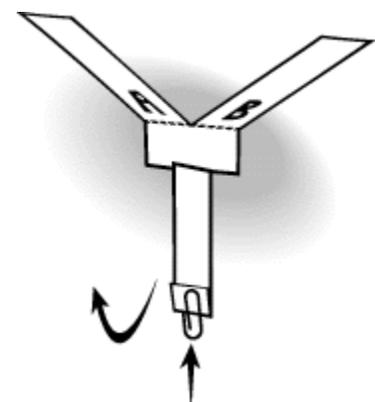
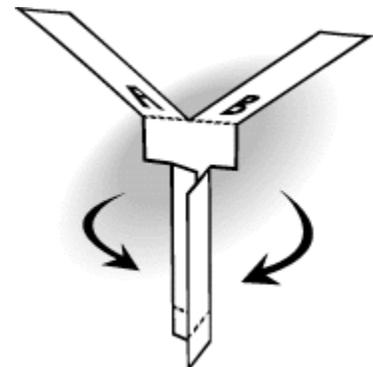
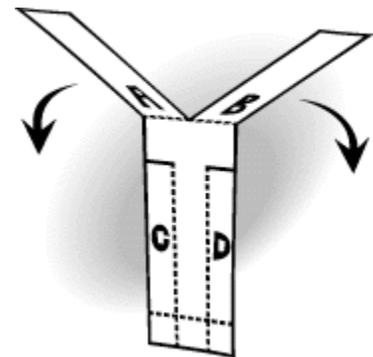
Helicopter Template Printout
Scissors
Paper Clips
Optional: Crayons or Markers

Check out these visual
steps from the
Exploratorium.edu!



STEPS

- 1) Print out the helicopter templates (on previous page).
- 2) Optional: Color the templates to your liking.
- 3) Cut along the solid lines only.
- 4) Fold on the dotted lines.
- 5) Fold A toward you.
- 6) Fold B away from you.
- 7) Fold C and D over each other so they overlap.
- 8) Fold the bottom up and put a paper clip on it.
- 9) Fly your seed! First, hold the helicopter by the paperclip. Next, throw it like a baseball, as high and far as you can, or stand on a higher surface like a chair and drop it from high up. You will see it spin and travel away and down to the floor!
- 10) **Experiment!** Try dispersing your helicopter seed in different ways- From different heights, from different angles, and with different wind and force. How do they land if you drop them from the base verses the wing? How far can they travel and why? What conditions help them move far and wide? What happens if you tear one wing shorter? What happens if you cut off the base? How many seconds does it fly through the air before landing? Why?



HELICOPTER SEEDS IN ACTION!

Watch the video below to see the beautiful whirling of falling maple tree helicopter seeds.



DID YOU KNOW?

There are five main modes of seed dispersal: Gravity, wind, ballistic, water, and animals. Watch the video below to learn about these amazing methods!



HELICOPTER SEEDS SUPPORTS NGSS!

By experimenting with Helicopter Seed models, children will: Ask Questions and Define Problems; Develop and Use Models; Plan and Carry Out Investigations; Analyze and Interpret Data; Use Mathematics and Computational Thinking; Construct Explanations and Design Solutions; all while learning about Cause and Effect; Structure and Function; and Energy and Matter; while exploring Life Science; and Physical Science.

Arboretum At Home Nature
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