

Four-Wing Paper Boomerang

SUBJECT: Aeronautics

TOPIC: Boomerang

DESCRIPTION: Plans for building and flying a four-wing boomerang from a manilla file folder.

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MATERIALS:

Manilla file folder (one folder makes two boomerangs)

Scissors

Pencil

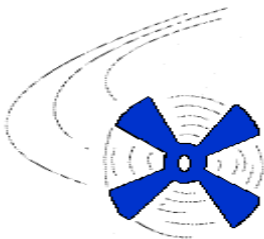
Pattern

PROCEDURE:

1. First print out a copy of the template on the following page. Cut out the pattern of the Four-Wing Boomerang and trace it on to one half of the file folder. (This pattern can be enlarged and used with other materials such as cardboard, styrofoam meat trays, and thin plywood. When thicker materials are used, the top surface of each blade should be rounded or even shaped as an airfoil. Wooden boomerangs should always be used outdoors.)

2. Cut out the boomerang .

FLYING THE FOUR-WING BOOMERANG:



Hold one wing of the boomerang between your thumb and index finger. Keeping the boomerang vertical, impart a spinning motion to the boomerang as you throw it straight forward. The boomerang will travel straight out from you a few feet, circle, and come back. By the time it returns, it will be spinning in a level plane. Catch the boomerang by clapping it between your hands or thrusting your finger up the hole as it momentarily hovers. Try throwing the boomerang horizontally and observe its flight.

DISCUSSION:

An explanation of boomerang flight is beyond the scope of this activity. Forces at work during boomerang flight include aerodynamic lift, torque, gyroscopic precession, and wake effects. It is recommended that you refer to books on boomerangs for an explanation of how they work.

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