

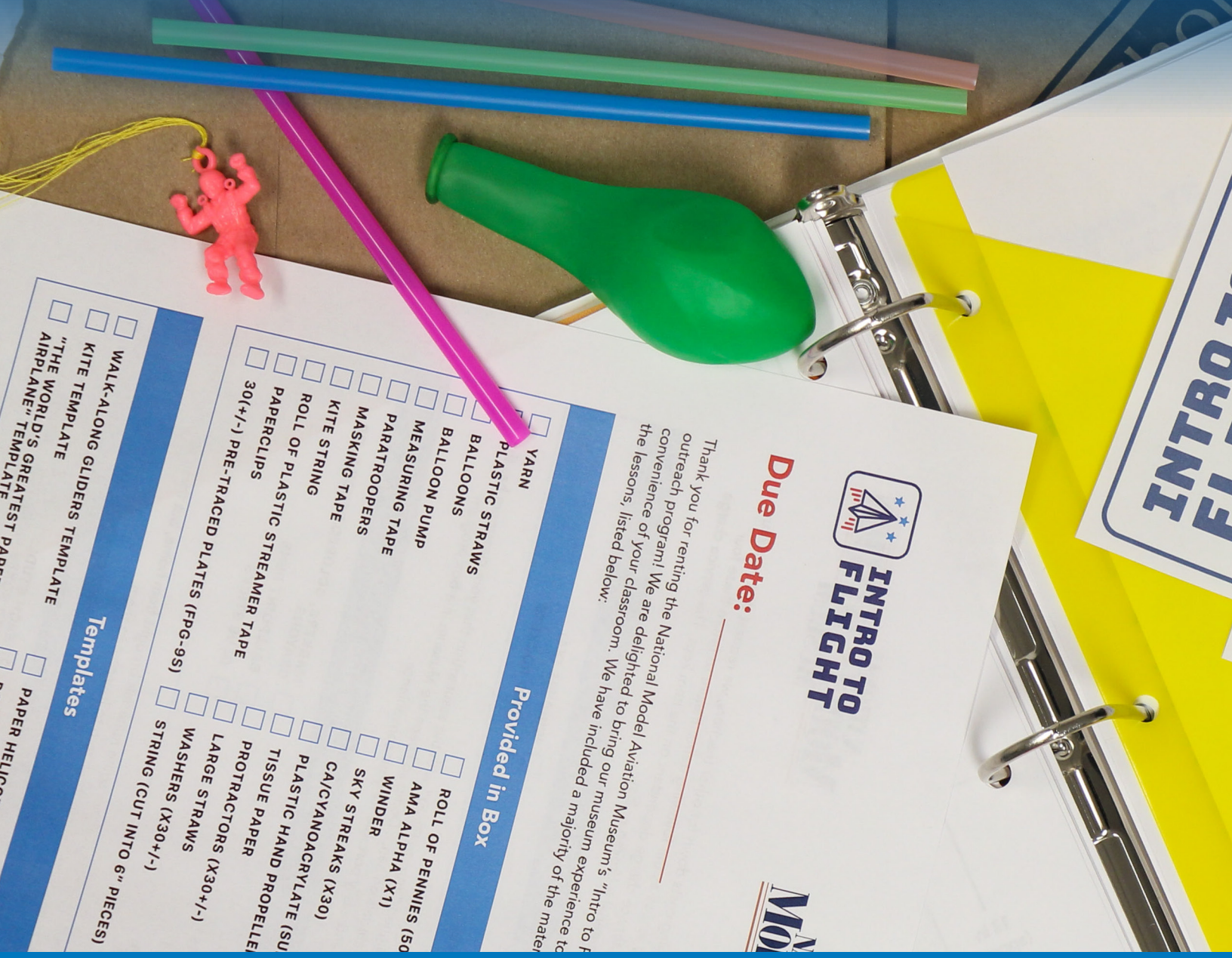


QUICK PROJECT

PARATROOPERS



AUTHORIZED AMA
STE(A)M PROGRAM



**INTRO TO
FLIGHT**

Due Date: _____

Thank you for renting the National Model Aviation Museum's "Intro to Flight" outreach program! We are delighted to bring our museum experience to the lessons, listed below. We have included a majority of the materials provided in the box.

Provided in Box

- YARN
- PLASTIC STRAWS
- BALLOONS
- BALLOON PUMP
- MEASURING TAPE
- PARATROOPERS
- MASKING TAPE
- KITE STRING
- ROLL OF PLASTIC STREAMER TAPE
- PAPERCLIPS
- 30(+/-) PRE-TRACED PLATES (FPG-9S)
- ROLL OF PENNIES (50)
- AMA ALPHA (X1)
- WINDER
- SKY STREAKS (X30)
- CA/CYANOACRYLATE (X30)
- PLASTIC HAND PROPELLER
- TISSUE PAPER
- PROTRACTORS (X30+/-)
- LARGE STRAWS
- WASHERS (X30+/-)
- STRING (CUT INTO 6" PIECES)

Templates

- WALK-ALONG GLIDERS TEMPLATE
- KITE TEMPLATE
- "THE WORLD'S GREATEST AIRPLANE" TEMPLATE
- PAPER HELICOPTER TEMPLATE



AN OFFICIAL COMPETITION OF THE ACADEMY OF
MODEL AERONAUTICS EDUCATION DEPARTMENT

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SUPPLIES

1 napkin, coffee filter, or whatever light-weight material you can find!

4, 6-inch pieces of string

Tape

Large paperclip

STANDARDS

4-PS3-1 - Use evidence to construct an explanation relating the speed of an object to the energy of that object.

DEFINITIONS

DRAG- Drag occurs when air pushes against the airplane as it moves forward.

GRAVITY- Gravity Pulls objects downward toward the center of an object dependent on it's mass (Earth). An airplane will only fly if the forces of lift and thrust are greater than the forces of gravity and drag.

A Brief History of Parachutes

Parachutes are devices used to slow the movement of objects, either vertically (such as cargo, skydivers, or rockets reentering the atmosphere) or horizontally (sometimes referred to as an 'air brake' when used to slow racecars).

The earliest documentation of the parachute date back to the Renaissance. Famed artist and inventor, Leonardo da Vinci, designed a pyramid-shaped parachute in the mid-1400's.

Faust Vrancic tested his parachute design, the "Homo Valans" (the "Flying Man") in the 1617 by leaping off a tower in Venice, Italy.

The first modern parachute was invented in 1783 by Louis-Sebastien Lenormand in France.

Lenormand also invented the word "parachute" by hybridizing the Italian prefix para, an imperative form of parare = to avert, defend, resist, guard, shield or shroud, from paro = to parry, and chute, the French word for fall, to describe the aeronautical device's real function.

WATCH A VIDEO

Check out this video! youtu.be/w4Jgh9V9gwE

Parachutes & the Four Forces of Flight

While parachutes don't actually fly, they do utilize two aspects of the four forces of flight, particularly weight and drag. An unencumbered object falling from any height will plummet toward the ground due to gravity's effect on it. However, when a parachute is added, it creates drag, thereby greatly reducing the speed by which the object falls. This is particularly useful if the object is something that could potentially be damaged by a rapid descent, such as a person.

1. Unfold the napkin and lay it flat. (if using a coffee filter, carefully flatten it on the table)
2. Tape a piece of string in each corner of the napkin. (if using a coffee filter, get a ruler and mark four dots on the filter at an equal distance from each other, like the points of a compass)
3. Flip the napkin over and bring all four strings together in a knot.
4. Attach the paperclip to the knot to give your parachute weight.
5. Pinch the top of the parachute and toss it up in the air!

CHALLENGES

Try different weighted objects to see how the change in weight changes the speed by which your parachute falls! A paperclip is a good place to start but look around the house and find other things that could work, like coins, small toys, even small candy!

Look for different materials to make your parachute out of! What if you used something heavier, like a bandana? Would you have to change the weight of the object being dropped too? Would you have to drop it from higher up? Experiment and see what happens!

