Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Good Old-Fashioned Paper Airplane**

Goal

* Make an airplane that achieves the longest straight flight when released.

Materials

* 8.5” x 11” paper (one sheet per student for individual and one sheet per team in group)

Time to Create

* 12 minutes

Although humans have been interested in aerodynamics and aviation for thousands of years, flying in a “heavier-than-air” craft has only been possible in the last century. Every airplane flight, bicycle ride, model rocket launch, kite expedition, automobile drive, and baseball pitch is designed around the basic concepts of aerodynamics.

Thinking about aerodynamics brings us to the task at hand. You will make your own paper airplane, following the instructions.

1. Fold an 8.5” x 11” sheet of paper in half lengthwise (like a hot dog).
2. Fold the short edge of one side down to the crease to produce a 45-degree angle. Repeat this step on the other side.
3. Fold the new fold you have created to the original fold you did in Step 1. Repeat on the other side.
4. Complete Step 3 again for both sides.
5. Hold the center and open the wings out.

When the teacher says it’s time for a practice flight, you will get a chance to see how effective your plane-making skills are. When you take your plane on its first flight, your observations will allow you to see what modifications might be necessary to result in a more efficient flight. Record your observation.

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TEAM CHALLENGE

Participants will work together in teams for a total of 12 minutes to make a paper airplane to be used for the flight contest. When the teacher signals it is time to stop working, teams will take their airplanes into an open space for the contest.

The teacher will select groups of three to four for the team challenge and will assign a number to each group.

Once teams have been selected the teacher will indicate that teams will start the process. You will have exactly 12 minutes to get your team’s supplies and make your team’s airplane. Any team that continues to work on its plane at any point after the teacher has called time may be disqualified from the contest. Your team’s goal is to make a paper airplane that will travel the furthest distance.

Airplanes must be released into flight at approximately 5 feet from the ground. When the teacher gives the signal, you will release your airplane and measure the distance from the start point. The goals is to have your team’s plane complete the longest flight (in terms of distance, not time) from start to finish. Each team will have three flight opportunities. Distances must be recorded in the space provided.

Each team will take the best distance out of the three flight opportunities. Record the distances in the space below.

Flight #1 \_\_\_\_\_\_\_\_ yd \_\_\_\_\_\_\_\_\_ ft \_\_\_\_\_\_\_\_\_\_ in

Flight #2 \_\_\_\_\_\_\_\_ yd \_\_\_\_\_\_\_\_\_ ft \_\_\_\_\_\_\_\_\_\_ in

Flight #3 \_\_\_\_\_\_\_\_ yd \_\_\_\_\_\_\_\_\_ ft \_\_\_\_\_\_\_\_\_\_ in

Convert each flight into inches. Remember that each yard = 36 inches and each foot = 12 inches.

Flight #1 ( \_\_\_\_\_\_ yd x 36 = \_\_\_\_\_\_in) + (\_\_\_\_\_\_ ft x 12 = \_\_\_\_\_\_ in) + \_\_\_\_\_\_ in = \_\_\_\_\_\_ total inches

Flight #2 ( \_\_\_\_\_\_ yd x 36 = \_\_\_\_\_\_in) + (\_\_\_\_\_\_ ft x 12 = \_\_\_\_\_\_ in) + \_\_\_\_\_\_ in = \_\_\_\_\_\_ total inches

Flight #3 ( \_\_\_\_\_\_ yd x 36 = \_\_\_\_\_\_in) + (\_\_\_\_\_\_ ft x 12 = \_\_\_\_\_\_ in) + \_\_\_\_\_\_ in = \_\_\_\_\_\_ total inches

Compute the average inches traveled in flight.

Flight #1 \_\_\_\_\_\_ in + Flight #2 \_\_\_\_\_\_ in + Flight #1 \_\_\_\_\_\_ in = \_\_\_\_\_\_ inches ÷ 3 = \_\_\_\_\_\_ inches.

What was your longest flight? Flight # \_\_\_\_\_\_ for \_\_\_\_\_\_ inches

What was the average distance of all 3 flights? \_\_\_\_\_\_ inches

Reflection

What worked? What didn’t work? What do you need to change?

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