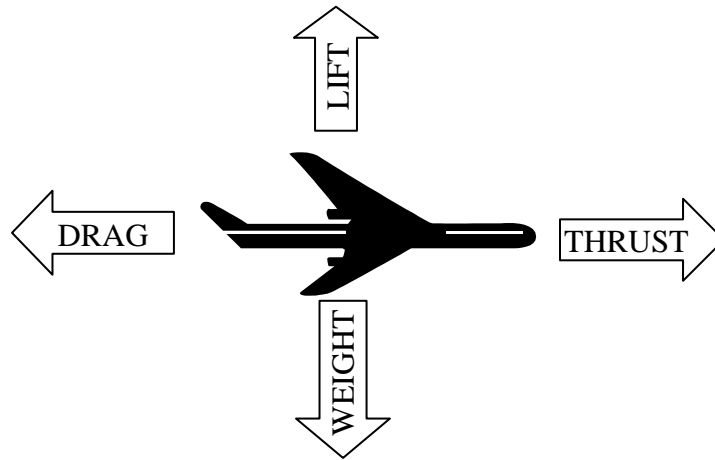


Name: _____ Date: _____

Design a Flying Machine Activity – Worksheet

While you design your very own Flying Machine, keep the four primary forces of lift, weight, thrust and drag in mind. For example, a huge airplane might have difficulty flying because of too much weight, while a plane with small engines might have difficulty generating enough thrust.



List the materials you will need to construct each part listed below:

| Airplane Part | Material to Be Used |
|-----------------------|---------------------|
| Main Body of Airplane | |
| Tail Section | |
| Wings | |
| Seats | |
| Doors | |

Draw a rough draft of your Flying Machine:

When you have completed your Flying Machine design, answer the following questions.

1. Which of the four forces (*lift*, *weight*, *thrust* and *drag*) did you keep in mind while designing your Flying Machine?

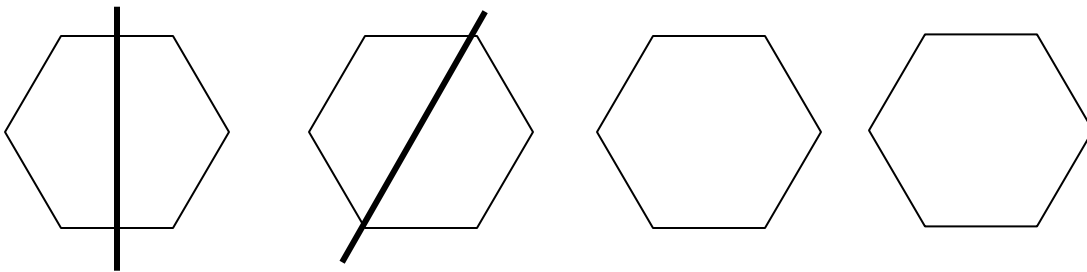
2. What do you think is the strongest part of your plane design? (What is the best part of your aircraft?)

3. What do you think is the weakest part of your plane design? (What might go wrong with your airplane?)

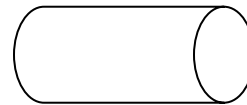
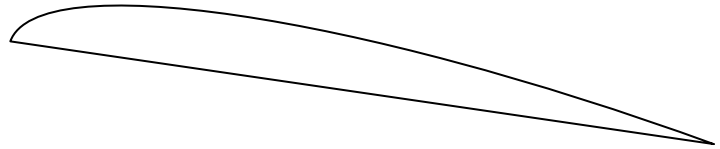
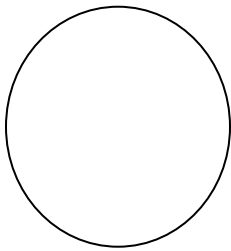
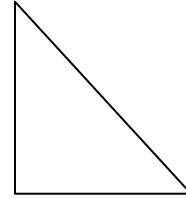
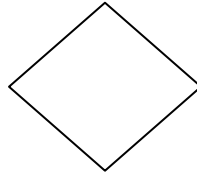
4. How did you choose your materials?

Engineers use many geometric ideas when they design planes. Airplane wings can move at different angles, some shapes are more aerodynamic than others (thus reducing drag), and a rocket ship or airplane usually has a symmetrical design.

A line of symmetry is any line that can be drawn through a figure that divides it into two equal parts — like a reflection in a mirror. For example a regular hexagon has six lines of symmetry. Below are two possible lines of symmetry. Draw two more different lines of symmetry on the other two hexagons.



Now draw a line of symmetry through the shapes below. Some shapes may have more than one line, and other shapes may not have any lines. If a shape has more than one shape, how many can you find?



Does your airplane design have a line of symmetry?

Why do you think symmetry is important in an airplane?
