



**PLTW Flight and Space Virtual Learning**

**8th Grade/Tools of  
Aeronautics**

**May 19, 2020**



8th Grade/Flight and Space  
Lesson: May 19, 2020

**Objective/Learning Target:**  
**Students will learn about the 4 main tools of aeronautics.**

## Warm-Ups:

On your [Cornell Notes](#) or notebook paper, review the 4 types of propulsion systems used on aircraft. Speculate how these engines were developed.

# Lesson Introduction/Background Information:

Science has come a long way since the Wright brothers first flight. Airplanes now fly faster, longer, and at higher altitudes. But, how did we learn how to accomplish this? Aerospace Engineers use 4 main tools to assist in development and design of aircraft and engines. These tools include wind tunnel testing, computational fluid dynamics, flight simulation, and flight test. Wind tunnels have been used since the time of the Wright brothers. Wind tunnels move air past the object. They are safer, cheaper, and in a controlled environment. Computational fluid dynamics started in the 1960s. It's like wind tunnel tests using a computer. Flight simulators use computers to create simulations for training and research. Flight tests are the final phase of development for aircraft used to verify predictions.

# Practice:

Let's try out one of these tools!

Go this free online [flight simulator](#).

Read the instructions first! You can also watch these [GeoFS tutorial 1](#) and [GeoFS tutorial 2](#). This is not as easy as it looks. When your ready click FLY at the top of the page to get to the simulator.

Your goal is to successfully takeoff, fly and land. This will take perseverance! You will need to keep trying to become successful.

## Self-Assessment:

How did your flight go? Did you stall the plane? How many times did you reset to try it again?

# Extend Your Learning/Continued Practice:

Learn more about [Wind Tunnels](#).

Learn about this military plane and see the [F-35 simulator](#).