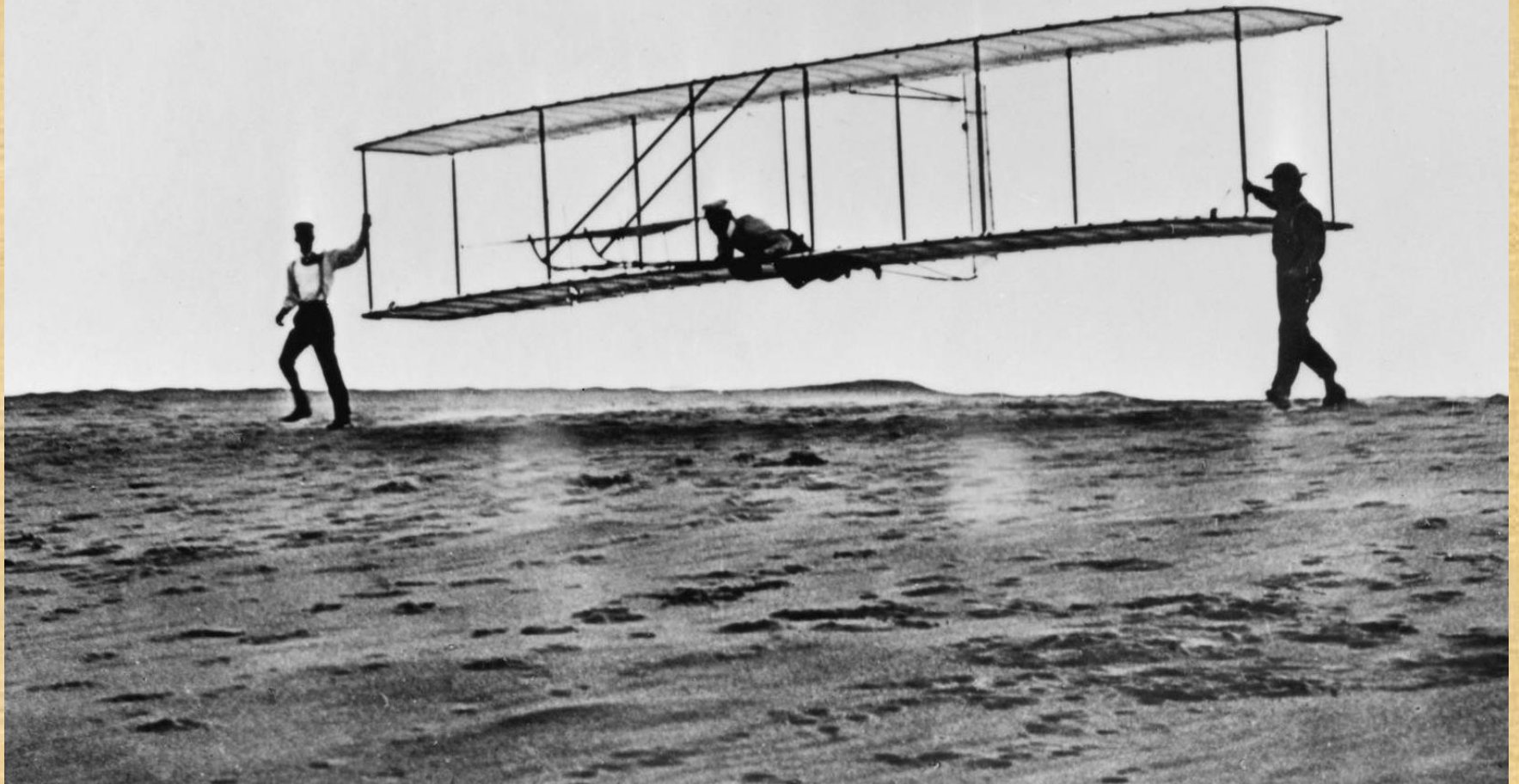


AIAA

Greater Huntsville Section

2022 First Flight Commemoration

Drawing & Essay Contest



2022 First Flight Commemoration Contest Winners

Drawing Contest Winner:

Zoey Mulloy of Horizon Elementary



L to R: Horizon Elementary School student Zoey Mulloy (age 9) with her mother and father, Principal Demetria Freeman, and AIAA Educator Associate and Gifted Specialist Elizabeth Bero.

Essay Contest Winner:

Jack Delduco of Hampton Cove Middle School



L to R: Hampton Cove Middle School Teacher Melissa Snider and student Jack Delduco (age 13).

“Remembering the Wright Brothers”

Zoey Mulloy, age 9
Horizon Elementary School

1st Place



The Wright Brothers Take Flight

By Jack Delduco

The Wright brothers changed aviation for the better in so many ways. Now, as we look back on their accomplishments, we can see all the progress that we have made in things like airfoil shape and the presence of thrust on modern-day airplanes like the Boeing 747. They used many already-known principles about aviation from pioneers like Otto Lilienthal. It was particularly important in aviation that the Wright brothers created the first heavier-than-air aircraft. In this essay, many concepts will be shown about the wright flyer. These include The Wright Flyer in the Engineering Design Process, The Four Forces of Flight, and the problem-solving involved in the building of their glider.

The process that the Wright Brothers used was remarkably similar to the Engineering Design Process we have now. First, the Wright Brothers had to define the problem. They had to read many studies and experiments of flight to gain the knowledge that they used to build the Wright flyer. Second, the Engineering Design Process encourages you to generate concepts or ideas. The Wright Brothers had to choose between many designs on their first try and would later return to the drawing board after each design failed until finally, one succeeded. Eventually, Wilbur decided on the warping wings mechanism because of how he saw different birds fly. They then began to build the 17-foot plane. Finally, after a lot of research and building, they tested the glider. Then, after over 200 different redesigns, they finally found the best model. To this day, it was one of the most important breakthroughs in aviation throughout history. This led the way for a new modern take on aviation including many different wing designs

While producing this glider the Wright brothers learned a lot about lift and drag. Many of their contributions to aviation were how they portrayed many aspects of the four forces of flight. This helped many aviation pioneers to create new and better versions of the heavier-than-air aircraft. Some examples of these contributions would be how they determined that the lift produced was just two-thirds of what was estimated in the Lilienthal table. This table showed a list of numbers that described the amount of lift and drag that Lilienthal found on different airfoil designs. The Wright brothers revised this table because they found that Lilienthal was slightly off with his calculations. Finally, they found that if they put a scale on the glider's line, it would calculate the lift and drag of the glider together.

This picture from the Smithsonian Air and Space Museum shows Lilienthal's lift and drag table that was used for his airfoil designs.

THE AERONAUTICAL ANNUAL.

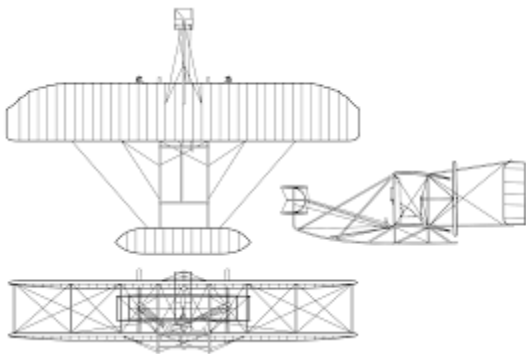
TABLE OF NORMAL AND TANGENTIAL PRESSURES

Deduced by Lilienthal from the diagrams on Plate VI., in his book "Bird-flight as the Basis of the Flying Art."

α Angle.	η Normal.	ϕ Tangential.	α Angle.	η Normal.	ϕ Tangential.
-9°.....	0.000	+ 0.070	16°.....	0.909	- 0.075
-8°.....	0.040	+ 0.067	17°.....	0.915	- 0.073
-7°.....	0.080	+ 0.064	18°.....	0.919	- 0.070
-6°.....	0.120	+ 0.060	19°.....	0.921	- 0.065
-5°.....	0.160	+ 0.055	20°.....	0.922	- 0.059
-4°.....	0.200	+ 0.049	21°.....	0.923	- 0.053
-3°.....	0.242	+ 0.043	22°.....	0.924	- 0.047
-2°.....	0.286	+ 0.037	23°.....	0.924	- 0.041
-1°.....	0.332	+ 0.031	24°.....	0.923	- 0.036
0°.....	0.381	+ 0.024	25°.....	0.922	- 0.031
+ 1°.....	0.434	+ 0.016	26°.....	0.920	- 0.026
+ 2°.....	0.489	+ 0.008	27°.....	0.918	- 0.021
+ 3°.....	0.546	0.000	28°.....	0.915	- 0.016
+ 4°.....	0.600	- 0.007	29°.....	0.912	- 0.012
+ 5°.....	0.650	- 0.014	30°.....	0.910	- 0.008
+ 6°.....	0.696	- 0.021	32°.....	0.906	0.000
+ 7°.....	0.737	- 0.028	35°.....	0.896	+ 0.010
+ 8°.....	0.771	- 0.035	40°.....	0.890	+ 0.016
+ 9°.....	0.800	- 0.042	45°.....	0.888	+ 0.020
10°.....	0.825	- 0.050	50°.....	0.888	+ 0.023
11°.....	0.846	- 0.058	55°.....	0.890	+ 0.026
12°.....	0.864	- 0.064	60°.....	0.900	+ 0.028
13°.....	0.879	- 0.070	70°.....	0.930	+ 0.030
14°.....	0.891	- 0.074	80°.....	0.960	+ 0.015
15°.....	0.901	- 0.076	90°.....	1.000	0.000

While the Wright brothers created an incredible glider that was the first of its kind, it was not the easy task that we believe it to be. Creating this glider required them to research and design for months. After they did this, they built their first glider prototype, and it did not work as intended. They decided to revise it over and over and eventually created the best design possible which is now what we call the Wright Flyer. It was hard for them to create this glider while keeping some sense of safety in mind. Sadly, there was one casualty after one flight in which Orville ended up breaking many bones in his body and the second passenger was killed due to a fatal skull injury. This shows that the Wright brothers had to work around many problems that kept them from creating the first heavier than air aircraft, but they did it anyway.

This photo below from Wikimedia Commons shows the blueprints of what once was a 17-foot glider.



The Wright Brothers changed aviation for the better in so many ways. Their impact on modern-day aviation is shown through the very advanced plane designs that we have today. All these examples of how the Wright Flyer came to be show the courage that the Wright brothers applied to every situation. They did not give up even when they failed. For them, it seemed so easy to just give up on their dreams, but they decided to keep going. While creating one of the most important advancements in aircraft technology, they also showed that if you do not give up then you can do incredible things.

Bibliography-

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"The Wright Brothers and the Invention of the Aerial Age" *Smithsonian Education*,
<https://airandspace.si.edu/exhibitions/wright-brothers>

“Redstone Rocket Launch”

Anna Blankenship, age 11
Monrovia Middle School

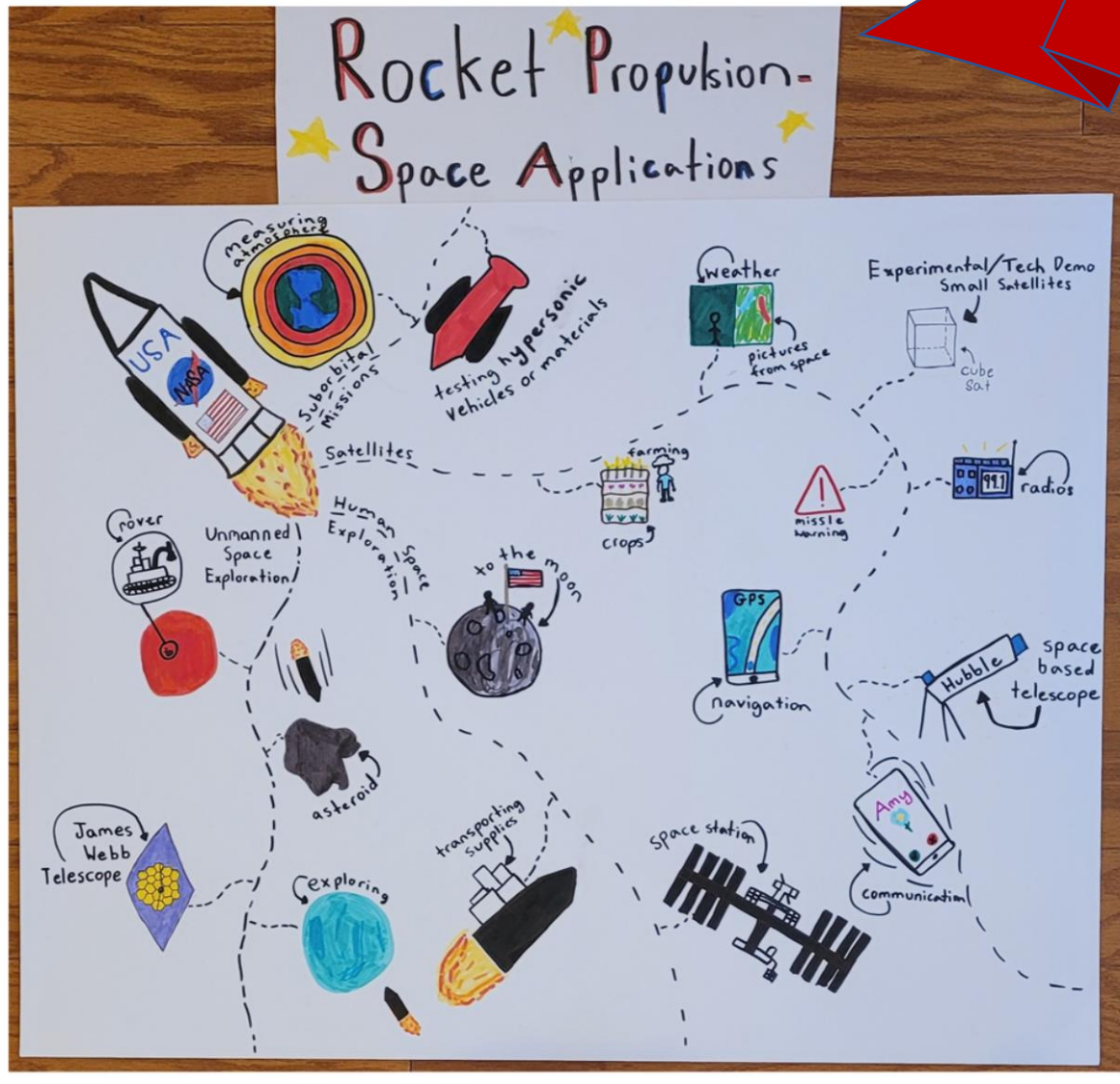
Semifinalist



"Rocket Propulsion Space Applications"

Michaela Spetman, age 11
Westminster Christian Academy

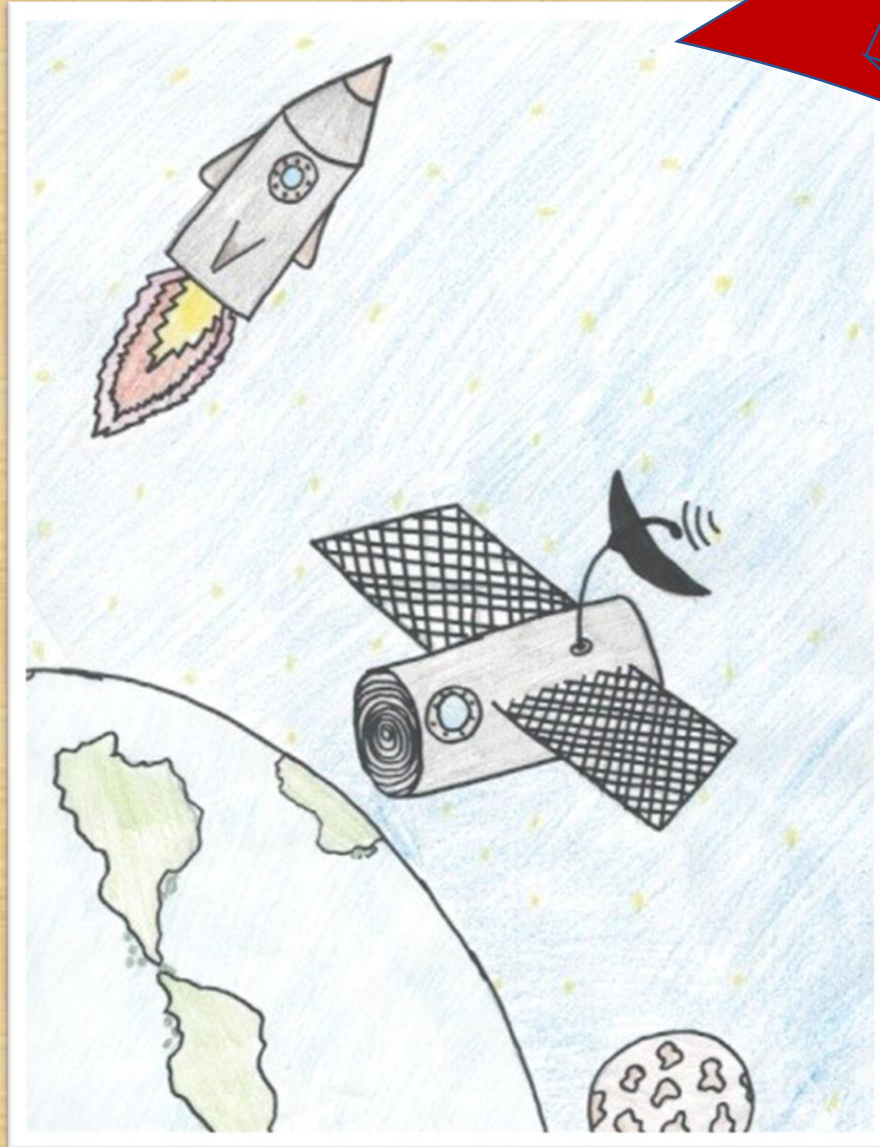
Semifinalist



"Family Staying Connected in Ukraine"

Sofiia Vasylichuk, age 11
Monrovia Middle School

Semifinalist



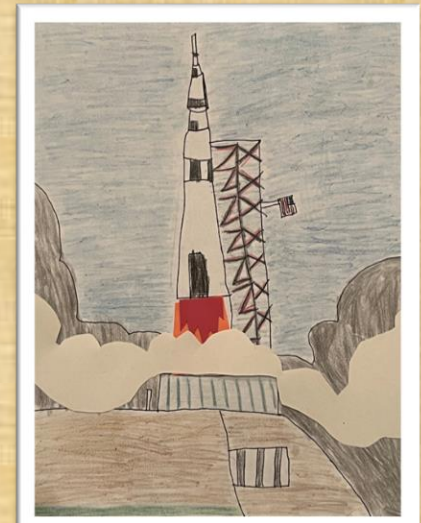
"Flight Done Wright"

Reese Wagner, age 10
Athens Intermediate School

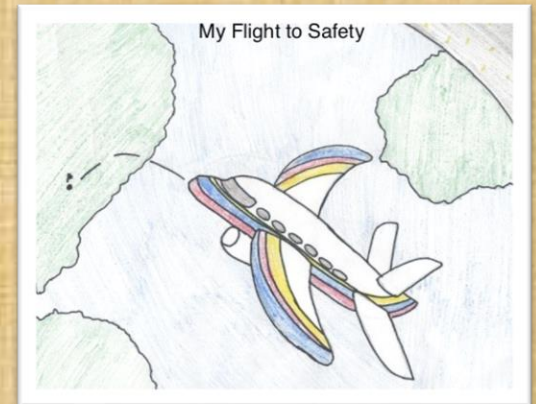
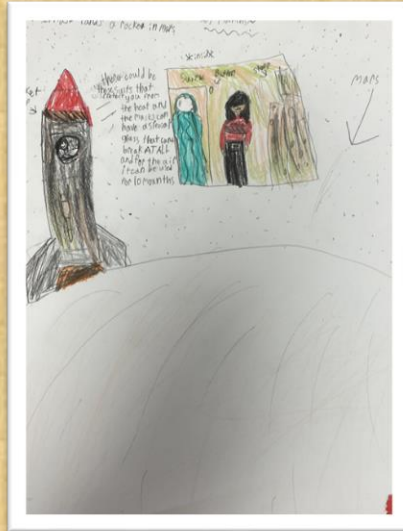
Semifinalist



Honorable Mention



Honorable Mention



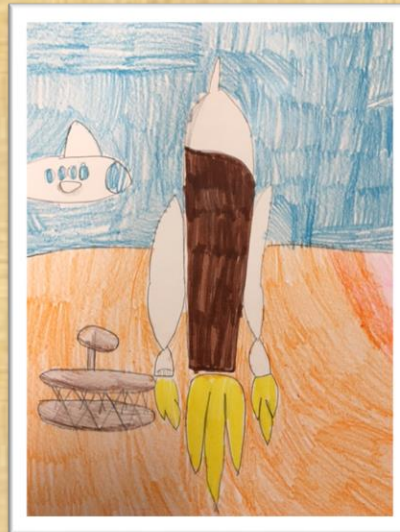
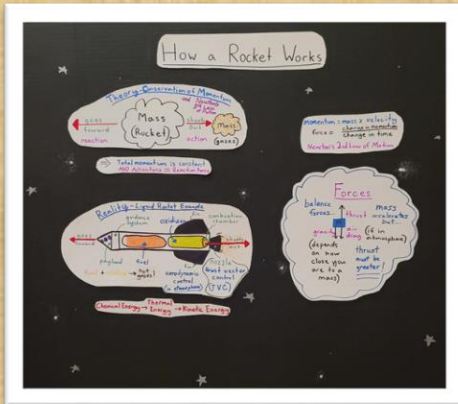
Honorable Mention



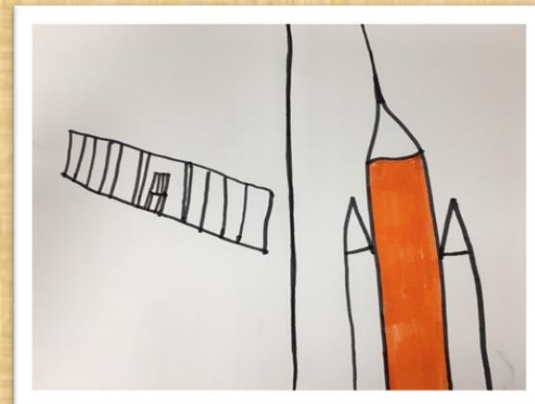
Honorable Mention



Honorable Mention



Honorable Mention



Honorable Mention



Thank you to all the students who submitted drawings and essays.

Last, but not least, a HUGE thank you to these STEM Committee Members who helped with the contest:

Veronica Rodriguez
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David Hitt
Matthew Hitt
Len Naugher
Leo Osborne

Robin Osborne
Pre-college Outreach Director

