



ARCADES

A white rocket with a blue eye-like sensor on its nose is flying through the letters of the word "ARCADES". The letters are blue and have a white outline. The rocket is positioned in the center of the word, flying from left to right.

*Flying with a little help
from my friends*

HELLO KIDS!

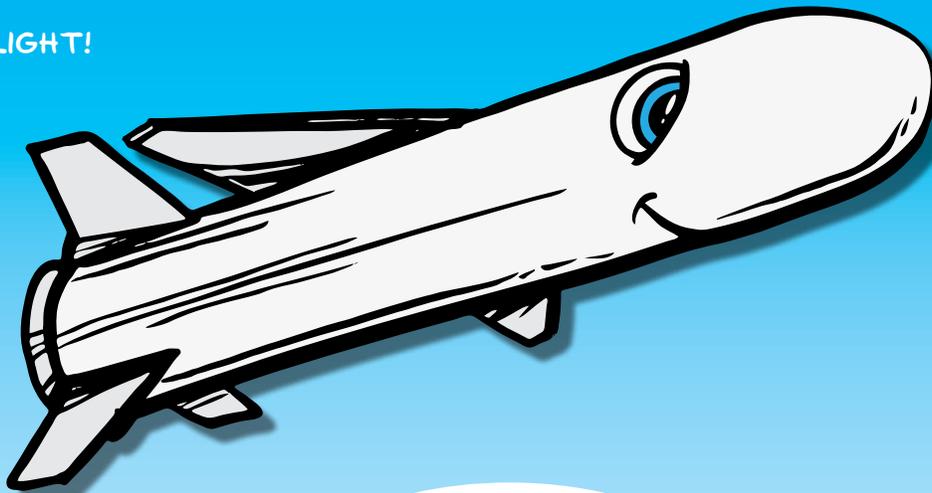
BLAST OFF WITH ME AND MY FRIEND STARGAZER AND LEARN ABOUT MY ROCKET FAMILY AT NASA'S LAUNCH SERVICES PROGRAM! IN MANY WAYS WE ARE JUST LIKE ANY OTHER FAMILY BUT IN MANY WAYS WE ARE DIFFERENT.

YOU WILL LEARN ABOUT HOW ROCKETS WORK, EVEN LITTLE ONES LIKE ME, AND WHY SPACECRAFT AND SATELLITES ARE IMPORTANT FOR SCIENCE HERE ON EARTH. YOU WILL DISCOVER THAT IT TAKES PARTNERSHIPS TO DO GREAT SCIENTIFIC THINGS LIKE GOING TO SPACE OR TO OTHER PLANETS.

ANYONE CAN BECOME A ROCKET SCIENTIST OR ENGINEER! YOU ARE ALREADY ON YOUR WAY BY READING MY BOOK AND DOING THE ACTIVITIES WITH YOUR TEACHER/PARENTS. YOU WILL LEARN ABOUT THE SPECIAL WORDS THAT HELP ENGINEERS AND SCIENTISTS DO THEIR JOBS, WORDS ABOUT OUR PLANET AND ABOUT PARTS OF A ROCKET, WORDS THAT NASA LAUNCH SERVICES PEOPLE USE EVERY DAY. YOU WILL ALSO FIND OUT WHERE I GOT MY NAME AND HAVE FUN COLORING AND WORKING ON SOME OF MY PAGES!

HUMANS HAVE BEEN EXPLORERS SINCE THE BEGINNING OF TIME. NASA'S LAUNCH SERVICES PROGRAM IS SORT OF LIKE A BRIDGE TO SPACE, HELPING HUMANS EXPLORE THE UNIVERSE AND BEYOND.

ENJOY THE FLIGHT!
PEGASUS

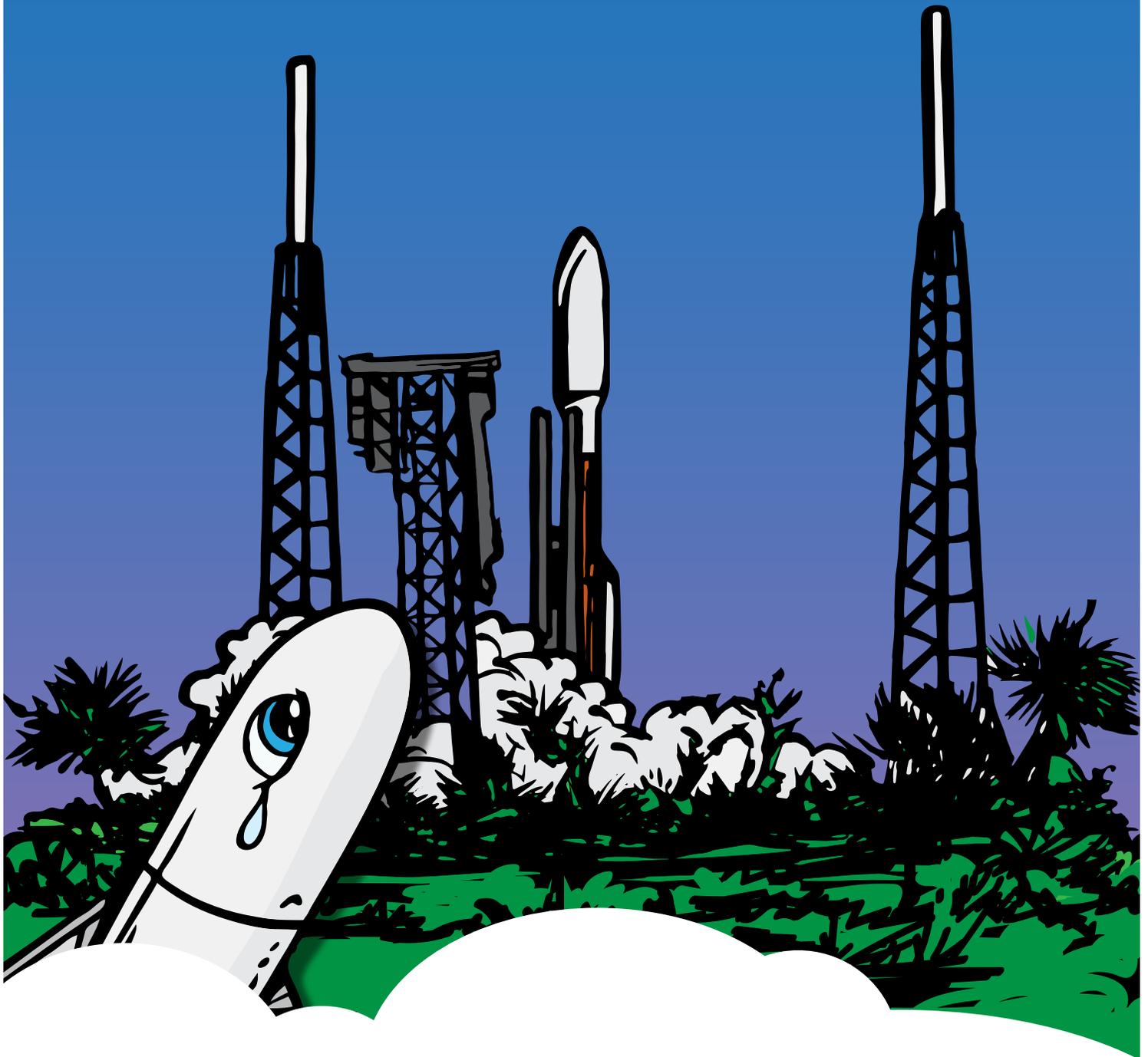


A Special Thank you to all of our contributors...

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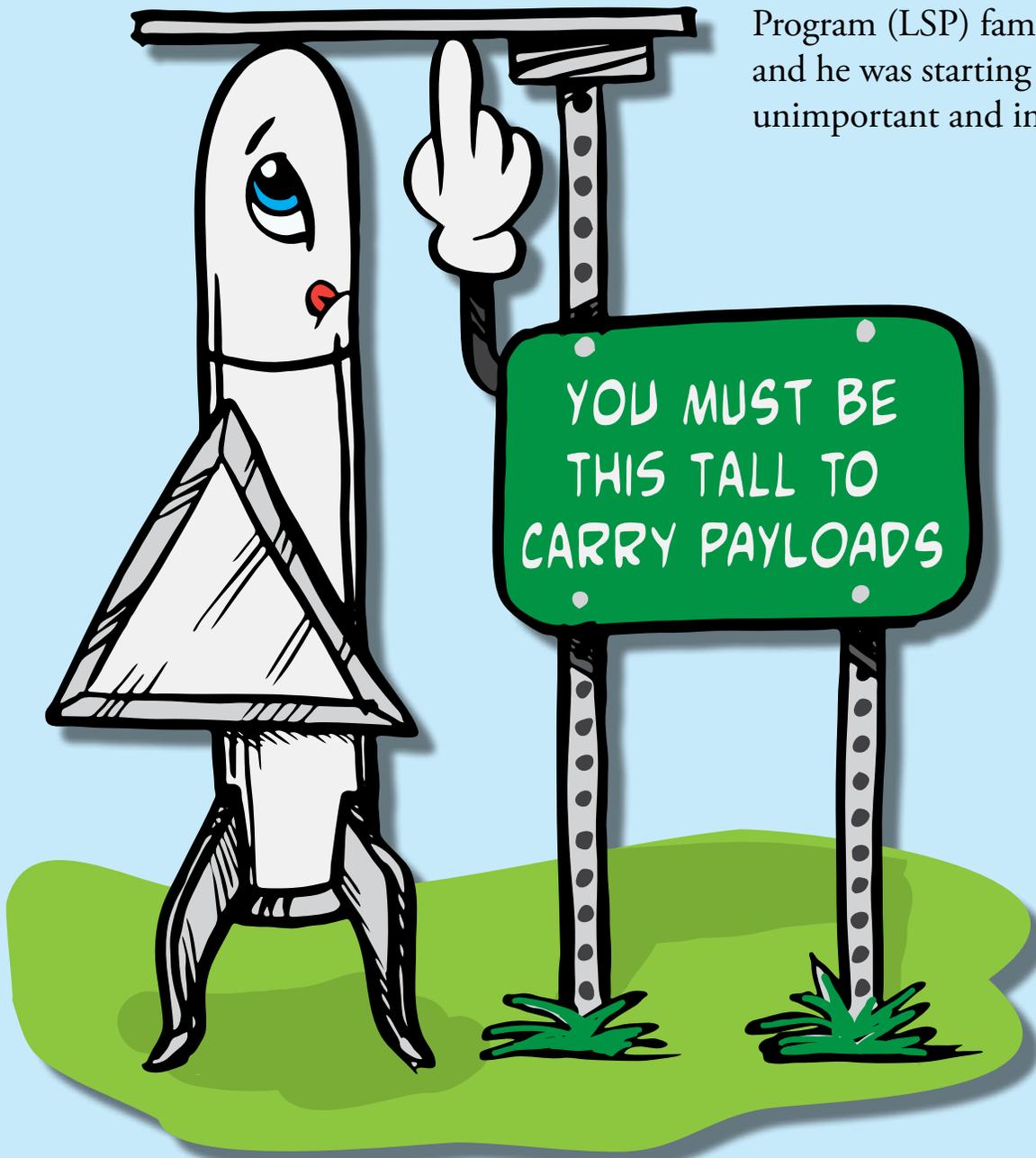
One very early morning, even before the sun was up, a little rocket sat watching the majestic Atlas rocket prepare for launch.

The Atlas stood tall against the sunrise as it sat on the launchpad. It began venting big clouds of cold liquid oxygen from its tanks in preparation for launch.



WHY DO YOU THINK PEGASUS IS SAD?

Pegasus was the smallest rocket in the NASA Launch Services Program (LSP) family of rockets and he was starting to feel a little unimportant and insecure.



IS PEGASUS BIG ENOUGH TO CARRY IMPORTANT PAYLOADS?

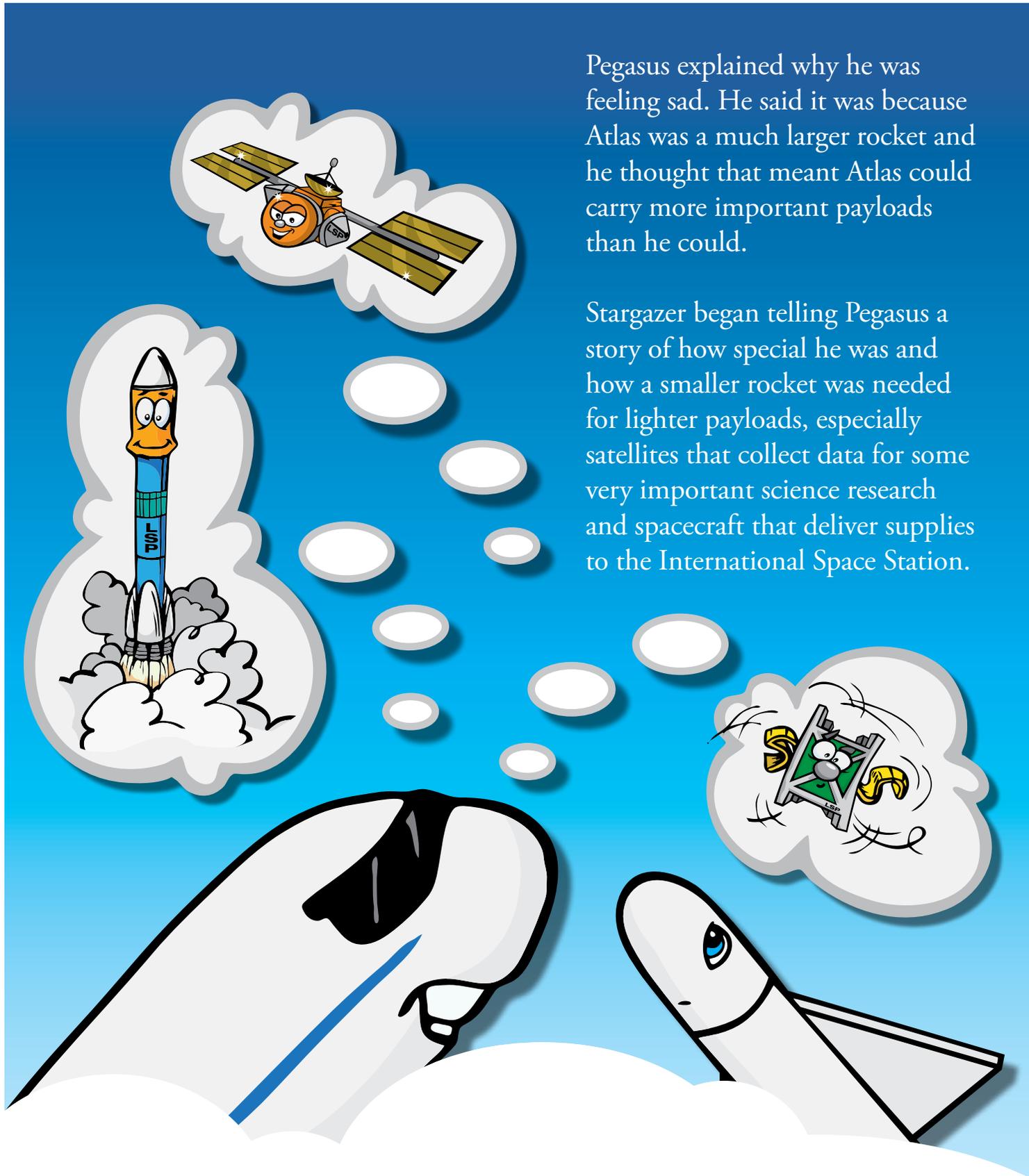
As he sat watching the mighty Atlas, Stargazer, his partner in flight, a converted L-1011 airplane, sat down next to him to watch the Atlas launch. Stargazer noticed his friend seemed a little down and suspected it had something to do with the launch.



WHO IS STARGAZER AND WHAT IS HE?

Pegasus explained why he was feeling sad. He said it was because Atlas was a much larger rocket and he thought that meant Atlas could carry more important payloads than he could.

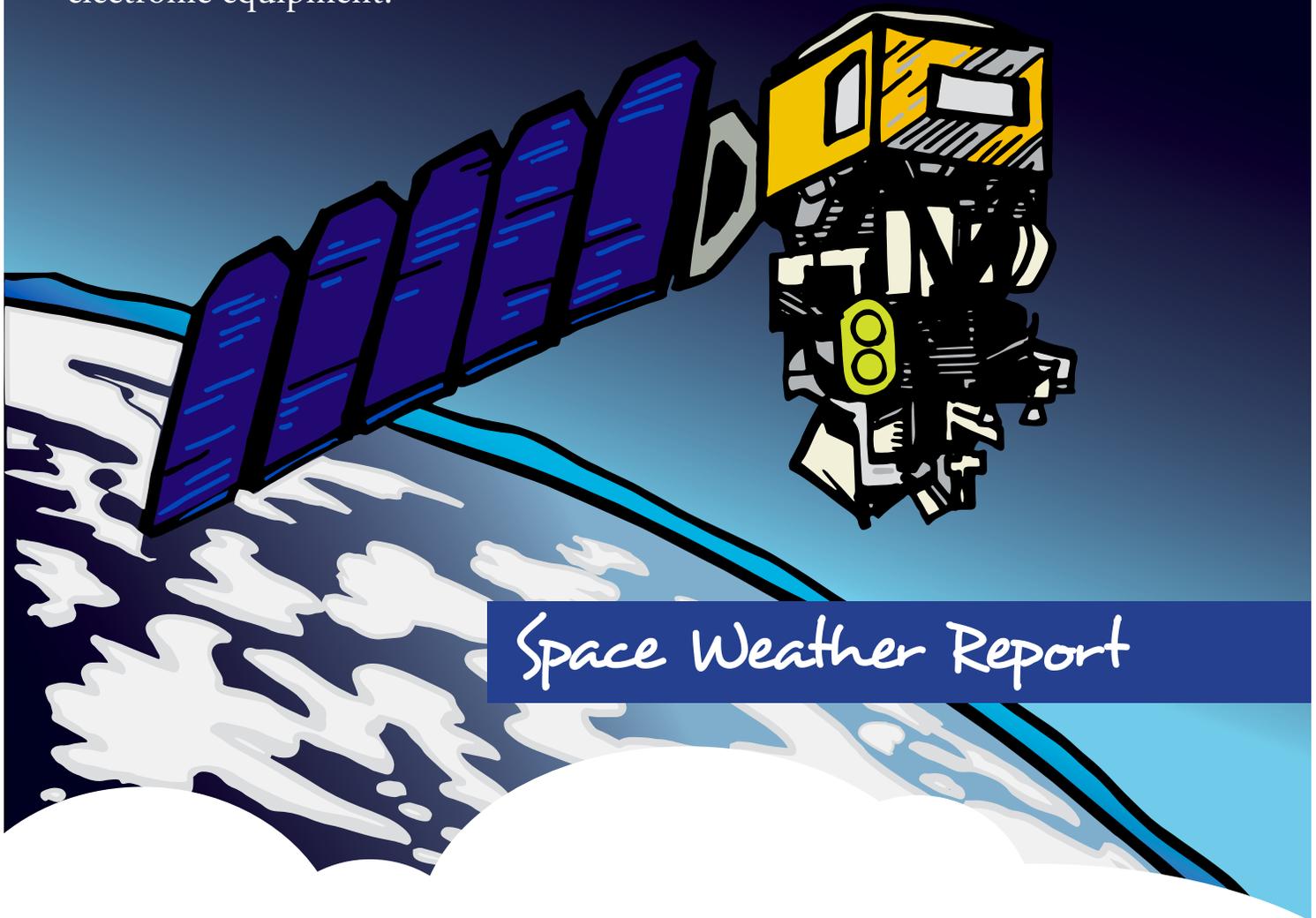
Stargazer began telling Pegasus a story of how special he was and how a smaller rocket was needed for lighter payloads, especially satellites that collect data for some very important science research and spacecraft that deliver supplies to the International Space Station.



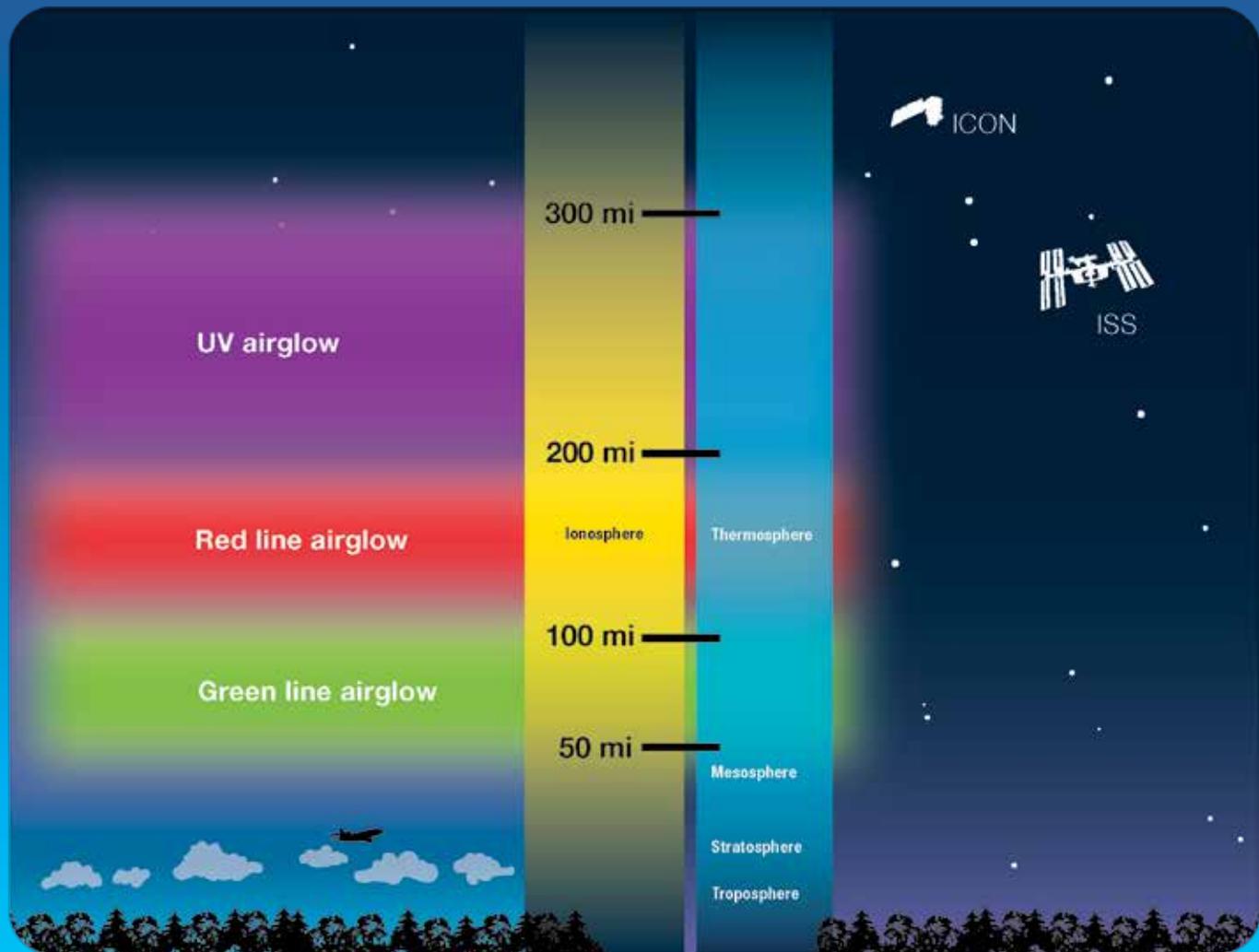
WHAT KIND OF PAYLOADS CAN PEGASUS CARRY?

Stargazer also reminded Pegasus that he had come from a long line of Pegasus rockets and that he would be following in the footsteps of his Pegasus relatives that had come before him.

Pegasus rockets had many successful flights, in fact, soon Pegasus' will help NASA's ICON, Ionospheric Connection Explorer, satellite reach the frontier of space and orbit at the highest level of the Earth's atmosphere, the ionosphere. That is 360 miles above the Earth's surface! There it can collect data about how space weather affects Earth weather. Understanding space weather is important because it can be harmful to astronauts in space and on Earth, it can affect our GPS navigation, cell phones and cause power surges that can damage electronic equipment.



HOW HIGH WILL THE ICON SATELLITE ORBIT ABOVE EARTH?

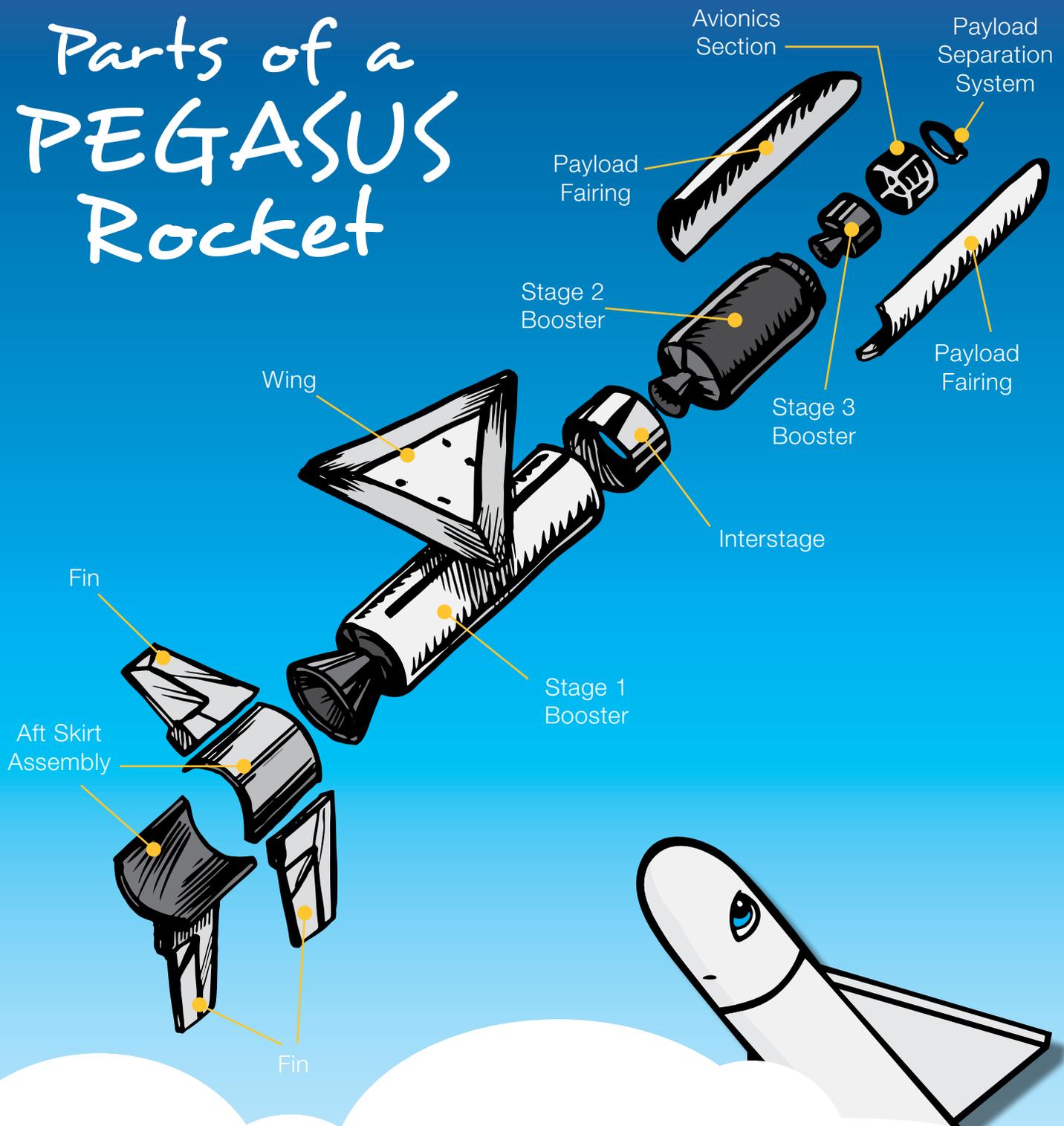


Gaining Altitude

Stargazer pointed out that even though Pegasus is small compared to other rockets, he has helped scientists gather data from places they cannot reach by themselves.

CAN YOU FIND ICON IN THE PICTURE?
WHAT ELSE ORBITS NEARBY?

Parts of a PEGASUS Rocket



HOW MANY BOOSTERS DOES PEGASUS HAVE? WHY?

UP, UP and Away

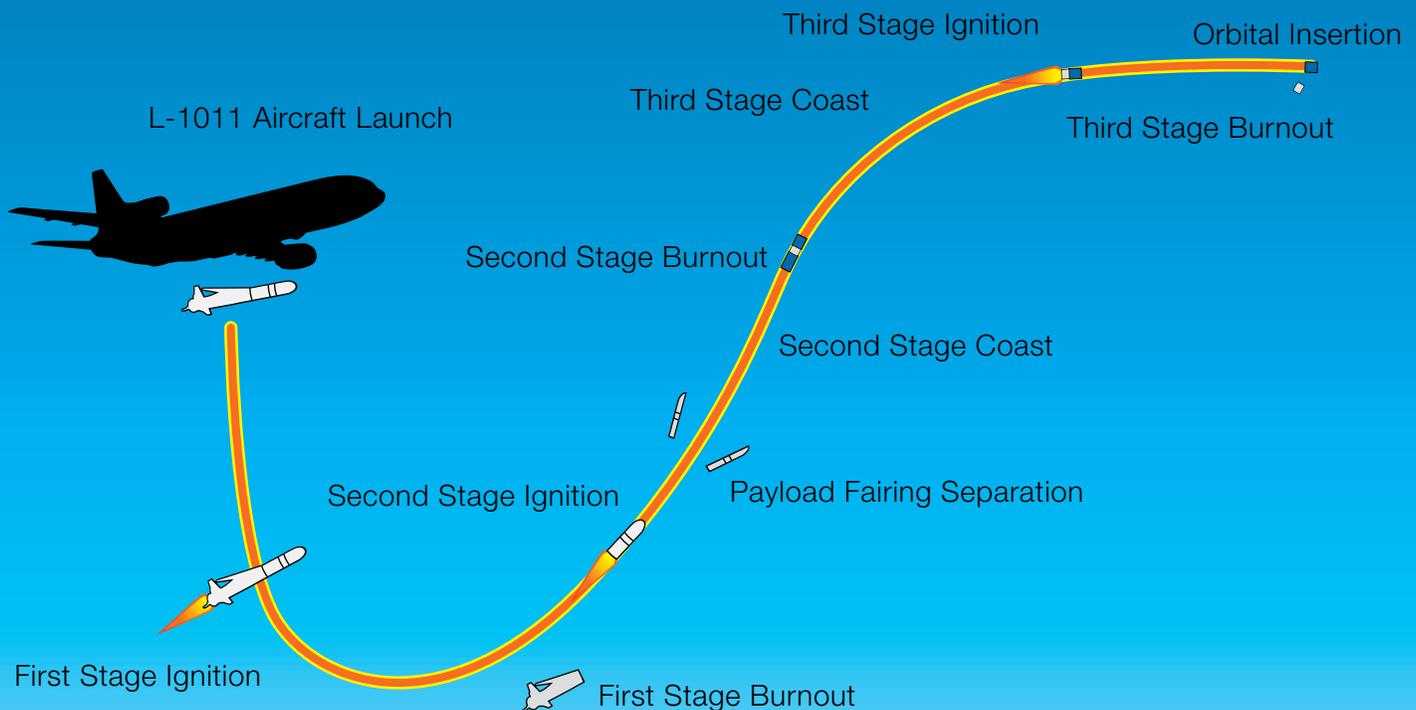


Stargazer reminded Pegasus that he was the perfect size to ride along with him and to launch from the air carrying important payloads. He explained that heavy rockets have to launch directly from the ground with massive rocket boosters and a lot more fuel. Smaller rockets like Pegasus can launch from the belly of a moving airplane at an altitude of thirty nine thousand feet. It's like getting a head start!

WHERE DOES PEGASUS LAUNCH FROM?

Reaching Orbit

By now Pegasus had turned to Stargazer and was eagerly listening with the beginning of a smile on his face. He excitedly added, "And I free-fall for a whole 5 seconds so I can light my solid rocket boosters at just the right trajectory and zoom toward the stars!"



WHY DO YOU THINK PEGASUS FREE FALLS BEFORE LIGHTING HIS ROCKET BOOSTERS?

150 MPH



329 MPH



1,656 MPH



17,000 MPH



Ready, Set, GO!

Stargazer chuckled, “Yes, you do little buddy. You are a speedy rocket, going as fast as 17,000 mph!

A typical family car can go as fast as 150 miles per hour, a drag race car is reported to go just over 329 miles per hour and a fighter jet has a maximum speed of about 1,656 miles per hour.

Pegasus was smiling proudly now. He said, “I can fly much faster than a fighter jet!”

HOW FAST CAN A RACECAR GO?

HOW FAST DOES PEGASUS GO?

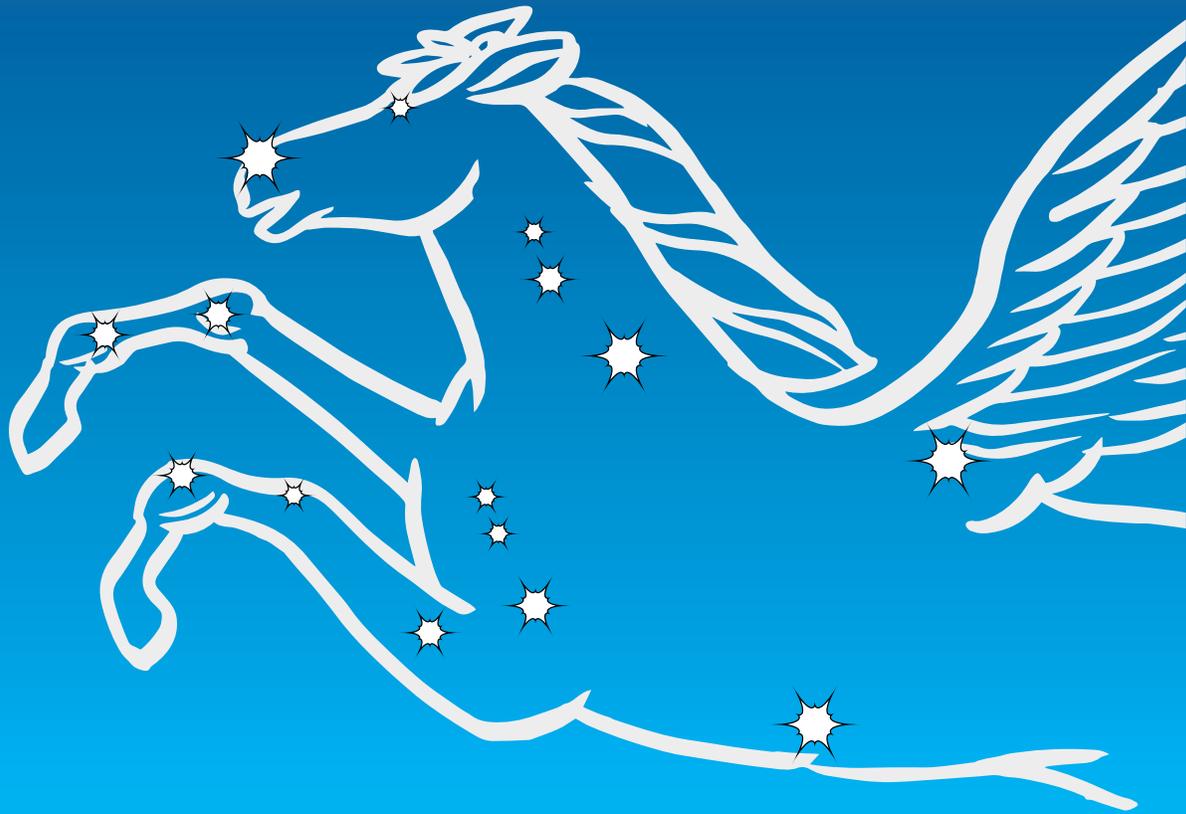
Newton's Third Law of Motion



Newton's third law of motion is why rockets launch. This law says that for every action, there is an equal and opposite reaction.

WHEN PEGASUS' ROCKET BOOSTER PUSHES ENERGY AWAY FROM HIM WHAT DIRECTION DOES IT MAKE HIS HEAD GO?

Hidden among the Stars



Stargazer said, yes you can, and that reminds me of another story. This one is about a mythological horse that had beautiful, feathered, very strong wings. He used his wings to fly up to the stars, sort of like the little rocket of the same name! At night you can still see him there as a constellation.

Can you guess what his name was?

Pegasus thought for a moment. He didn't know any flying horses.

CAN YOU GUESS THE CONSTELLATIONS NAME?

a Mythological Hero



Stargazer announced with pride, “You are named after that famous flying horse!”

DO REAL HORSES HAVE WINGS?

Pegasus jumped to his feet with his answer,
“Pegasus! His name was my name!”

WORD MINING

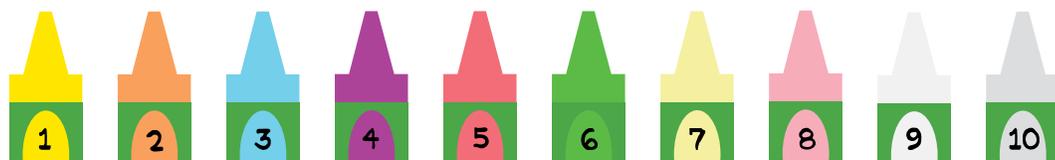
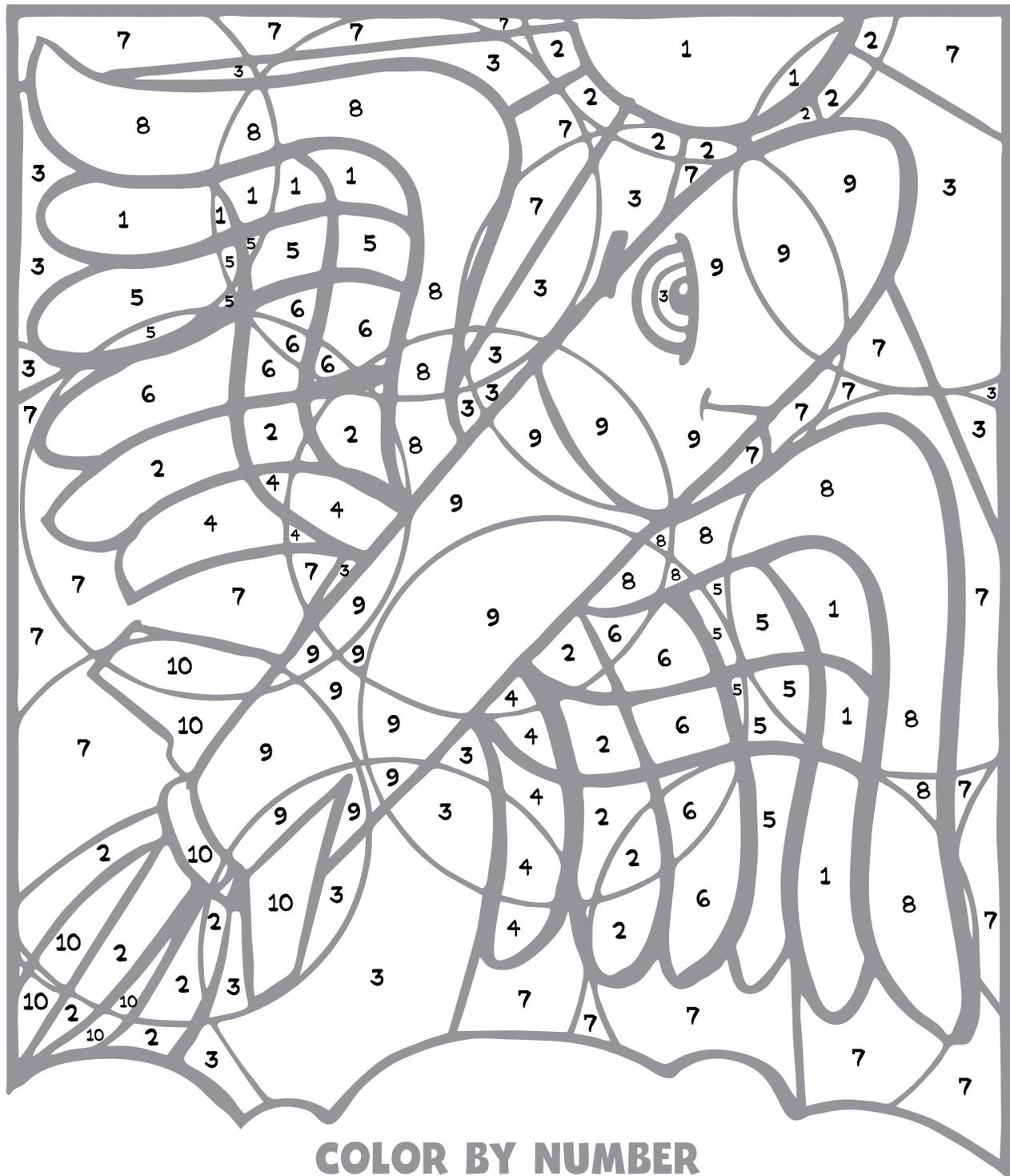
Dig through the words “PEGASUS ROCKET” to discover how many words with three or more letters you can create. (*Example: “SOCK” or “TOE”*)

- | | |
|-----------|-----------|
| 1. _____ | 12. _____ |
| 2. _____ | 13. _____ |
| 3. _____ | 14. _____ |
| 4. _____ | 15. _____ |
| 5. _____ | 16. _____ |
| 6. _____ | |
| 7. _____ | |
| 8. _____ | |
| 9. _____ | |
| 10. _____ | |
| 11. _____ | |



WHAT ARE SOME WORDS YOU CAN SPELL USING THE
LETTERS IN YOUR NAME?

Pegasus was daydreaming of himself with big beautiful wings that had feathers of every color. He could just feel the air rushing past and the strength of his wings as he flew toward the stars.



At that moment Pegasus and Stargazer were reminded of the launch as they began to hear the countdown over the loud speaker, “five, four, three, two, one, liftoff” they counted along as Atlas’ engines ignited and the ground shook with a rumble. Then Atlas rose from the Launchpad and lit up the night sky like the sun.

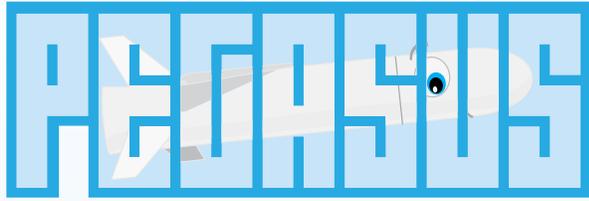


WHAT SOUND DO YOU THINK ATLAS MADE AS IT LIFTED OFF THE LAUNCHPAD?



They both cheered and waved in admiration. Pegasus turned to Stargazer and said, “We are all so different but each one of us is an important part of this rocket family.”

HOW MANY DIFFERENT PEOPLE DO YOU HAVE AS FAMILY OR FRIENDS?



*Flying with a little help
from my friends*

**<https://public.ksc.nasa.gov/LspEducation>
<http://go.nasa.gov/lspockets>**