Student Workbook

Adopt-A-Pilot®

Name_____

My Pilot's name_____

Southwest®

THE ADOPT–A–PILOT VALUES

F **FEARLESSNESS:** Being brave enough to go for it even when you are scared! Be courageous and take action even if you feel anxious or nervous. Success is found on the other side of fear!

L **LEADERSHIP:** Being someone people can count on to get things done! Making decisions based on what is right and ethical, not necessarily what is popular with others. Great leaders are successful because they lead by example.

I **IMAGINATION:** Being creative! Your imagination allows you to dream really big dreams! It will help you find solutions for obstacles that stand in your way. Using your imagination to 'see' yourself succeeding is an essential part of success.

G **GRATITUDE:** Being thankful! An attitude of gratitude will allow you to appreciate hard times because they make you grow and become stronger. Gratitude will bring great happiness to all areas of your life.

H **HONESTY:** Being truthful in what you say and do! Do not gossip, bully, or spread rumors about others. When you are honest people respect you. People who respect you will help further your success.

T **TENACITY:** Being someone who never ever gives up! Work hard and keep trying, even if you have a set-back. Tenacity is the key! If you always stick with your dreams, no matter what, you will have an amazingly successful life!

Table of Contents

Welcome to Adopt-A-Pilot!
You are one of 35,000+ Students 'adopting' a Southwest Pilot this year!

NOTES

Lesson 1:
Take-Off . . . With Adopt-A-Pilot!

FLIGHT ROUTE

Where You'll Go Today

- In this lesson you will:
  - Learn more about the Adopt-A-Pilot program, an adventure in learning, discovery, and fun!
  - Get to know your Pilot and learn how they pursued their career in aviation.
  - Use your imagination to brainstorm what skills and subjects are needed to be successful in different careers.
  - Learn about the Adopt-A-Pilot F.L.I.G.H.T. Values, which can help guide you throughout life.

MATERIALS

- Pen or Pencil

THE ADOPT-A-PILOT VALUES

FEARLESSNESS

noun |

: without fear

: bold or brave; intrepid

CRUISE—TO A SUCCESSFUL CAREER

In-Class Activity 1

Take a minute to think about what a doctor does every day. Do they help you feel better when you are sick? Can they fix a broken bone? Yes! The reason they can do this is because they have skills and have studied subjects that make them good at their job. What skills do they have? Are they good with their hands? A good listener? What subjects did they study? Biology, Medicine? Every career requires its own set of specific skills and subject knowledge. This activity will explore different careers and the skills and subjects that they use!

SKILL

- *Skill: an ability, coming from one's knowledge, aptitude, or practice, to do something well.*
- A skill can come naturally, be something you have already learned, or it can be something that with practice, you will be good at one day.
- There are many ways to say that you are skilled. For example, your coach might say that you are a talented soccer player or your teacher might say that you have a knack for problem solving.

SUBJECT

- *Subject: a branch of knowledge that you study or learn.*
- A subject doesn't always have to be something that's taught in school. For example, your mom can teach you how to knit!
- Sometimes a subject can also be a skill. For example, you can be good at math and also study math in school.

If you already know what you want to be when you grow up, you can start focusing now on developing the skills and subject knowledge that are important to your career. If you don't know what you want to be yet, you can look at what skills and subjects you like (or are good at) to help you decide upon a career that you will love.

CAREER SKILLS AND SUBJECTS

Directions: As a class, fill-in the table as you explore different skills and subjects professionals need for their careers.

CAREERS	SKILLS	SUBJECTS
Pilot	**Problem solving** **Hand-eye coordination**	**Physics** **Math**

CRUISE—LET YOUR DREAMS TAKE F.L.I.G.H.T.

In-Class Activity 2

You probably have heard that you should always tell the truth and be kind to others. These are great examples of values. A value is something you should consider to be important. We all have our own values, they add to the quality of our life, and help us make decisions based on what is right or ethical. During Adopt-A-Pilot you will learn the F.L.I.G.H.T. Values that can help guide your behavior and aid in your decision-making for the rest of your life.

Directions: Work as a class to complete a list of synonyms or phrases that describe each letter of the **F.L.I.G.H.T.** Values.
Note:* Each of the Adopt-A-Pilot **F.L.I.G.H.T. Values are explained in detail on the last page of this worksheet.

FEARLESSNESS

_____ _____

_____ _____

LEADERSHIP

_____ _____

_____ _____

IMAGINATION

_____ _____

_____ _____

GRATITUDE

_____ _____

_____ _____

HONESTY

_____ _____

_____ _____

TENACITY

_____ _____

_____ _____

LANDING

Wrapping Up the Lesson

- Congratulations! Today you:
  - You learned about the Adopt-A-Pilot program, and got to know a little bit about your 'adopted' Pilot.
  - Explored different careers and considered what skills and subjects are needed to be successful in those professions.
  - You discovered the **F.L.I.G.H.T.** Values and what they mean. Remembering and applying the Adopt-A-Pilot **F.L.I.G.H.T.** Values can help you achieve anything all of your dreams.

POST-FLIGHT CHECKLIST

A Briefing For Your Pilot's Next Visit

- While your Pilot is away, complete the **1ST SOLO FLIGHT – WHEN I GROW UP**, **I WANT TO BE** BRAIN BOOSTER activity. This activity will take a closer look at your future career goals and the Adopt- A-Pilot **F.L.I.G.H.T.** Values.
- Between now and the next time your Pilot visits, your teacher may have you complete **LESSON 1A: WHILE THE PILOT IS AWAY ... The F.L.I.G.H.T.** Values.
  - During your Pilot's next visit, you will explore the world of geography and time zones using a Southwest Airlines destination map.

1ST SOLO FLIGHT—WHEN I GROW UP I WANT TO BE

Brain Booster Activity

PART ONE: THE ADOPT-A-PILOT F.L.I.G.H.T. VALUES

1. The Adopt-A-Pilot **F.L.I.G.H.T.** Values will help me live a successful life. These values are:

F _____

L _____

I _____

G _____

H _____

T _____

2. In one or two sentences, talk about a time you were FEARLESS.

_____

_____

_____

PART TWO: CAREERS AND GOALS

1. When I grow up I want to be: _____

2. Three skills I need for this career are:

1. _____ 2. _____ 3. _____

3. Two school subjects I need to study for this career are:

1. _____ 2. _____

4. Circle the skill(s) you will need to practice.

5. Circle the subject(s) you are looking forward to studying.

6. Discuss your career dreams with an adult who you admire. What advice do they have that will help you?

_____

_____

7. How will **FEARLESSNESS** help you achieve your career goals? _____

Lesson 2:
Look Out Below . . . World Geography!

FLIGHT ROUTE
Where You'll Go Today

- In this lesson you will:
  - Discover why we have time zones.
  - Learn how to calculate the current time anywhere in the world as you explore the six time zones in the Southwest Airlines system.
  - Discover why airports use 3-Letter Airport Codes and where those codes come from.

MATERIALS

- 3-Letter Airport Chart (in the Addendum)
- Adopt-A-Pilot Student Map (in the Addendum)
- Pen or Pencil

THE ADOPT-A-PILOT VALUES

LEADERSHIP

noun |

: the ability to lead other people

: a position as a leader of a group, organization, etc.

CRUISE—TIME TRAVEL

In-Class Activity 1

Have you every wondered what someone in a different part of the world is doing at the exact same time as you are? If you live in a different time zone it's probably not the same thing. Imagine you live in California and your family is eating dinner. At that very same time, kids in New York are probably getting ready for bed. How is that so? It is because you live in different time zones. In this activity you are going to learn how to calculate the current time anywhere in the world.

TIME ZONES

- *Time Zones: any region that uses the same standard time.*
- Time zones are imaginary lines usually based on a geographical reference like a state/country border, river, or other geological features.
- Each time zone has its own unique name.
- There are four major time zones in the continental United States: Pacific, Mountain, Central and Eastern.
- We did not always have time zones. In the 1800's most towns set their clocks based on 'high noon,' or when the sun was at it's highest overhead. Each city called this time 'local time,' so there were thousands and thousands of different 'local times' throughout the world. With the invention of the railroads, all these 'local times' were confusing. It became necessary to create a different system with fewer 'local times.' This is how the international time zone system was adopted. Today, there is a time zone for every hour of the day starting at a line of longitude called the Prime Meridian in Greenwich, England.
- Southwest Airlines flies to all four of these time zones as well as the Atlantic time zone (which is located east of the Eastern time zone) and the Hawaiian time zone (which is located west of the Pacific time zone).

PART ONE: CALCULATING TIME CHANGES

- Each time you cross a time zone line you are 'traveling' through time!
    - For example: Lets say you and your best friend are standing right on top of the border between Nevada (Pacific time zone) and Utah (Mountain time zone). You take one step into Nevada and your friend takes one step into Utah. The time on your cell phone will read 8:00 a.m. but the time on your friend's phone will read 9:00 a.m.! What? That doesn't make any sense! You can still see your friend, hear them, reach out and touch their hand. So, what happened? Very simply, the two of you are now on different sides of a time zone line, making the current time different for you and your friend!

- Calculating the current time in any time zone is easy. All you have to know is how many time zone lines are crossed and how to count clockwise (forwards) and counter-clockwise (backwards) on an analog clock.
    - When traveling from west to east you count clockwise (forwards).
    - When traveling from east to west you count counter-clockwise (backwards).

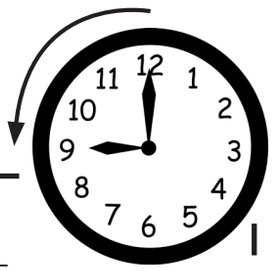
Directions: Using the resources in the Addendum work as a class to calculate the time change questions.

1. Which time zone is **SFO** located in? _____
2. Which time zone is directly to the east of the Pacific time zone? _____
3. Which time zone is **DAL** located in? _____
4. Which time zone is directly east of the Central time zone? _____
5. List three cities (using the 3-Letter City Code) Southwest Flies to in the Hawaiian time zone?

   a. _____ b. _____ c. _____

PART TWO: TRAVELING FROM EAST TO WEST

Directions: Using the resources in the Addendum work as a class to calculate the time change questions.



1. What city does the 3-Letter City Code **DTW** stand for? _____
2. Circle **DTW** on your Adopt-A-Pilot Student Map.
3. What state is **DTW** in?_____ What is the state capital?_____
4. If it is 9:00 p.m. in **DTW,** what do you think kids your age are doing?_____

   _____
5. What city does the 3-Letter City Code **BOI** stand for?_____
6. Circle **BOI** on your Adopt-A-Pilot Student Map.
7. What state is **BOI** in?_____ What is the state capital?_____
8. Count how many Time zone lines are crossed between **DTW** and **BOI**. Record your answer:_____
9. Is **DTW** east or west of **BOI**?_____

To calculate what time it is when traveling from east to west, you count backwards!

10. Looking at the clock, start at nine o'clock and count backwards (counter-clockwise) the number of time zone lines you crossed. What time is it on the clock?_____
11. What do you think kids your age are doing in **BOI** at this time _____

PART THREE: TRAVELING FROM WEST TO EAST

Directions: See directions on page 21.

1. What city does the 3-Letter City Code **SEA** stand for? _____

2. Circle **SEA** on your Adopt-A-Pilot Student Map.

3. What state is **SEA** in?_____ What is the state capital?_____

4. If it's 6:00 a.m. in **SEA,** what do you think kids your age are doing?_____

_____

5. What city does the 3-Letter City Code **MCO** stand for?_____

6. Circle **MCO** on your Adopt-A-Pilot Student Map.

7. What state is **MCO** in?_____What is the state capital?_____

8. Count how many time zone lines are crossed between **SEA** and **MCO.** Record your answer:_____

9. Is **SEA** east or west of **MCO**?_____

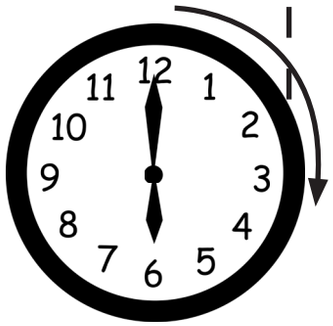
To calculate what time it is when traveling from west to east, you count forwards!

10. Looking at the clock, start at six o'clock and count forwards (clockwise) the number of time zone lines you crossed.

What time is it on the clock?_____

11. What do you think kids your age are doing in **MCO** at this time?_____

_____



BONUS QUESTIONS:

1. What ocean is east of **MCO**?_____

2. What ocean is west of **SEA**?_____

3. Name the 5 big lakes close to **DTW** (so big you might call them 'Great'):

H:_____ E:_____

O:_____ S:_____

M:_____

6. If you leave Denver, Colorado (**DEN**) at 9:00 a.m. and fly 2 hours and 30 minutes to Oakland, California (**OAK**) what time is it in **OAK** when you land?_____

7. What Mountain range is west of **DEN**?_____

LANDING

Wrapping Up the Lesson

- Congratulations! Today you learned:
    - How the time zones came to be.
    - How to calculate the current time in any time zone by counting backwards and forwards.
    - The location of six time zones: Hawaiian, Pacific, Mountain, Central, Eastern, and Atlantic.

POST FLIGHT CHECKLIST

A Briefing For Your Pilot's Next Visit

- While your Pilot is away, complete the **2ND SOLO FLIGHT – A JOURNEY THROUGH TIME** BRAIN BOOSTER activity. This activity will reinforce what you learned about time changes.
- Between now and the next time your Pilot visits, your teacher may have you complete **LESSON 2A: WHERE IN THE WORLD?** This geography and math lesson follows your Pilot while they are at work.
- During your Pilot's next visit, you will explore the world of science and learn how a 75 ton airplane flies.

2ND SOLO FLIGHT—A JOURNEY THROUGH TIME

Brain Booster Activity

PART ONE: THE ADOPT-A-PILOT F.L.I.G.H.T. VALUES

IMAGINE being able to travel anywhere in the world or universe. List the five top places you would go.

a._____ b._____

c._____ d._____

e._____

PART TWO: TIME TRAVEL

1. To calculate time changes if you are traveling from east to west, you count (select one):

   a. Forwards b. Backwards

2. To calculate time changes if you are traveling from west to east you count (select one):

   a. Forwards b. Backwards

3. Assume it is 7:30 a.m. in **STL**. What time is in the following cities?

   *(Hint: First determine the time zone for **STL**)*

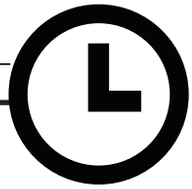
   a. **GSP**:_____ b. **AUS**:_____

   c. **ABQ**:_____ d. **RNO:**_____

   e. **SJU**:_____ f. **Your home town**:_____

4. What city is **STL**? _____ What is the state capital? _____

5. If your Pilot departs from Baltimore, Maryland (**BWI**) at 6:30 a.m. and flies 5 hours and 25 minutes to San Diego, California (**SAN**), what time is it in **SAN** when they land? _____



BONUS QUESTIONS

1. Why is the 3-Letter City Code for Orlando, FL **MCO**?_____

2. Why is the 3-Letter City Code for New Orleans, LA, **MSY**?_____

Note: you may need to use the internet to find the answer.

Lesson 3:
What Is Up . . . With Aviation Science?

FLIGHT ROUTE
Where You'll Go Today

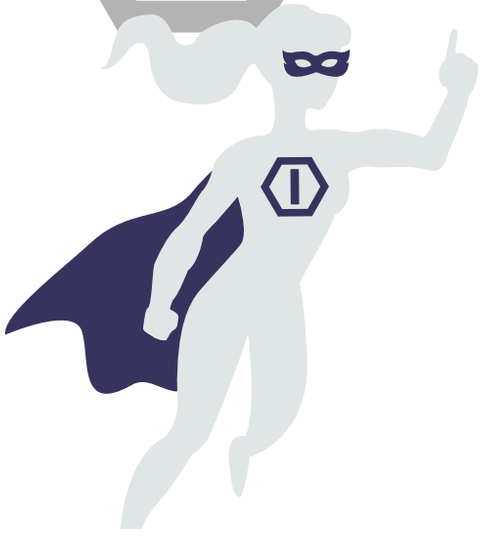
- In this lesson you will:
  - Learn how the scientific process helps scientists answer questions.
  - Learn a little bit about Orville and Wilbur Wright.
  - Learn more about Bernouli's Principle.
  - Learn how Sir Isaac Newton's discoveries apply to an airplane in flight.
  - Learn about the four forces of flight: lift, weight, thrust, and drag.

MATERIALS

- Pen or Pencil

THE ADOPT-A-PILOT VALUES

IMAGINATION



noun |

: the action of forming new ideas, images, or concepts

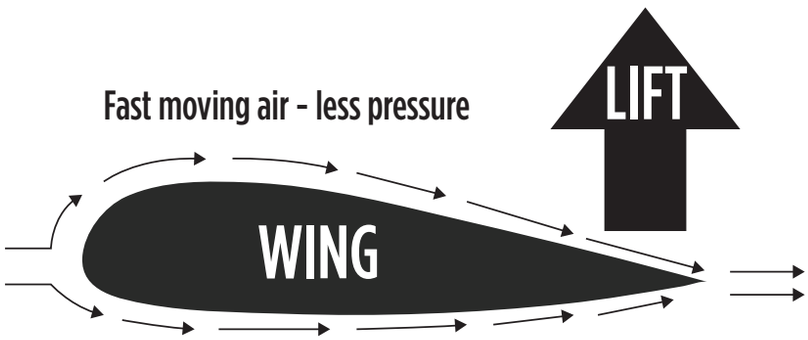
: the ability to form a picture in your mind of something you have not seen or experienced

CRUISE—WITH THE SCIENTIFIC PROCESS

In-Class Experiment 1

On a windy day in December 1903, on the Outer Banks of North Carolina, two brothers were about to change the course of history. Orville and Wilbur Wright owned a bicycle shop in Dayton, Ohio. However, what they were really interested in was the idea of powered flight. Up to that point, humans had used hot air balloons and gliders, but because there was no engine, neither where very useful for reliable travel from Point A to Point B. (Unless Point A happened to be at the top of a big hill, and Point B was gliding distance down the hill!) Using their strong mechanical skills and the scientific process, Orville and Wilbur built an airplane with an engine, which they named The Wright Flyer. On December 17, 1903, their imagination and tenacity finally paid off when The Wright Flyer flew 120 feet down the sandy dunes.

To accomplish this remarkable achievement, the brothers worked with the four forces of flight. By managing each carefully so that they worked together, Orville and Wilbur Wright were able to make a powered airplane fly. Today, you and your Pilot are going to study those four forces of flight.



But first you need to learn about two scientific principles that were discovered long before Orville and Wilbur were born.

BERNOULLI'S PRINCIPLE:

- Daniel Bernoulli (1700 - 1782) was a Swiss scientist and mathematician who spent his life studying the way that fluids move. The lessons learned from Bernoulli's work explains why boomerangs soar, baseballs curve, and why airplanes fly!
- ***Bernoulli's Principle: slower moving fluids will exert more pressure than faster moving fluids.***
- *Fluid: a substance, such as a liquid or gas, that can flow and change shape.*
- *Exert: to put pressure on.*
- An airplane's wing is curved on the top and is relatively flat on the bottom. The air over the top of the wing moves faster than the air flowing under the wing.
- The slower moving air under the wing exerts more pressure than the faster moving air over the top of the wing.

NEWTON'S LAW OF GRAVITY and THIRD LAW OF MOTION

- Sir Isacc Newton (1643-1727) was an English physicist who is credited with many important scientific discoveries. Newton's work explains how everything in the universe moves and behaves. His Law of Gravity and his Laws of Motion apply to everything—from an apple falling off of a tree to a planet orbiting the sun; even a Southwest Airplane taking off!
- Some stories say that Newton sat under a tree and watched as an apple fell into the grass. This inspired him to use his imagination to investigate the force that pulls objects to the ground - the Law of Gravity.
- He is also famous for his three Laws of Motion. The Third Law applies directly to aviation, as it is the reason why our engines are able to make us move forward.
    - *Newton's Third Law: for every action there is an equal and opposite reaction.*

THE SCIENTIFIC PROCESS

- *The Scientific Process: a step-by-step way to answer questions or solve problems by conducting experiments, making observations and evaluating the results to reach a conclusion.*
- The scientific process is the most commonly used method to conduct experiments.
- This method of acquiring knowledge has characterized the development of science since the 17th century. It explores observations and answers questions.
- *Hypothesis*: An educated guess based on current knowledge.
    - It is important to understand this is only a guess, and its okay to be wrong!

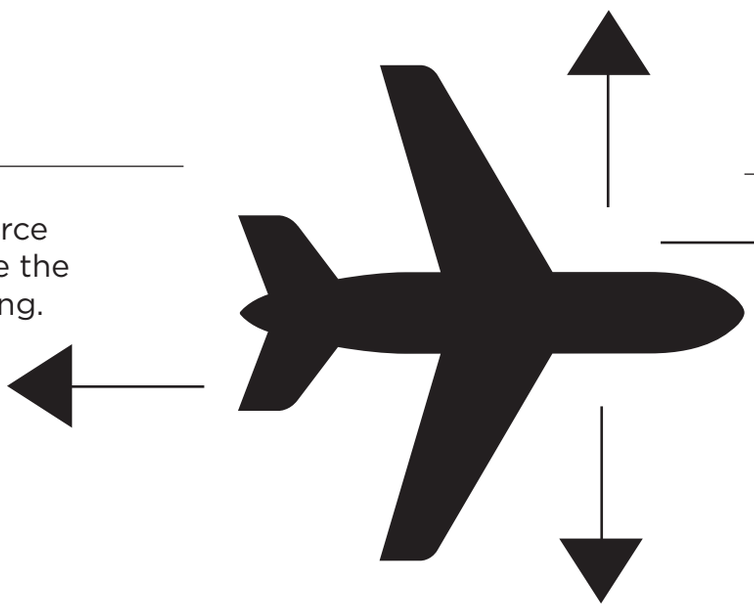
THE SCIENTIFIC PROCESS

- **Step One**: Create a **HYPOTHESIS** about a question you have or a problem you want to solve.
- **Step Two**: Conduct an **EXPERIMENT** to test your **HYPOTHESIS**.
- **Step Three**: Record the **OBSERVATIONS** of your **EXPERIMENT**.
- **Step Four**: Based on your **OBSERVATIONS**, come to a **CONCLUSION**. Compare your **CONCLUSION** to your **HYPOTHESIS**. Did the results support your **HYPOTHESIS**?

THE FOUR FORCES OF FLIGHT

- Any object that is in motion is affected by four forces: lift, weight, thrust and drag.
- These four forces are what make an airplane fly.
- A "force" is a pushing or pulling motion in a specific direction.
- During level and unaccelerated flight, the opposing forces (lift, weight, thrust and drag) are equal to each other.
- By changing the forces, Pilots can make an airplane climb or descend, speed up, or slow down.

Directions: With your Pilot's help, label the Four Forces diagram.



_____

The upward force generated by airflow over the wings. (Bernoulli's Principle)

_____

The rearward force created because the airplane is moving.

_____

The forward force created by the airplane's engine(s) (Newton's Third Law)

_____

The downward force created by the mass of the aircraft. Should not be confused with Gravity. Gravity is a constant, while _____ is constantly changing. (Newton's Law of Gravity)

CRUISE—UP OR DOWN WITH SCIENCE

In-Class Experiment 2

Directions: Your Pilot will conduct an experiment to demonstrate one of the four forces of flight. Use this worksheet to help follow along, using the scientific process.

THE SCIENTIFIC PROCESS

THE FORCE OF: _____

• Step One: HYPOTHESIS

- Think and predict what will happen?

• Step Two: EXPERIMENT

- Watch as the Pilot demonstrates the experiment.

• Step Three: OBSERVATIONS

- Briefly write down what you observed. What happened?

• Step Four: CONCLUSION

- Explain (using scientific words) the results of the experiment.

• THINK & REVIEW

- Did the results support your hypothesis? What did you learn?

LANDING

Wrapping Up the Lesson

- Congratulations! Today you:
  - Learned how Daniel Bernoulli and Sir Issac Newton's discoveries are instrumental to the science of flight.
  - Investigated the scientific process, and conducted an experiment to determine if your hypothesis was supported by your results.
  - Became an expert on the four forces of flight that make airplane travel possible.

POST FLIGHT CHECKLIST

A Briefing For Your Pilot's Next Visit

- While your Pilot is away, complete the **3RD SOLO FLIGHT – UP, UP AND AWAY** Brain Booster activity. This activity reviews the four forces of flight and the scientific process.
- Between now and the next time your Pilot visits, your teacher may have you complete L**ESSON 3A: WHILE THE PILOT IS AWAY ... FEEL THE FOUR FORCES**.
- During your Pilot's next visit, you will celebrate all you have learned during your Adopt-A-Pilot journey!

3RD SOLO FLIGHT—UP, UP AND AWAY

Brain Booster Activity

PART ONE: THE ADOPT-A-PILOT F.L.I.G.H.T. VALUES

Write a couple of sentences explaining why being **HONEST** is always the best policy.

_____

_____

_____

_____

PART TWO: BERNOULLI'S & NEWTON'S PRINCIPLES AND THE SCIENTIFIC PROCESS

Draw a line to the correct answer for each step of the scientific process

Step One:	**Conclusion**
Step Two:	**Experiment**
Step Three:	**Hypothesis**
Step Four:	**Observation**

2. What is a hypothesis? a. A fact b. A myth c. An educated guess

3. Newton's _____ Law of Motion saays: for every _____ there is an equal and opposite _____.

4. The four forces of flight are:

a. push, pull, up, down

b. lift, weight, thrust, drag

c. left, right, forward, backward

d. eenie, meenie, miney, moe

NOTES

Lesson 4:
Destinations . . . Adopt-A-Pilot Completion Day!

FLIGHT ROUTE

Where You'll Go Today

- Hip, hip, hooray! You have successfully completed the Adopt-A-Pilot program.
- You explored how learning different skills and subjects can help you with your future career dreams.
- You traveled through time—time changes that is!
- You investigated Bernoulli's Principle and the forces of flight using the scientific process.
- You learned the Adopt-A-Pilot **F.L.I.G.H.T** Values, and how import they are as you 'fly' through life!
- Thank you for being a part of this journey. Your 'adopted' Pilot is **GRATEFUL** they got to spend part of the school year with you!

TEACHER LESSONS

Lesson 1A:
While The Pilot Is Away . . . The F.L.I.G.H.T. Values

FLIGHT ROUTE
Where You'll Go Today

•In this lesson you will:

- Review the **F.L.I.G.H.T.** Values that were introduced by your Pilot.
- Think of ways these values can make you successful as you progress through your life.

MATERIALS

- Pencil or Pen

THE ADOPT-A-PILOT VALUES

GRATITUDE

noun |

: the quality of being thankful

: readiness to show appreciation for and to return kindness

CRUISE – FINDING THE VALUE

In-Class or At-Home Activity 1

Each one of the **F.L.I.G.H.T.** Values has been identified as being very important in determining success as you go forth with your lives. By developing a deeper understanding of what each word means to you individually, you will be able to recall each of the values, and apply them when you need guidance.

Directions:

1. Use a dictionary to help you develop your own definition of what each of the **F.L.I.G.H.T.** Values means.
2. Using a thesaurus, find 2 or 3 synonyms for each of the **F.L.I.G.H.T.** Values.
3. Write 2 or 3 sentences explaining how each of the **F.L.I.G.H.T.** Values can help make you more successful in your life.
4. Be ready to share your answers with the rest of the class.

Fearlessness

My definition _____

_____

Synonyms _____ • _____ • _____

Will help me because _____

Leadership

My definition _____

_____

Synonyms _____ • _____ • _____

Will help me because _____

Imagination

My definition _____

_____

Synonyms _____ • _____ • _____

Will help me because _____

Gratitude

My definition _____

_____

Synonyms _____ • _____ • _____

Will help me because _____

Honesty

My definition _____

_____

Synonyms _____ • _____ • _____

Will help me because _____

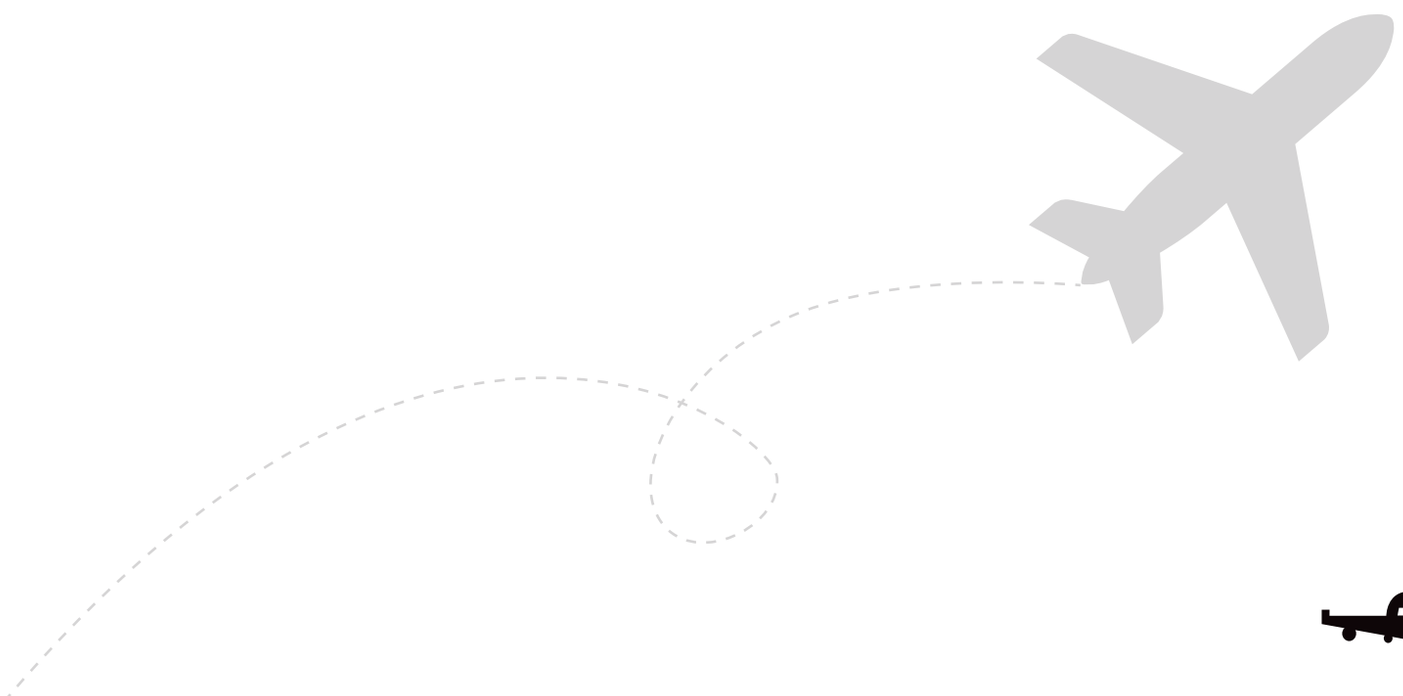
Tenacity

My definition _____

_____

Synonyms _____ • _____ • _____

Will help me because _____



LANDING

Wrapping Up the Lesson

- Developing your own understanding of the **F.L.I.G.H.T.** Values will help you as you make your way to a very successful life.
- After reviewing the lesson, think of some ways the **F.L.I.G.H.T.** Values could help you.
- Use the space below to write down any questions you might have for your Pilot.

POST FLIGHT CHECKLIST

A Briefing For Your Pilot's Next Visit

- If you have not completed your **1ST SOLO FLIGHT – WHEN I GROW UP, I WANT TO BE** BRAIN BOOSTER activity, you still have time. Your Pilot may ask some of you to share this activity the next time they visit!
- Be ready to share **LESSON 1A: WHILE THE PILOT IS AWAY … THE F.L.I.G.H.T. VALUES with your Pilot. How will the F.L.I.G.H.T.** Values lead to your success?
- Come to the next Adopt-A-Pilot class ready to exhibit all of your Adopt-A-Pilot **F.L.I.G.H.T**. Values!

Questions:

Lesson 2A:

While The Pilot Is Away . . . Have The Courage To Soar!

FLIGHT ROUTE

Where You'll Go Today

- In this lesson you will:
    - Explore the location of many cities, states, countries, and territories.
    - Calculate just how far your Pilot flies each day and for their entire trip.
    - Continue to look at the world's different time zones.
    - Calculate the mean and median using real data.
    - Calculate the percentage of time your Pilot spends in each of the time zones.
    - Discover what makes a city unique.

MATERIALS

- The 3-Letter Airport Code Chart (in the Addendum)
- Pilot's Trip Sheet (given to you by your Pilot)
- The Capitals and Postal Code List (on the inside back cover)
- Colored pencils
- The Internet, Atlas, or other Geography resources

THE ADOPT-A-PILOT VALUES

HONESTY

noun |

: the quality of being fair or truthful

: adherence to the facts

CRUISE – FINDING THE VALUE

In-Class or At-Home Activity 1

Many adults head off to an office, classroom, or job site close to home when they go to work. When your Pilot heads off to work, they go to the airport and then they fly all around the United States and foreign countries. In between your Pilot's classroom visits you will track them on their trips, learning about geography as you go.

PILOT TRIP SHEET

Each week your Pilot has a schedule that tells them where they will fly. Their schedule is very similar to your school schedule – it tells them where to be and when to be there. One difference is your Pilot's schedule usually changes every week. To complete this activity you will need to know how to read your Pilot's trip sheet and how to understand some basic terminology that your Pilot uses every day.

TRIP SHEET

DATE	FLIGHT #	DEPART	ARRIVE	EQ	BLK	GRND
03 Oct	1818	OAK 2000	LAS 2120	700	120	45
03 Oct	1819	LAS 2205	SFO 2330	700	125	1555
04 Oct	3236	EXAMPLE		700	130	35
04 Oct	241			700	105	105
04 Oct	1481			700	410	1355
05 Oct	675	BUF 1345	PHX 1825	700	440	115
05 Oct	734	PHX 1530	SLC 2110	700	130	35
05 Oct	734	SLC 2145	OAK 2330	700	145	0

Block Time

Departure Airport and Time

Ground Time

Arrival Airport and Time

Terminology:

- *Trip: A Pilot's schedule. (A trip can be anywhere from one day to four days in length.)*
- *Leg or Route: One flight – from departure airport to arrival airport. (Usually each day of your Pilot's trip has several legs.)*
- *Block Time: The total time of a leg from departure (pushback) to arrival (opening the Main Cabin Door).*
- *Ground Time: The amount of time in between legs.*
- *Overnight or Layover: The city where your Pilot sleeps overnight during their trip.*
- *3-Letter Airport Code: A 3 letter abbreviation used to identify each airport.*
- *Taxi: Driving the airplane on the ground.*

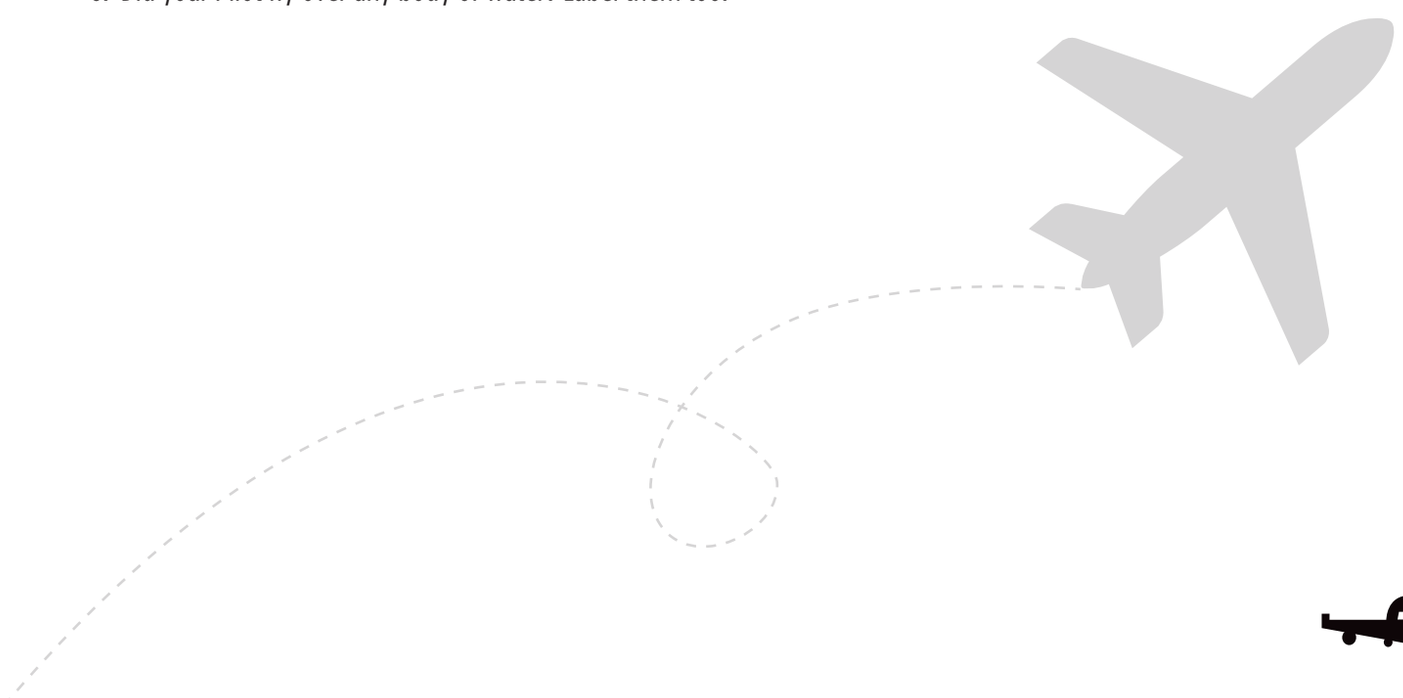
PART ONE: DOTS ON A MAP

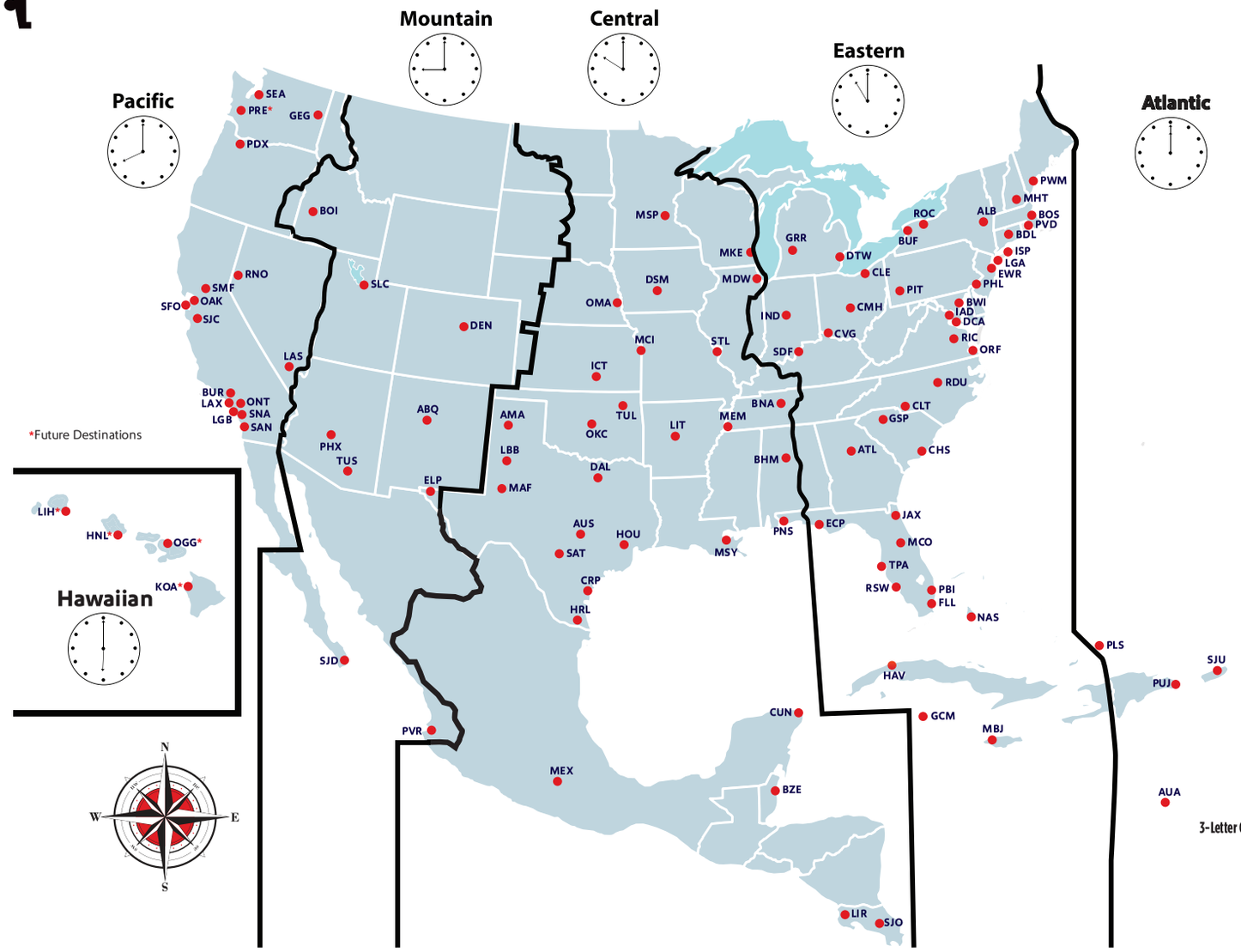
Directions: Using the map on PAGE 34, the Capitals and Postal Code List on the BACK COVER complete the following.

1. Using a different color for each day, 'fly' each leg of your Pilot's trip by drawing a line between each departure and arrival airport.
2. Color every state/country/territory your Pilot departs from using a different color.
3. Pick at least 6 ***different*** cities your Pilot landed at and fill in the table below.

3-LETTER AIRPORT CODE	CITY	STATE/COUNTRY/TERRITORY	STATE/COUNTRY/TERRITORY CAPITOL

4. *(Optional)* Using a variety of different colors, color every state/country/territory your pilot flew over during their trip.
5. *(Optional)* Label each state/country/territory you have colored using the two-letter postal abbreviation.
6. Did your Pilot fly over any body of water? Label them too!





3-LETTER CITY CODES

3-Letter City Code	U.S. Cities	3-Letter City Code	U.S. Cities
ABQ	Albuquerque	LIH	Lihue, Kauai
ALB	Albany	LIT	Little Rock
AMA	Amarillo	MAF	Midland/Odessa
ATL	Atlanta	MCI	Kansas City
AUS	Austin	MCO	Orlando
BDL	Hartford	MDW	Chicago (Midway)
BHM	Birmingham	MEM	Memphis
BNA	Nashville	MHT	Manchester
BOI	Boise	MKE	Milwaukee
BOS	Boston	MSP	Minneapolis/St. Paul
BUF	Buffalo/Niagara	MSY	New Orleans
BUR	Burbank	OAK	Oakland
BWI	Baltimore	OGG	Kahului, Maui
CHS	Charleston	OKC	Oklahoma City
CLE	Cleveland	OMA	Omaha
CLT	Charlotte	ONT	Ontario
CMH	Columbus	ORF	Norfolk
CRP	Corpus Christi	PBI	West Palm Beach
CVG	Cincinnati	PDX	Portland, Oregon
DAL	Dallas	PHL	Philadelphia
DCA	Washington, DC (Reagan National)	PHX	Phoenix
DEN	Denver	PIT	Pittsburgh
DSM	Des Moines	PNS	Pensacola
DTW	Detroit	PVD	Providence
ECP	Panama City Beach	PWM	Portland, Maine
ELP	El Paso	RDU	Raleigh/Durham
FLL	Fort Lauderdale	RIC	Richmond
GEG	Spokane	RNO	Reno
GRR	Grand Rapids	ROC	Rochester
GSP	Greenville/Spartanburg	RSW	Fort Myers
HNL	Honolulu, Oahu	SAN	San Diego
HOU	Houston	SAT	San Antonio
HRL	Harlingen	SDF	Louisville
IAD	Washington, DC (Dulles)	SEA	Seattle Wichita
SEA	Seattle Wichita	SFO	San Francisco
IND	Indianapolis	SJC	San Jose, California
ISP	Long Island/Islip	SJU	San Juan
ITO	Hilo, Hawaii	SLC	Salt Lake City
JAX	Jacksonville	SMF	Sacramento
KOA	Kona, Hawaii	SNA	Orange County/Santa Ana
LAS	Las Vegas	STL	Saint Louis
LA	Los Angeles	TPA	Tampa Bay
LBB	Lubbock	TUL	Tulsa
LGA	New York City (La Guardia)	TUS	Tucson
LGB	Long Beach		

3-Letter City Code	International Cities	3-Letter City Code	International Cities
AUA	Oranjestad	MBJ	Montego Bay
BZE	Belize City	NAS	Nassau
CUN	Cancun	PLS	Providenciales, Turks and Caicos
CZM	Cozumel	PUJ	Punta Cana
GCM	Grand Cayman	PVR	Puerto Vallarta
HAV	Havana	SJD	San José del Cabo
LIR	Liberia	SJO	San Jose, Costa Rica

PART TWO: FAR, FAR, AND AWAY

Directions: Use the City to City Mileage Chart to answer the following questions.

1. For each leg of your Pilot's trip, fill-in the table.

DAY ONE	LEG	DEPARTURE 3-LETTER CITY CODE	ARRIVAL 3-LETTER CITY CODE	MILEAGE
	1			
	2			
	3			
	4			
	5			
	DAY ONE MILEAGE TOTAL:			

DAY TWO	LEG	DEPARTURE 3-LETTER CITY CODE	ARRIVAL 3-LETTER CITY CODE	MILEAGE
	1			
	2			
	3			
	4			
	5			
	DAY TWO MILEAGE TOTAL:			

DAY THREE	LEG	DEPARTURE 3-LETTER CITY CODE	ARRIVAL 3-LETTER CITY CODE	MILEAGE
	1			
	2			
	3			
	4			
	5			
	DAY THREE MILEAGE TOTAL:			

DAY FOUR	LEG	DEPARTURE 3-LETTER CITY CODE	ARRIVAL 3-LETTER CITY CODE	MILEAGE
	1			
	2			
	3			
	4			
	5			
	DAY FOUR MILEAGE TOTAL:			

2. Calculate the total distance your Pilot flew during their trip:

DAY ONE MILEAGE	
DAY TWO MILEAGE	
DAY THREE MILEAGE	
DAY FOUR MILEAGE	
TOTAL MILEAGE FOR LESSON 2A	

PART THREE: A MATTER OF PERCENTS

Directions: Calculate the mean and find the median for each day of your Pilot's trip.

- Mean: the average
- Median: the value separating the higher half of the mileage from the lower half of the mileage.

	MEAN	MEDIAN
DAY ONE		
DAY TWO		
DAY THREE		
DAY FOUR		
THE ENTIRE TRIP		

Directions: Use the map on PAGE 34 and your Pilot's Trip Sheet to answer the following questions.

1. How many times did your Pilot land in each time zone?

	PACIFIC	MOUNTAIN	CENTRAL	EASTERN	ATLANTIC	HAWAIIAN
DAY ONE						
DAY TWO						
DAY THREE						
DAY FOUR						

2. Out of the total landings for each day, what percentage of the time did your Pilot land in each time zone?

	PACIFIC	MOUNTAIN	CENTRAL	EASTERN	ATLANTIC	HAWAIIAN
DAY ONE						
DAY TWO						
DAY THREE						
DAY FOUR						

PART FIVE: OH THE PLACES YOU WILL GO!

Directions: Pick one city where your Pilot overnighted and research that city to complete this activity.

1. The city I chose was: _____

   This city is in the state/country/territory of: _____

   The state/country/territory capital is: _____

   The postal abbreviation is: _____

2. List any major geological features (rivers, lakes, oceans, mountains, plateaus, canyons, deserts, etc.), landmarks, national parks, or attractions of the state/country/territory.

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

3. Name any professional sports teams in the state/country/territory!

Basketball:_____ Soccer:_____

Football:_____ Hockey:_____

Baseball:_____ Other:_____

4. The average high and low temperature:

   High:_____ Low:_____

5. One cool fact that I learned about this location: _____

_____

_____

LANDING

Wrapping Up the Lesson

- Thank you for following along while your Pilot went to work.
- After reviewing this lesson, use the space below to think of some questions you might want to ask your Pilot.
- What city do they like to overnight in the most?
- What is the coolest landmark they have ever seen?
- What is their favorite thing to do while flying at altitude?

POST FLIGHT CHECKLIST

A Briefing For Your Pilot's Next Visit

- If you have not completed your **2ND SOLO FLIGHT—A JOURNEY THROUGH TIME!** activity, you still have time. Your Pilot may ask some of you to share this activity the next time they visit!
- Be ready to share something you found interesting about **LESSON 2A: WHILE THE PILOT IS AWAY ... WHERE IN THE WORLD** with your Pilot. Maybe you'll teach them something they didn't know!
- Come to the next Adopt-A-Pilot class ready to exhibit all of your Adopt-A-Pilot **F.L.I.G.H.T.** Values

Questions:

Lesson 3A:
While The Pilot Is Away . . . Feel The Force!

FLIGHT ROUTE

Where You'll Go Today

- In this lesson you will:
  - Review the four forces of flight.
  - Answer questions about how these forces apply out in the real world.

MATERIALS

- Pencil or Pen
- Four Forces diagram from **LESSON 3: WHAT IS UP WITH AVIATION SCIENCE?**

THE ADOPT-A-PILOT VALUES

TENACITY

noun |

: the quality or fact of being very determined

: continuing to try; perserverance

CRUISE – SEEING THE FORCE

In-Class Activity

Believe it or not, the four forces of flight that work on an airplane also have applications outside of aviation.

Some examples of this are:

- Birds use their wings to control the amount of drag and lift that they need. When they are coming in to land, they position their wings forward to create more drag. When they want to soar, they spread their wings out, which increases lift.
- Race car designers are constantly looking for ways to reduce the weight of the vehicles . By shaving millimeters off of parts, or by using fiberglass or other light weight materials, they are able to make the car go faster with the same amount of thrust.

In the activity below you will look at other ways that the four forces of flight affect things you do everyday.

Directions: Answer the following questions by yourself. Afterwards, you'll have to chance to share your answers. Some of these questions will have you repeat a few facts that your Pilot told you, and other questions will require you to use a little problem solving.

1. In each of the following examples, write down which of the four forces (lift, weight, thrust or drag) is being demonstrated.

A) You're helping to carry in the groceries. One bag has two gallons of milk, and the other has two boxes of cereal. You choose to carry the bag with the cereal because you know it'll be easier to carry. _____

B) A rocket launches into space by igniting flammable gasses and pointing them at the ground. _____

C) Race cars have a spoiler on the back that looks like a wing. The faster the car goes, the more it pushes the back tires down to improve traction. _____

D) Olympic swimmers wear racing caps and streamlined bathing suits to help them swim faster. _____

E) In a BINGO machine, a fan moves air quickly through a tube. A door is opened, and the low pressure inside draws a ping pong ball into the tube. _____

F) In drag racing, the driver will deploy a parachute to help slow the car after crossing the finish line. _____

G) You're using a garden hose with a spray nozzle, when you hear the ice cream man driving down the road. In your excitement, you accidentally drop the hose, which whips around crazily and sprays water everywhere. _____

H) Your oh-so-nice-and-kind teacher tells your class that homework has been cancelled for the rest of the month. You take your huge math book out of your backpack, making it way easier to carry. _____

2. Your Pilot told you that the four forces of flight were equal in level and unaccelerated flight. What do you think they meant by 'level' and 'unaccelerated'? _____

LANDING

Wrapping Up The Lesson

- Sometimes you don't realize it but science is around us everyday.
- After reviewing this lesson, put your hand out the car window (with your parents permission) as you travel down the road. What forces are you feeling?
- Use the space below to write down any questions you may have for your Pilot.

POST FLIGHT CHECKLIST

A Touch-and-Go For Your Pilot's Next Visit

- If you have not completed your **3RD SOLO FLIGHT—UP, UP, AND, AWAY!** activity, you still have time. Your Pilot may ask some of you to share this activity the next time they visit.
- Be ready to share something interesting about **LESSON 3A: WHILE THE PILOT IS AWAY ... THE FOUR FORCES**, with your Pilot. Maybe you'll teach them something they didn't know!
- By now you should be an expert on the Adopt-A-Pilot **F.L.I.G.H.T.** Values! Come to the final class ready to have fun and exhibit all that you have learned!

Questions:

ABOVE AND BEYOND

Above and Beyond

Some Additional LUV For You!

FLIGHT ROUTE

Where You'll Go Today

Your Pilot and/or Teacher may choose to have you complete these additional activities.

- You will learn how a Pilot communicates when they are at work by practicing hand signals unique to aviation.
- You will learn how a Pilot 'spells'—it's different than you think!

CRUISE – WITH HAND SIGNALS

Optional - Communication Activity 1

Imagine you are in a completely empty classroom (no phones, walkie-talkies, pencils, etc.) with the doors and windows closed and your friend is outside, on the other side of the playground (with a window between you two). Your friend needs to give you directions. Can you think of a way you might still be able to communicate? How about hand signals?

Every time your Pilot lands, they are in this situation. Using hand signals from a Ramp Agent on the ground, they safely maneuver the airplane into its parking spot. Today you will learn the hand signals your Pilot uses every day!

Directions: Break into groups of two. Using the hand signals below; pretend you are a Captain and a Ramp Agent, practice taxiing (driving) around the ramp. Make sure the Captains hold their arms out like airplane wings!

Ready To Assume Guidance

Hands held at approximately eye level or above.

- The Ramp Agent is assuming directional control of the airplane.
- The safety zone is clear of obstacles.

Taxi Straight Ahead

Hold wands facing the airplane, elbows bent 90°. Move both arms backwards and forwards together.

- The Ramp Agent is telling the Captain to steer the airplane straight.

Turn Left

Hold right arm outstretched to the side and keep it stationary. Bend left elbow 90°, move it backwards and forwards.

- The Ramp Agent is telling the Captain to steer the airplane to the left.

Turn Right

Hold left arm outstretched to the side and keep it stationary. Bend right elbow 90°, move it backwards and forwards.

- The Ramp Agent is telling the Captain to steer the airplane to the right.

Aircraft Approaching Stop Mark

Slowly bring the wands upward and inward to indicate the distance between the stop mark and the nose gear.

- The Ramp Agent is telling the Captain how quickly the aircraft is approaching the stop mark.

Smooth Stop

Cross the wands just above eye level.

- The Ramp Agent is telling the Captain to bring the aircraft to a smooth stop.

Stop Engines

Move the left hand across the throat.

- The Ramp Agent is acknowledging the Captain has told them the aircraft engines are off.

Set Parking Brake

Hold right arm parallel to the ground above head until 'brake set' signal from the Captain. Then acknowledge with a clenched fist.

- The Ramp Agent acknowledges the Captain has set the aircraft parking brake.
- It is safe to move around the aircraft.

CRUISE - WITH THE PHONETICALPHABET

Optional - Communication Activity 2

Have you ever tried to spell a word out loud and been misunderstood? 'E' sounds like 'C' sounds like 'V' sounds like 'GEE' this is hard! Today you are going to learn how to avoid these misunderstandings by learning how to 'spell' with the phonetic alphabet!

PHONETIC ALPHABET

- *The Phonetic Alphabet: a set of words used to identify the letters of the alphabet in voice communications.*
- The phonetic alphabet was adopted in the mid 1900's to ensure that when something was spelled, the letters can be pronounced and understood, regardless of language barriers or the quality of the communication equipment.
- Today, Pilots, Air Traffic Controllers, Police Departments, Fire Departments, and all branches of the United States Military, use the phonetic alphabet to guarantee the accuracy of their communications.
- To use the phonetic alphabet, you say the universal word instead of the individual letter. For example; if you want to spell Ben, you would say, 'Bravo,' 'Echo,' 'November' instead of B,E,N. It's like talking in code.

A	B	C	D	E	F	G	H	I
Alpha	Bravo	Charlie	Delta	Echo	Foxtrot	Golf	Hotel	India

J	K	L	M	N	O	P	Q	R
Juliet	Kilo	Lima	Mike	November	Oscar	Papa	Quebec	Romeo

S	T	U	V	W	X	Y	Z
Sierra	Tango	Uniform	Victor	Whiskey	X-Ray	Yankee	Zulu

CAPITALS AND POSTAL CODES LIST

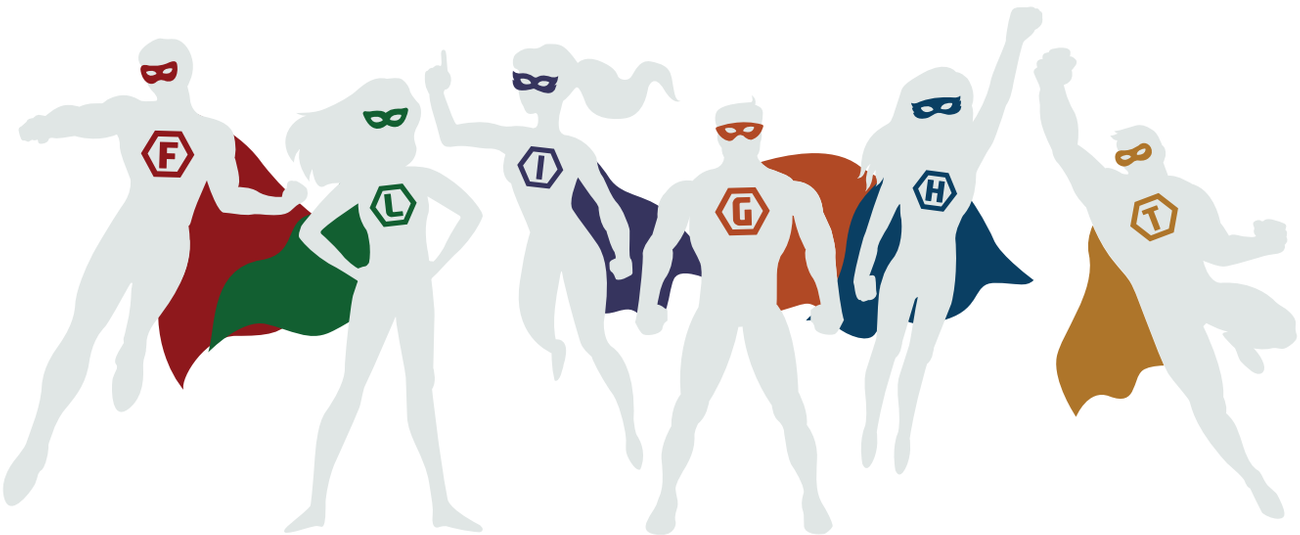
US STATE	CAPITAL	POSTAL
Alabama	Montgomery	AL
Alaska	Juneau	AK
Arizona	Phoenix	AZ
Arkansas	Little Rock	AR
California	Sacramento	CA
Colorado	Denver	CO
Connecticut	Hartford	CT
Delaware	Dover	DE
Florida	Tallahassee	FL
Georgia	Atlanta	GA
Hawaii	Honolulu	HI
Idaho	Boise	ID
Illinois	Springfield	IL
Indiana	Indianapolis	IN
Iowa	Des Moines	IA
Kansas	Topeka	KS
Kentucky	Frankfort	KY

US STATE	CAPITAL	POSTAL
Louisiana	Baton Rouge	LA
Maine	Augusta	ME
Maryland	Annapolis	MD
Massachusettts	Boston	MA
Michigan	Lansing	MI
Minnesota	St. Paul	MN
Mississippi	Jackson	MS
Missouri	Jefferson City	MO
Montana	Helena	MT
Nebraska	Lincoln	NE
Nevada	Carson City	NV
New Hampshire	Concord	NH
New Jersey	Trenton	NJ
New Mexico	Santa Fe	NM
New York	Albany	NY
North Carolina	Raleigh	NC
North Dakota	Bismark	ND

US STATE	CAPITAL	POSTAL
Ohio	Columbus	OH
Oklahoma	Oklahoma	OK
Oregon	Salem	OR
Pennsylvania	Harrisburg	PA
Rhode Island	Providence	RI
South Carolina	Columbia	SC
South Dakota	Pierre	SD
Tennessee	Nashville	TN
Texas	Austin	TX
Utah	Salt Lake City	UT
Vermont	Montpelier	VT
Virginia	Richmond	VA
Washington	Olympia	WA
West Virginia	Charleston	WV
Wisconsin	Madison	WI
Wyoming	Cheyenne	WY

COUNTRY/TERRITORY	CAPITAL	POSTAL
Aruba	Oranjestad	AW
Bahamas	Nassau	BS
Belize	Belmopan	BZ
Costa Rica	San José	CR
Cuba	Havana	CU
Dominican Republic	Santo Domingo	DO
Grand Cayman	George Town	CI
Jamaica	Kingston	JM
Mexico	Mexico City	MX
Puerto Rico	San Jaun	PR
Turks & Caicos	Cockburn	TC
United States	Washington, D.C.	USA

STUDENT NOTES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