<table>
<thead>
<tr>
<th>Station</th>
<th>Activity/Standards and Concepts</th>
<th>Equipment needed at station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom (5 minutes)</td>
<td>Welcome</td>
<td>Dog tags</td>
</tr>
<tr>
<td></td>
<td>Squadron division</td>
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<tr>
<td></td>
<td>Housekeeping (restrooms, water fountain, pictures)</td>
<td></td>
</tr>
<tr>
<td>Station 1 15 minutes</td>
<td><strong>Airplane Assembly</strong></td>
<td>Done in history section area</td>
</tr>
<tr>
<td></td>
<td>Parts of a Plane, Forces of Flight; Resources/People in the Past, Teamwork &amp; Communication</td>
<td>Lego Simple Machine boxes</td>
</tr>
<tr>
<td></td>
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<td>Stopwatch/timer/your phone</td>
</tr>
<tr>
<td>Station 2 15 minutes</td>
<td><strong>Feeding the Troops</strong></td>
<td>Sample MRE &amp; C-rations</td>
</tr>
<tr>
<td></td>
<td>Nutrition choices; Resources; Scarcity &amp; Choices;</td>
<td>Pencils/pens</td>
</tr>
<tr>
<td></td>
<td>Teamwork &amp; Communication</td>
<td>Student “Packing slips”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fake food boxes</td>
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<tr>
<td></td>
<td></td>
<td>C ration boxes</td>
</tr>
<tr>
<td>Station 3: Part 1 15 minutes</td>
<td><strong>Shapes Take Flight</strong></td>
<td>Shape Poster</td>
</tr>
<tr>
<td></td>
<td>Shapes &amp; Geometric Figures; Parts of a Plane, Forces of Flight</td>
<td>Airplane pictures and cards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expo markers</td>
</tr>
<tr>
<td>Station 3: Part 2 15 minutes</td>
<td><strong>Shapes Take Flight</strong></td>
<td>Styrofoam gliders</td>
</tr>
<tr>
<td></td>
<td>Shapes &amp; Geometric Figures; wing shape, Forces of Flight, making scientific observations</td>
<td>Airplane parts and forces of flight poster</td>
</tr>
<tr>
<td>N3N &amp; Westpac (~30 min.)</td>
<td><strong>History Takes Flight with STEM!</strong></td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>• Teacher/chaperone in N3N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Westpac tour</td>
<td></td>
</tr>
<tr>
<td>Departure, ~5min</td>
<td>Return dogtags</td>
<td>Teacher: day-of evaluation</td>
</tr>
<tr>
<td></td>
<td>Wrap-up—name one thing you learned, etc.</td>
<td>(none for students)</td>
</tr>
</tbody>
</table>
Teacher Materials Provided
- Electronic copy of curriculum materials
  - Pre-lessons #1, #2, #3
  - Student worksheets, lab questions, and assessments
  - Background information for teachers—**NOT INTENDED FOR STUDENT DISTRIBUTION!**
    - National Museum of World War II Aviation Information
    - Teacher and Student Surveys
  *Note*: the curriculum guide has blank pages in different places. These are intentional, to allow easier double-sided printing.
- Curriculum and content support whenever you need it!

Before Your Visit to the Museum
- Complete **Pre-Lessons #1, #2 and #3** in the curriculum guide. Each lesson is designed to take no more than two class periods.
- Split your class(es) into groups. The amount of groups will depend on class size. Split the class into a maximum of six groups. Choose one leader from each group to be the "Flight Leader". Let students know which groups they are in ahead of time; it will make the museum orientation more efficient, leaving your students with as much time as possible for the program!
- **Arrange for transportation to the museum.** If you are receiving assistance for transportation funding, please let us know if you will need a check ahead of time, or if your school/district will invoice us.
- **Arrange for chaperones.** You need one adult to accompany each small group. If you will not be able to get chaperones, please contact Rachel Greenfield immediately.
- Decide whether students will eat lunch back at the school, go out to eat for lunch, or pack their own lunches and eat out on the ramp at the museum.
- If you are planning on eating lunch at the museum, please let us know **ASAP!**
**Your Visit to the Museum**
- Make sure that you have directions to the museum from your location. The address for Mapquest/GPS is **755 Aviation Way, Colorado Springs, CO 80916**. Follow the signs for museum parking, not for Westpac Restoration.
- If possible, have students enter the museum in their smaller groups.
- Students should leave backpacks, large purses, etc. on the bus or at school. We will provide students with clipboards and pencils or pens.
- Everyone is welcome to bring cameras, although photography is allowed in the museum only (not at Westpac Restorations).
- Bring your filled out pre-evaluations, if you have not sent them ahead of time.

**After Your Visit to the Museum**
- One week after your visit or later, complete the Post-Visit Evaluation. Mail these to Rachel Greenfield at the address below.
- Wrap up your visit! Talk about your visit with your students, or complete the reflections or assessments in the curriculum guides. Find out what interested them, what surprised them, etc. If students have questions that you are unable to answer, feel free to direct them back to the museum during public hours (Tuesday, Thursday and Saturdays).

*If you have any questions, just ask!*
Rachel Greenfield
k12programs@worldwariaviation.org
Office: 1-888-843-0671 (option 5)

*Mailing address:*
See The Change USA
Attn: National Museum of WWII Aviation K-12 Programs
1755 Telstar Drive, Suite 300
Colorado Springs, CO 80920
Evaluation Procedures

GENERAL PROCEDURES

1. Log onto Physics Lab using the log in information your Mission Coordinator provided you with.
2. For teachers, take your survey on Physics Lab and submit your answers.
3. To complete the student evaluations, download the printable version of the Pre-Visit Student Evaluation and the Post-Visit Student Evaluation from Physics Lab, have students fill out the surveys.
4. Bring student's pre-visit evaluation to the museum on the day of your visit.
5. Scan and email your students post evaluations to your Mission Coordinator or mail the completed evaluations to the address below.

See The Change USA
Attn: National Museum of WWII Aviation K-12
Programs 1755 Telstar Drive, Suite 300 Colorado Springs, CO 80920

EVALUATION TIMELINE

<table>
<thead>
<tr>
<th></th>
<th>Pre-Evaluation</th>
<th>Day-of Evaluation</th>
<th>Post-Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who?</strong></td>
<td>4th-12th grade students</td>
<td>4th-12th grade students</td>
<td>Teachers and 4th-12th grade students</td>
</tr>
<tr>
<td><strong>Time Frame</strong></td>
<td>Any time before beginning NaMoWWIIA curriculum</td>
<td>Will be completed at NaMoWWIIA immediately following program</td>
<td>Will be completed any time within one month after visit.</td>
</tr>
<tr>
<td><strong>Time Requirement</strong></td>
<td>5-10 minutes</td>
<td>15 minutes</td>
<td>5-10 minutes</td>
</tr>
</tbody>
</table>

Please Note:
Collecting data about teacher experience and student knowledge is crucial to continue receiving funding for the programs. Thus, for those teachers and students participating in this program, completing all evaluations is mandatory. Thank you for helping us collect data about our program so we can continue to provide teachers and students with the best overall experience with the education program!
Pre-lesson #1: Parts of an Airplane
Adapted from “Getting on an Airplane,” NASA Aeronautics Research Mission Directorate, Museum in a Box, EP-2010-12-463

Time requirement: 30 minutes
In this activity, students will learn about the properties of objects and materials, and the abilities of technical design as they utilize prior knowledge regarding airplanes. Also, they will record questions they have about airplanes and how airplanes fly and identify the main parts of an airplane using labeled and unlabeled drawings. Those parts include fuselage, wings, vertical stabilizer, horizontal stabilizer, rudder, elevator, ailerons, engine, propellers, and cockpit.

Materials:
- Group KWL chart on board or large piece of paper
- Student sheets
- Download of “I’m Getting on an Airplane” mp3 and/or lyrics (available on flash drive)

Procedure:
1. Begin by asking students: Who has ever been on an airplane? What was it like?
2. Next, ask the students: What do we already know about airplanes?
3. Now, ask students: What don’t you know about airplanes that you wish you knew? What questions do you have about airplanes?
4. Use the answers from above to complete the “Know” and “Want to Know” sections of a group KWL chart about airplanes.

Sample:

<table>
<thead>
<tr>
<th>K</th>
<th>W</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do we already know about airplanes?</td>
<td>What do we want to know about airplanes?</td>
<td>What have we learned about airplanes?</td>
</tr>
</tbody>
</table>

Save this chart until after your visit to the museum, as it will be used as part of the wrap-up activity.

5. Show the students the blank diagram of an airplane (“Parts of an Airplane”) and ask them to name as many of the parts they can. If a word bank is needed, put the following terms on the board: fuselage, cockpit, engine/propeller, horizontal stabilizer, vertical stabilizer, ailerons, rudder, elevator.
6. As a group, decide on the “correct” answers to the worksheet. Second and early third graders will enjoy listening to the “I’m Getting on an Airplane” song and reading the lyrics in order to find the correct answers. Older third graders may listen to the song for the information, or you may hold a pair-share, classroom discussion, or any other appropriate forum in which students can share ideas and arrive at consensus.
Label the parts of the airplane as best you can!
ANSWER KEY
Parts of an Airplane

- Propeller
- Cockpit
- Aileron
- Vertical stabilizer
- Horizontal stabilizer
- Fuselage
- Wing
I’m gettin’ on an airplane, but how does a plane fly?
There are many parts in an airplane, to keep it movin’ through the sky
I’m gettin’ on an airplane, but how does a plane fly?
There are many parts in an airplane, to keep it movin’ through the sky

The body is the fuselage, it carries people and cargo
The pilot sits in the cockpit, for command and control
Jet engines or propellers provide the needed thrust
In order to lift the plane in the air, wings are a must

I’m gettin’ on an airplane, but how does a plane fly?
There are many parts in an airplane, to keep it movin’ through the sky

In the tail of the plane, are some smaller wings
They keep the craft flying straight, a very important thing
The horizontal stabilizer controls the pitch
The vertical stabilizer controls the yaw – but that’s not all...

There are many hinged parts that bring about change
Let’s describe them, and see how they affect the plane
The flaps change lift – up and down
And they change drag – fast and slow
The ailerons cause tilt – that’s called roll
Left up – roll left, right up – roll right
The rudder changes yaw – side to side
The elevators change the pitch

I’m gettin’ on an airplane, but how does a plane fly?
There are many parts in an airplane, to keep it movin’ through the sky
I’m gettin’ on an airplane, but how does a plane fly?
There are many parts in an airplane, to keep it movin’ through the sky
I’m gettin’ on an airplane.

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Pre-lesson #2:  
Understanding the Four Forces of Flight  
Adapted from “Principles of Flight: Four Forces,” NASA Museum in a Box, EP-2010-12-473-HQ

Time Requirement: 45-90 minutes

Materials
- Balloons
- Stopwatch (2)
- 2 balls of similar size but different weights
- Fan
- Umbrella
- Scale
- Balloon pump (optional)
- Paper
- Four Forces of time lab and Synthesis sheets (one per student)

Procedure
1. Demonstration #1: Thrust  
   a. Bring two students up to the front of the room; one will be in charge of the balloon, the other will be the timer.
   b. Explain what will happen: the “balloon” student will inflate the balloon using either four breaths or four pumps of a balloon pump. Then he/she will let go of the balloon, while another student times the length of the flight. Invite the class to make hypotheses about what will happen, and then perform the experiment.
   c. Repeat the experiment multiple times with various levels of inflation, allowing the students to make predictions and recording the number of breaths and the flight time for each trial.
   d. Ask students what they thought happened, and why. Direct the students towards the idea of **thrust**: a **forward force that pushes an aircraft through the air**.
2. Demonstration #2: Drag  
   a. Bring two new students up to the front of the room. One will be the runner; the other will be the timer.
   b. Explain what will happen: Assign two points on opposite sides of the room (or in the hall) between which the students can safely run. The runner will run using a steady pace from one point to the other, while another student times the journey. Then the runner will run again at the same pace as before, but this time holding the open umbrella behind them. Again, time the journey. Ask the class to make predictions about what will happen, and then perform the experiment.
   c. Ask students what they thought happened, and why. Direct the students towards the idea of **drag**: the force of resistance to the motion of a vehicle body as it moves through a fluid such as water or air. Drag acts in the **opposite direction to thrust**, and slows a plane down.
3. Station 3: Lift  
   a. Bring a new student to the front of the room, and explain what will happen: Using the fan, the student will hold one hand flat against the blowing stream of air, and describe what they see and feel happening. Then they will tilt the front of their hand slightly, and describe what they see and feel happening (they should feel it start to rise). Ask the class to make predictions about what will happen, and then perform the experiment.
b. Ask students what they thought happened, and why. Direct the students towards the idea of **lift**: Lift is a force that acts upward against gravity and makes it possible for aircraft to rise in the air.

4. Demonstration #4: Weight
   a. Pass the two balls around the group. Ensure the students note that the two balls are of different weights by weighing them on the scale.
   b. Bring two more students up to the front of the room and explain what will happen: Have one student stand on the table or a chair for additional height. Next, have the same student hold the two balls at arm’s length and at equal height. Ask the class to make predictions: as to which will hit the ground first, the lighter or heavier, and then perform the demonstration.
   c. Next take two sheets of copy paper and pass them around the group to confirm they are identical. Take one sheet of paper and scrunch it into a tight ball, leaving the other untouched. Remind the students that both sheets of paper weigh the same. Based on the previous demonstration, ask the class to hypothesize as to which sheet of paper will hit the ground first. As before, have the students take turns dropping the two pieces of paper, noting which one landed first.
   d. Ask students what happened and why. Direct the students towards the idea of **weight**: Weight is a response of mass to the pull of gravity. It acts downward against lift. Planes have to fight against it in order to stay in the air.

5. If time permits, set the materials out where all students can access them, and allow students to perform the experiments on their own.

**Assessment:** Ask students to write one sentence for each term explaining how **lift**, **weight**, **thrust** and **drag** affect how an airplane flies.
Pre-lesson #3: Good Nutrition

Time required: 50 minutes

Materials
- Student food cards
- Crayons, markers, or colored pencils
- Old magazines (for cutting out food pictures), optional
- Scissors, glue (optional)

Procedure
1. Begin by asking students to think about the Essential Question: What do they think it means to be healthy? What do they think it means to eat healthy? Accept all answers and list them on the board. Explain to students that to be healthy one should eat healthy and be physically active each day.

2. Play the song “Alive With 5 Food Groups” for the class. Ask children to listen carefully to the lyrics of the song. The lyrics introduce the five food groups. Invite students to share what they learned from the song. Can anyone identify the five food groups? (Fruits, Vegetables, Protein, Grains, Dairy). Note: You may want to play the song more than once. Older students who might find the song “goofy” may just choose to have a discussion about food groups.

3. Display the MyPlate poster. Ask students to share what they notice about the MyPlate icon. Explain that MyPlate illustrates the five food groups a person should eat each day, and that the colors red, green, orange, blue, and purple represent the five food groups. Before they eat, people should think about what goes on their plate or in their cup. Foods like vegetables, fruits, whole grains, low-fat dairy products, and lean protein help them eat healthy and be healthy. Note: full-sized posters may be ordered at http://tn.ntis.gov/.

4. List the names of all five food groups on the board. Explain that foods are put into groups to help us understand how to create a balanced meal. Ask the class why they think eating foods from each food group is important. Putting food from each food group on our plate helps us eat smart to play hard.

5. Invite students to share a food. Encourage them to think about foods they have eaten at home or in the cafeteria, or seen their parents purchase in the supermarket. Prompt them by asking them to think of foods they’ve seen that grow in the ground or on trees or plants, are found in the sea, or come from an animal. Write down their answers on the board.

6. Work together as a class to determine what food group each belongs to. If students suggest a combination food or dish (for example: pizza, sandwich, curry, or tacos), help students to break the meal down by asking them to think about its specific main food ingredients. For example: Tacos — tortilla (Grain Group), tomatoes and lettuce; (Vegetable Group), cheese (Dairy Group), ground turkey or beef (Protein Foods Group).
7. Next, supply each student with art supplies and three My Food Card handouts. Note: If you have more time, ask students to create five Food Cards, one from each group. Give students 15 minutes to complete their Food Cards — each with a drawing or collage of a favorite food from a different food group. Ask students to draw one specific food, such as a fruit or a dairy product, as opposed to combination foods, such as pizza or tacos. Prompt students to think of foods they like to eat by asking what they ate at lunch that day, or dinner the night before. They will also need to complete the sentences on the card according to what food they chose.

8. Invite students to share and read their Food Cards aloud with the class and explain why they like each food item. Collect everyone’s cards.

**Extension: Musical Food Groups**

1. Play a game called Musical Food Groups (similar to “musical chairs,” but uncompetitive). In preparation, designate five different sections of the classroom by clearly labeling each as one of the five food groups. You will be using the song “Alive with 5 Food Groups” for this game.

2. The objective of the game is to be able to identify foods in their correct food groups. Shuffle the Food Cards (created by the students in the above activity) and explain that each student will draw one card from the deck. When the music starts, students will move around the room. When the music stops, students should move to the food group to which their Food Card belongs. For example, a student with a pineapple on his or her Food Card should stand in the Fruit Group section.

3. Play at least two rounds to help students become familiar with the food groups. After each round, collect all cards, shuffle, and have students select a new card. Encourage students to dance or express themselves through physical activity while the music is playing.

4. In the third and final round of the game, add a new objective. Students will need to organize themselves into healthy “meals” based on MyPlate (groups of five students representing all food groups). For example, if a student’s card is broccoli, he/she represents the Vegetable Group. When the music stops, he/she will need to find four other students, one from each food group, to create their “meal.” Write the foods in each meal on the board. Note: In the event that your class cannot be divided perfectly into groups of five, ask the students who have fewer than five foods in their group to think of the remaining foods in their “meal.”

5. Once all students have organized themselves into meals, ask each group to share the foods in their “meal.” Write these on the board. Ask students, “What sounds yummy? What would you eat for breakfast, lunch, or dinner?” Ask students if there is any rearranging they can do as a class to make the meals tastier. Are there any ideas of ways to make substitutions so the meals are healthier? Explain to students that they may not be able to get every food group in one meal, but if they ate a protein food, dairy, fruit, and grain for breakfast, they could have a vegetable later for a snack.
Name: ___________________________ Date: ___________________________

Fill in the sentences below, then draw a picture or make a collage of your favorite food item.

I like to eat ___________________________,
    (My favorite food)

which is part of the ___________________________,
    (Food group)

at ___________________________.
    (Mealtime)

I like to eat it with ___________________________,
    (Other food items)

because ___________________________.
    (Explain why you like to eat it)
“Alive with 5 Food Groups”
Lyrics

Banana is a fruit, broccoli is a veggie
Rice is a grain, chicken is a protein food
Milk is dairy, and now we’ve got five
We’re going to feel our best (uh huh), we’re going to feel alive!

Chorus:
Alive, with five, both you and I
Alive with five, let’s give them a try
Fruits and vegetables, dairy and grains
Add to that a protein food and you’ll be on your way!

So many fruits and vegetables are good for me
Some help me heal my wounds, or give me more energy
Sometimes I like to eat them with some meat, bread, and cheese
These five food groups give me what I need, wouldn’t you agree?

Chorus

I’ve got a red apple (a fruit, a fruit)
And green spinach leaves (a vegetable, a vegetable)
I toasted up some bread (a grain, a grain)
With some low-fat cheddar cheese (that’s dairy, that’s dairy)
A few slices of turkey (a protein food, a protein food)
That’s a fine-looking plate (my plate, my plate)
If you want to be healthy, if you want to feel your best
These five food groups are the key to your success!

Chorus
Nose Art

Nose art is found on WWII aircraft and on aircraft today. Nose art originally began as a way of identifying aircraft. During the first World War, nose art painted by ground crews generally took the form of stylized squadron insignia. During WWII, considered by some to be the “golden age” of nose art, nose art (and the associated practice of naming the plane) became a way to express the pilot or crew’s personality, served to remind crewmembers of home and peacetime life, and sometimes even personalized the plane and made it another member of the crew. It also helped distinguish one plane from hundreds of others in its squadron that looked identical to it. Nose art (often extending beyond the nose onto the fuselage or tail) continued to appear on military aircraft following WWII and today can be seen on a number of commercial airlines as well.

Students will see nose art on at least one aircraft at the museum. Because aircrews during WWII were mainly staffed by young men in their late teens or early 20’s, a great deal of nose art on WWII aircraft can be “colorful.” This activity will put nose art into a historical context for students, and help them understand why airmen chose the nose art that they did and the significance that it held for crews. This activity may be done individually or as a small group activity to foster teamwork and communication skills.

Materials:
Student sheets
Art supplies (paper, markers, crayons, paint)

Procedure
1. Introduce the concept of nose art to the students. Examples of nose art follow this lesson plan.
2. Have students walk through the nose art “thought process” (see following page) in order to develop their own nose art (individually or in groups).
3. Once students/groups have decided on the concept of their nose art, they should create a picture of what it would look like.
4. Have students present their nose art to the class, explaining the meaning behind their design and why they chose the different elements.
During WWII, aircraft crews often painted “nose art” on their planes. The designs that they chose reflected their personalities, reminded them of home, reminded them of what they were fighting for, and sometimes even personalized their plane and made it part of the crew.

Imagine that you are part of a WWII air crew that has just been assigned to your brand-new plane. Your job, as a new team, is to decide what you want the ground crews to paint on the nose of your airplane. Your nose art might describe your team, your plane, or even include little aspects of each of you as individuals. Use the questions below to help guide your thinking. Good luck!

**What kinds of things are important to you?**

**What kinds of things make you think of home and your loved ones?**

**If you came in contact with another aircraft, what would you want the nose art to tell the other aircrew about you and your crew?**

**Use the thoughts above to design your nose art, and to also give your plane a name! Remember that the people who usually painted the art on planes were NOT professional artists, so don’t worry about how “real” your art looks!**
NOSE ART

Plane name: ____________________________________________
Dumbo on a TBM Avenger

Many aircrews—not just those from the U.S.—requested Disney characters because they were “suitable” for humor and patriotism. The Walt Disney Company actually designed a number of insignia specifically for aircrews!

http://www.sklights.org/disney/
The B-29 Superfortress *Ernie Pyle*.

Ernie Pyle was a famous war correspondent who reported from Europe and the Pacific during WWII.

The P-38 Lightning *Lucky Irish*
This P-38 was named after its pilot, Lt. Gerald O’Donnell
http://www.nose-art.net/P-38.htm
Frontier Airlines
Each Frontier aircraft has a unique tail and a name associated with the plane. Passengers are “introduced” to their plane by the flight crews.
The B-25 *In the Mood*

Students will see the *In the Mood* on their visit to the museum. *In the Mood* was a popular song during WWII.
Visit to the Museum

Please note: **this section is not intended for student distribution.** This section is to provide the “big picture” of what students will be doing at the museum, not to provide for additional instruction before the visit.

Students will rotate through each station, so that each student gets the chance to experience each activity in a small group setting. Station rotations last approximately 15 minutes unless otherwise noted. Note: teachers and/or chaperones will be asked to participate in History Takes Flight With STEM!

<table>
<thead>
<tr>
<th>Station</th>
<th>Activity/Standards and Concepts</th>
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<tbody>
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<td>Classroom (5 minutes)</td>
<td>Welcome</td>
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<td></td>
<td>Squadron division</td>
</tr>
<tr>
<td></td>
<td>Housekeeping</td>
</tr>
<tr>
<td>Station 1</td>
<td>Airplane Construction</td>
</tr>
<tr>
<td></td>
<td>Parts of a Plane, Forces of Flight; Resources/People in the Past, Teamwork &amp; Communication</td>
</tr>
<tr>
<td>Station 2</td>
<td>Feeding the Troops</td>
</tr>
<tr>
<td></td>
<td>Nutrition choices; Resources; Scarcity &amp; Choices; Teamwork &amp; Communication</td>
</tr>
<tr>
<td>Station 3</td>
<td>Wing Shape Matching</td>
</tr>
<tr>
<td></td>
<td>Shapes &amp; Geometric Figures; Parts of a Plane, Forces of Flight</td>
</tr>
<tr>
<td>Station 4</td>
<td>Paper Airplane Push &amp; Pull</td>
</tr>
<tr>
<td></td>
<td>Push/Pull; Shapes &amp; Geometric Figures; Parts of a Plane, Forces of Flight</td>
</tr>
<tr>
<td>Museum Hangar &amp; Westpac Restoration (~30 min.)</td>
<td>History Takes Flight with STEM!</td>
</tr>
<tr>
<td>Departure, ~10 min</td>
<td>Day-of evaluations</td>
</tr>
<tr>
<td></td>
<td>Return dogtags</td>
</tr>
<tr>
<td></td>
<td>Wrap-up</td>
</tr>
</tbody>
</table>
After Your Visit:
Wrap-Up/Assessment

Suggested Activities:

1. Have students complete the “L” part of the original KWL chart by listing what they have learned through the museum program experience. This may be done as a group or, if it is possible to give a copy of the original KW chart to each student, done individually.

2. Letters written to far-away family were an integral part of maintaining the morale of WWII troops. Ask students to imagine that they are writing a letter to a family member who was unable to make the trip to the museum. In their letters, students should tell their family member about one thing they learned or were surprised by, the part of the program they liked best, and one thing they wished they’d seen or heard about.

3. Play “The Four Forces of Flight” Game to review what students learned in the pre-lessons. Upon completion of the game, students should write a sentence or two explaining how their experience in the game reflects actual flight. For example: why would a student who lands on the “rudder malfunction” space have to lose a turn? Why did students have to move backwards when experiencing drag or weight, but get to move forward when experiencing thrust and lift?

4. Complete the “Four Forces of Flight” word search. Ask students to highlight or circle any words that they still do not understand or remember.
Four Forces of Flight Game

Purpose
To have experience with the positive and negative forces of the four forces of flight.

Game
Objective
To be the first to arrive at Lifsville Airport after departing from Thrust City Airport.

Procedure
1. The player whose birthday is closest to January 1 will be the player to start the game. The player with the next closest birthday will go second and so on.
2. To make the game cube, cut along solid lines and fold along dotted lines. Glue or tape tabs to the inside to form a cube.
3. Starting at Thrust City Airport, choose a runway for takeoff and roll the cube.
4. Move your airplane the number of spaces indicated.
5. The next player will now take his turn and so on.
6. If you land on a space that indicates a “problem,” follow the directions given on that space.
7. Continue taking turns until a winner reaches Lifsville Airport’s runway.

Materials
- game board
- game pieces
- game cube
## Flying Word Search

Locate the key vocabulary terms in the word search below.

<table>
<thead>
<tr>
<th>aerodynamic</th>
<th>jet</th>
<th>landing gear</th>
<th>tail</th>
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<tbody>
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<td>aileron</td>
<td>engine</td>
<td>wind tunnel</td>
<td>lift</td>
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GEOLIATPWIC
NTCBSHKTXHD
ELANDINGGEAR
FLIGHTCKHFMD
CGNVGMALWMASS
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YRITSIDBCIX
AEAIOWHKASK
WWXCJEFRIA
NVWYRDPTRB
UNURGSZIL
RSREWQBLK
KXYULBNZ
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Science: 2\textsuperscript{nd} Grade
1.1 Changes in speed or direction of motion are caused by forces such as pushes and pulls

Math: 2\textsuperscript{nd} Grade
4.1 Shapes can be described by their attributes and used to represent part/whole relationships
4.2 Some attributes of objects are measurable and can be quantified using different tools

Math: 3\textsuperscript{rd} Grade
4.2 Geometric figures are described by their attributes

Reading, Writing, and Communicating: 2\textsuperscript{nd} Grade
1.2 New information can be learned and better dialogue created by listening actively

Reading, Writing, and Communicating: 3\textsuperscript{rd} Grade
1.2 Successful group activities need the cooperation of everyone

Social Studies: 2\textsuperscript{nd} Grade
1.2 People in the past influenced the history of neighborhoods and communities
3.1 The scarcity of resources affects the choices of individuals and communities

Social Studies: 3\textsuperscript{rd} Grade
1.2 People in the past influenced the development and interaction of different communities and regions

Comprehensive Health: 2\textsuperscript{nd} Grade
2.1 Identify eating behaviors that contribute to maintaining good health

Comprehensive Health: 3\textsuperscript{rd} Grade
2.1 Demonstrate the ability to make and communicate appropriate food choices

\textbf{21\textsuperscript{st} CENTURY SKILLS}

- Critical Thinking and Problem Solving
- Communication and Collaboration