The Palm Springs Air Museum – no matter how often you visit, there is always something new and exciting to experience.

This guide is filled with fun, informative activities for the whole family. It is designed to give you an understanding of a crucial period in American history. We are dedicated to **preserve** the unique aircraft of World War II, **educate** future generations by teaching the history of World War II and **honor** the veterans who have protected our democracy.

Our three climate controlled hangars include one of the world's largest collections of flying World War II airplanes. Also, the museum has computer flight simulators and an extensive library. It's an awesome walk through history that has visitors returning for more.

We recommend you schedule a minimum of two hours for your visit to the museum. Before you begin, we suggest you review the Highlights of Your Tour featured on the next page. Select some of the "highlights" to look for during your visit. If you are a novice airplane enthusiast, check out "How to Read an Airplane" and follow that with the "Types of Planes at the Palm Springs Air Museum" and "Who's Who and What's What." By the time you finish these, you'll know enough about the museum to impress even the most serious aviators. Keep on "flying" through the guide and you'll find many more activities and lots of information about our airplanes and World War II. After your visit, we encourage you to have fun with the activities in this guide. They have been designed to help you and your family better understand the exhibits you have seen.

Teachers may use the guide either as a unit based on the museum or as a source for individual lessons and enrichment projects independent of the museum. To schedule a group tour of the museum, contact our Youth Education Program Director at (760) 778-6262, Extension 231. During your group tour, each child will wear a "bio-sketch" of a key individual featured in the museum. At the end of your tour, each child will receive a bookmark with our website and a FREE admission pass for the child if he/she brings at least one adult on a return visit to the museum. We invite you to come to the Palm Springs Air Museum prior to your class trip in order to better plan your students' time here. A complimentary teacher ticket is available by bringing this guide with you and presenting it at the gift shop prior to your class trip. Refer to the last page of this guide for information about our Educator's Membership.

Highlights of Your Tour

Many of the volunteers are combat veterans who are willing to share their experiences and sacrifices for the education of future generations. While visiting the Palm Springs Air Museum, interview your tour guide about some of the topics listed below.

- Personal reactions to the attack on Pearl Harbor
- Personal experiences in the armed services
- Individual actions taken by the person named on your Bio-Sketch
- Advantages and limitations of various airplanes during warfare
- Advances made in the aerospace and defense industries during World War II
- Personal experiences related to the impact of World War II on California

If desired, assign each child to look for one of the following:

Some of the items to look for in the Robert J. Pond Hangar – Pacific Theater of Operations:

- Pictorial time line of the Pacific labeled "A Chronological History of The Road to War"
- Pearl Harbor diorama with a narration by Tom Brokaw
- Bob Hope stage
- The Avenger, Corsair, Dauntless, Grumman "Cats," Grumman Goose, Invader, AT-6 Trainer, A-26, and the ship models. Look for the information signs provided for each aircraft that tell when the plane was built, by whom, and its specifications
- Display case with artifacts from the home front
- Information about "future" presidents who served during World War II
- Photo of General MacArthur signing the Surrender Documents

Some of the items to look for in the Donald and Peggy Cravens Hangar – European Theater of Operations:

- Pictorial time line of Europe labeled "A Chronological History of The Road to War"
- Living History kiosk
- Wall murals dedicated to the Tuskegee Airmen
- Jackie Cochran display case
- Women of World War II display which highlights the Women Airforce Service Pilots (WASP)
- The B25 Mitchell Bomber, P-40, P47 Thunderbolt, P51 Mustang, P63 Kingcobra, Stearman, Spitfire and the T-33 jet trainer. Look for the information signs provided for each aircraft that tell when the plane was built, by whom, and its specifications
- Movie posters (Also, posters are displayed in the theater)

Some other things to look for:

- The Phillips Hangar: B-17 Flying Fortress and/or the C-47
- Outside the back of the museum: PBY – it's huge, you can't miss it!
- On the front lawn: Navy jets

Note: The Palm Springs Air Museum is a "working museum." This means the planes and exhibits are frequently moved to new locations.

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How to READ an Airplane

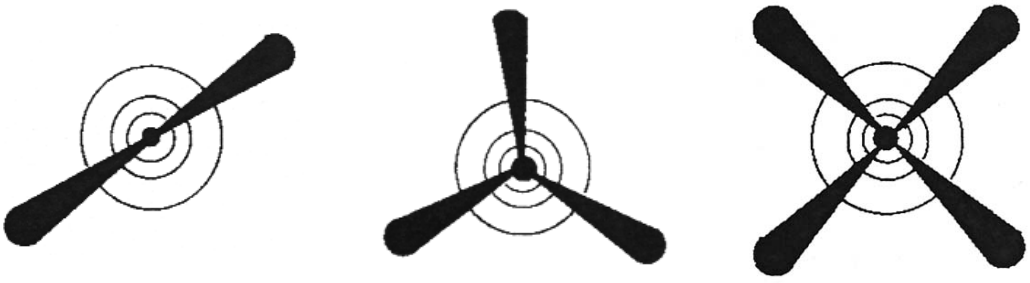
Pick an airplane in the museum. Let's learn how to "read" it.

1. **How many engines does your airplane have?** _____

   Face the **nose** or front of the airplane. A single-engine plane has one engine. A twin-engine has two engines. Some of our airplanes at the museum have up to 4 engines. The type of engine and the shape of the airplane help to determine the range or how far the airplane can go, the speed of the airplane or how fast it can go, and the altitude of the airplane or how high it can go.

2. **On your airplane, how many blades does the propeller have?** _____

   Most of the aircraft in our museum are called prop-planes because the engines have **propellers**. (The jet engine was not in common use until after World War II.) The propeller helps to propel or thrust the plane through the air. The propeller is usually mounted in front of or behind the engine housing. Usually propellers have two, three, or four blades that spin.



3. **Find the fuselage and the cockpit.**

   How many seats does the cockpit have? _____

   Face the **fuselage** or the main body of the airplane. The fuselage holds the crew and sometimes cargo or passengers. The pilot controls the aircraft from the **cockpit**, an area on the top or at the front of the fuselage.

4. **Find the plane's landing gear. How many wheels do you see?** _____

   Does your plane have a taildragger or a nose strut? _____

The **landing gear** is found under the wings or under the fuselage of the airplane. Usually, there are two main landing gear wheels (struts) located near the middle of the aircraft. They usually support about 90% of the plane's weight. A smaller tail strut or a smaller **nose strut** supports the rest of the aircraft. Most of our planes are **taildraggers** with two wheels near the middle and one wheel under the tail.

5. On the picture of the P-51 on page 6, label the wings, ailerons and the flaps.

Look at the wings of the airplane. **Ailerons** are movable flaps attached to the trailing edge or backside of the wing. Some airplanes have the ailerons extending only half the distance of the wing beginning at the tip of the wing. The ailerons are used to control the plane's rolling and banking movements. To bank the aircraft to the left, a pilot must raise the left aileron (to decrease the lift of the plane) and lower the right aileron (to increase the lift).

The other part on the trailing (back) edge of a wing is called a **flap**. It is closer to the fuselage than the aileron. The flaps move along metal tracks built into the wings. Moving the flaps aft (toward the tail) increases the wing area. Turning the flap downward increases the lift of the airplane. In addition, the large area of the flap increases the drag of the aircraft. This helps the airplane slow down for landing.

6. On the picture of the P-51 on page 6, label the vertical stabilizer and the rudder.

Look at the tail or back of the airplane. At the rear of the fuselage of most aircraft you can find a **vertical stabilizer** and a **rudder**. The stabilizer is a fixed wing section whose job is to provide stability for the aircraft, to keep it flying straight. The vertical stabilizer prevents side-to-side, or yawing, motion of the aircraft nose. The rudder is the small moving section at the rear of the stabilizer that is attached by hinges to the stabilizer. Landing a taildragger can be difficult since the pilot must line up his approach very carefully while making constant rudder adjustments to keep the plane on a straight path until it comes to a stop.

7. On the picture of the P-51 on page 6, label the horizontal stabilizer and the elevator.

At the rear of the fuselage of most aircraft you can find a **horizontal stabilizer** and an **elevator**. The horizontal stabilizer prevents up-and-down, or pitching, motion of the aircraft nose. The elevator is the small moving section at the rear of the stabilizer that is attached to the fixed sections by hinges. There is an elevator attached to each side of the fuselage. The elevators work in pairs; when the right elevator goes up, the left elevator also goes up.

Palm Springs Air Museum ★ ★ ★

Lexicon Recon...

as in a Dictionary Reconnaissance

You have a special mission to conduct a reconnaissance trip around the vocabulary words. Match them with their definition. Write the number of the definition next to its word.

_____Fuselage

_____Cockpit

_____Ailerons

_____Flaps

_____Vertical stabilizer

_____Rudder

_____Horizontal stabilizer

_____Elevators

_____Propellers

_____Wings

1. main body of the airplane
2. movable flaps attached to the trailing edge or backside of the wing that help to control the plane's rolling and banking movements
3. an area on the top or at the front of the airplane; where the pilot controls that aircraft
4. turning this downward increases the lift of the plane; it can also help slow the airplane down for landing
5. small moving section attached to the rear of the horizontal stabilizer by hinges
6. prevents side-to-side, or yawing, motion of the aircraft
7. located on each side of an aircraft; provides the lift
8. a power-driven shaft with blades that provides thrust for an airplane
9. a small moving section at the rear of the stabilizer that is attached by hinges
10. prevents up-and-down, or pitching, motion of the aircraft

Types of airplanes at the Palm Springs Air Museum

"Where History Flies Through the Skies"

Airplanes come in many different shapes and sizes depending on the mission of the aircraft.

Many of our airplanes are **fighter planes**. They usually had single-engines with only one pilot. They were used for aerial combat and to support the troops on the ground. This airplane is a **Warhawk P-40N** (AAC) Curtiss. Warhawk is the name of the aircraft and P-40N is the model. AAC stands for Army Air Corp and Curtiss is the manufacturer of the aircraft. The Warhawk P-40 was America's first fighter when the United States entered World War II.

How many of our fighter planes can you find? Check them off when you find them.

- ❑ Corsair FG1D (Navy) Goodyear
- ❑ Bearcat F8F (Navy) Grumman
- ❑ Hellcat F6F (Navy) Grumman
- ❑ Tigercat F7F (Navy) Grumman
- ❑ Wildcat FM-2 (Navy) Grumman
- ❑ Kingcobra P63A (AAC) Bell
- ❑ Warhawk P40N (AAC) Curtiss
- ❑ Thunderbolt P-47D (AAC) Republic
- ❑ Spitfire MkXIV (British) Supermarine

Dive bombers were about the same size or a little larger than a fighter plane. They usually had a crew of two and carried one bomb. They had two machine guns in the wings or nose and usually one or two at the rear of the cockpit so the gunner could shoot behind the plane. The plane on the left is a **Dauntless SBD.** It was the Navy's smallest and most widely used bomber. SBD stands for Scout Bomber Douglass (manufacturer). It would scout ahead of an aircraft carrier formation for any enemy threats and radio back the information. It was able to dive out of the sky at 70 degrees and release a bomb over a moving target.

Torpedo bombers are single-engine planes but they are larger, heavier, and slower than dive bombers. They usually carried a crew of three. Torpedo bombers were used only by the Navy. A torpedo is a very long bomb that is dropped by the plane and goes through the water to hit a naval vessel or ship. This aircraft is a **Grumman TBF/TBM Avenger**. TB stands for torpedo bomber. F stands for Grumman, the manufacturer. Grumman was busy building the F6F Hellcat fighter so production was subcontracted with Eastern Aircraft which had the M manufacturer designation. The TBF/TBM Avenger was the largest airplane to regularly operate from the deck of an aircraft carrier. Its wings could be folded up to make space aboard the carrier. With a cruising speed of 147 miles per hour and a fuel capacity of 335 gallons, the aircraft had a range of 260 miles while carrying torpedoes.

Medium bombers are two-engine planes that carry 1,400-4,000 pounds of bombs. This aircraft is a **North American B-25 Mitchell**. North American was the manufacturer in Inglewood, California. The B stands for bomber. It was named the Mitchell in honor of General William "Billy" Mitchell, a pioneer in the development of an American Air Force in the 1920s and 1930s. The B-25 had a range of 1,350 miles and a speed of 275 miles per hour.

No other bomber during the war carried as many guns, eight in the nose, four under the cockpit, two in the upper turret, two in the waist, and two in the tail. Medium bombers usually flew in formation or groups of planes. They could take off from fairly small airfields which made the B-25 useful as the ground Army advanced. The B-25 won fame in the April 1942 "Doolittle Raid" on Japan just 6 months after the attack on Pearl Harbor.

Heavy bombers are the giant four engine planes that can carry 6,000-20,000 pounds of bombs. This plane is a **Boeing B-17 Flying Fortress**. Boeing was the manufacturer and the B stood for bomber. The B-17 had a crew of 10 men including a pilot, co-pilot, navigator, flight engineer, bombardier, radio operator, ball-turret gunner, two waist gunners and a tail gunner. The B-17s flew in squadrons of many planes and had an effective range (how far an airplane can fly with a reasonable payload of passengers, bombs and some reserve fuel) of 2,000 miles. They flew far into enemy territory to bomb factories, large railroad centers, oilfields and power plants. These long-range bombers needed fighter escorts for protection. They had to fight off enemy fighter planes and anti-aircraft fire from the ground.

Patrol Boats. This aircraft is a **Consolidated PBY Catalina**. PB stood for Patrol Boat and Y stood for Consolidated, the manufacturer. The PBY Catalina is amphibious which means it can take-off and land from both runways and water. It was one of the few aircraft that was capable of rescuing downed airmen or sailors at sea. Flying at a cruising speed of 117 miles per hour, this flying boat had twin-engines mounted high on the wing to avoid getting splashed by sea water. The large wing gave the Catalina great lift to carry the aircraft in the air much like the large wing on a glider. Also, the wing carries all the fuel necessary for long range patrols which could exceed 10 hours in time and 2,500 miles without refueling.

Trainers. This aircraft is the **Boeing/Stearman Kaydet PT-17 (N2S Navy)**. The Kaydet was a two-seater biplane introduced by the Stearman Aircraft Division of Boeing. Its simple, rugged construction made it ideal as a trainer for novice pilots during World War II. After the war, their slow, low-flying capabilities made them well-suited for crop dusting and spraying.

Who's Who and What's What?

Let's Go on a Wild Goose Hunt to Seek and Find some FUN things in the Museum

Look for:	Write the name here:
Attack bomber	
Dive bomber	
Fighter plane	
Heavy bomber	
Medium bomber	
Patrol or scout plane	
Torpedo bomber	
Trainer plane	
Also, look for:	
American flag	Write the year (if given) and tell how many stars it has.
Classic car or motorcycle	Write the model and year.
Flying Tiger	
Movie poster	Write the name of the movie.
Naval ship	
Newspaper front pages	Write the headline and date.
Poster of WW II	Write the title of the poster.
Tuskegee Airman	

Other things to look for... place a check mark next to each one you find.

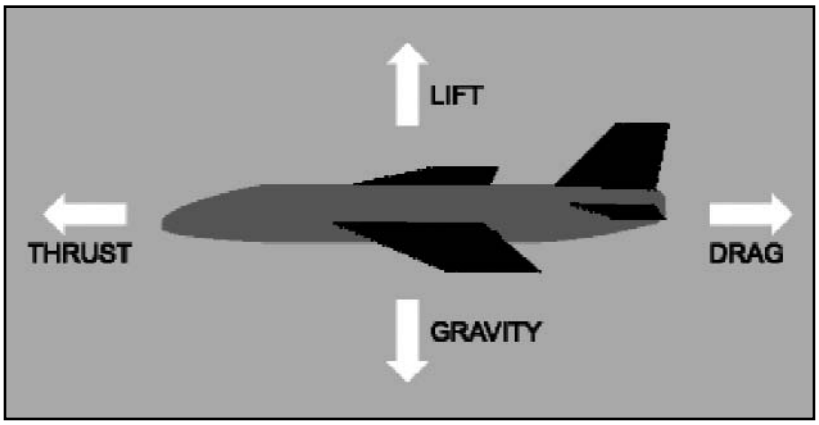
- ❑ Airborne Troop Carrier
- ❑ Aircraft Engine display
- ❑ Axis and Allied Maps
- ❑ Bob Hope stage
- ❑ Bombs
- ❑ Dog Tag machine
- ❑ Cross section of a wing
- ❑ Flight Simulators
- ❑ High flying wardrobe
- ❑ Life magazines
- ❑ Life on Home Front USA
- ❑ Living History Kiosk
- ❑ Medal of Honor recipient
- ❑ Model airplane collection
- ❑ Nose Art
- ❑ Surrender documents
- ❑ Uniforms of WW II
- ❑ Weapons of WW II
- ❑ Women in the Armed Services

When you finish this page, take it to the gift shop and receive a free glider.

How Does an Airplane Fly?

For any airplane to fly, you must lift the weight of the airplane itself, the fuel, the passengers, and the cargo. There are four forces needed for flight: lift, gravity, thrust and drag. The wings generate most of the **lift** to hold the plane in the air. **Gravity** is a force that causes any object in the air to come back to the ground. With airplanes, gravity works against lift by pulling the airplane toward the ground. To generate lift, the airplane must be pushed or **thrust** forward through the air. Without thrust, planes can not produce lift. Most of the airplanes at our museum use propellers for thrust. Jet planes have engines located under the wing which provide the thrust to push the airplane forward through the air. The air resists the forward motion in the form of **drag**.

There are many possible aircraft configurations (shapes), but all configurations must provide for the four forces needed for flight. Lift and thrust help to keep an airplane flying. Gravity and drag work against it. We can't do anything to change gravity, but we can try to minimize drag and increase lift and thrust.



To control and maneuver the aircraft, smaller wings are located at the tail of the plane. The tail usually has a fixed horizontal piece (called the **horizontal stabilizer**) and a fixed vertical piece (called the **vertical stabilizer**). The stabilizers' job is to provide stability for the aircraft, to keep it flying straight. The vertical stabilizer keeps the nose of the plane from swinging from side to side, while the horizontal stabilizer prevents an up-and-down motion of the nose.

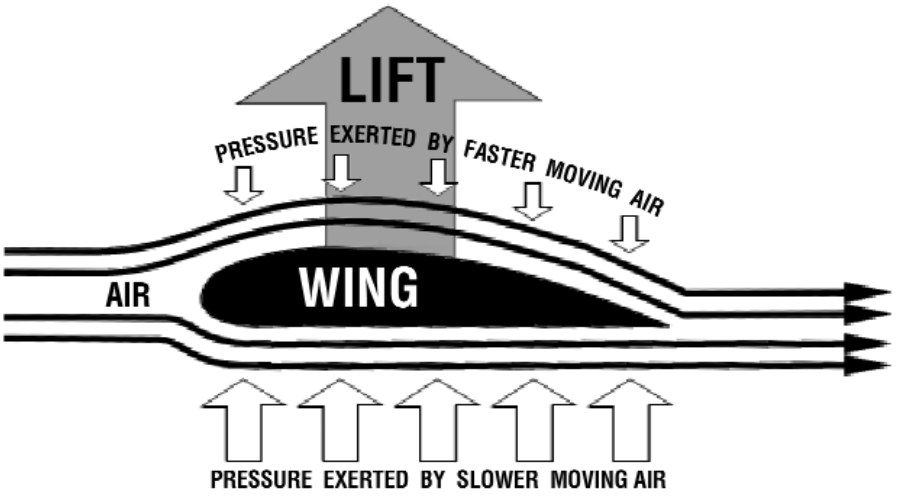
At the rear of the wings and stabilizers are small moving sections that are attached to the fixed sections by hinges. The hinged part of the vertical stabilizer is called the **rudder**. The hinged part of the horizontal stabilizer is called the **elevator**; it is used to deflect the tail up and down.

The hinged part of the wing is called the **aileron**; it is used to roll the wings from side to side. The wings have additional hinged, rear sections near the body that are called **flaps**. Flaps are deployed downward on takeoff and landing to increase the amount of lift produced by the wing. The next time you fly on an airplane, notice how the wing shape changes during takeoff and landing.

The **fuselage** or body of the airplane holds all the pieces together. The pilots sit in the **cockpit** on top of or at the front of the fuselage. Passengers and cargo are carried in the rear of the fuselage. Some aircraft carry fuel in the fuselage; others carry it in the wings.

The wings of the airplane produce lift because of **air pressure**. Air usually presses equally on all sides of an object. Notice that the wing is flat on the bottom and curved on the top. This shape is called **airfoil**. Airfoils are specifically designed to produce lift.

Bernoulli's Principle (named after Swiss Physicist Daniel Bernoulli). When the moving propeller pulls the airplane forward, air starts moving over the surfaces of the wing, both on top and bottom. As the wind moves past the wing, the approaching air splits up when it hits the leading (front) edge of the wing and rejoins at the trailing (back) edge of the wing. The air pressure is reduced on the top of the wing because it is curved. This allows the pressure on the bottom to push the airplane up. The faster the airplane goes, the greater the difference in pressure between the bottom and the top of the wing. As the plane rises, there is less and less pressure on the top of the wing while the pressure at the bottom stays the same and pushes up. This means the air on the top of the wing must move faster. When air speeds up, its pressure gets lower. Since the air pressure on the top of the wing is lower than the air pressure on the bottom of the wing, the wing produces lift.



Propeller-Produced Thrust For the forty years following the first flight of the Wright brothers, airplanes used internal combustion engines to turn **propellers** to generate thrust. Today, most general aviation or private airplanes are still powered by propellers and internal combustion engines, much like your automobile engine. The engine takes air from the surroundings, mixes it with fuel, burns the fuel to release the energy in the fuel, and uses the heated gas exhaust to move a piston which is attached to a crankshaft. In the automobile, the shaft is used to turn the wheels of the car. In an airplane, the shaft is connected to a **propeller**.

A Beginner's Reference for Flight Terms

What is Lift?	Lift comes from air moving over the wings. The air under the wings pushes up more than the air on top of the wing pushes down. The pressure that is pushing the airplane up creates a force called lift in the upwards direction.
What is Thrust?	Thrust, caused by the airplane's engines, is the force that moves the airplane forward. If the plane did not move forward, the air would stop moving over and under the wings, the wings could not create lift and the plane would start falling back towards the ground.
What is Drag?	Drag is the force that tries to slow down a moving object. Airplanes are made to be aerodynamic or streamlined to reduce the amount of drag they feel. Drag is caused by friction and is the force that opposes thrust.
What are two ways to reduce drag on an airplane?	(1) make sure the surface is structurally smooth (aerodynamic) and (2) keep the airplane very clean.
What is Weight?	Weight is a force caused by gravity. An airplane's weight also pulls downward on it - directly opposite to the lift force that is pulling the airplane up. For level flight, lift and weight must balance each other out.
What is Gravity?	Gravity is the force that causes objects to fall to earth.
How does a propeller create thrust?	Propeller blades are shaped like wings - flat side to the back, curved side to the front. Changes in air pressure over this airfoil create thrust.
What is Bernoulli's Principle (Law)?	Moving air has lesser pressure than air that is not moving. Bernoulli's principle demonstrates lift as one of the forces of flight.

Rate the Aircraft

This chart lists the specifications of eight World War II fighter aircraft, two from each of four nations. Rate each of the aircraft on a scale of 1 (least effective) to 5 (most effective). Write the rating in the box to the left of each aircraft. Base your rating on the effectiveness of the fighter aircraft on the following criteria:

- supporting ground forces
- escorting bombers attacking enemy targets
- aerial combat with enemy fighters, "dog fighting"
- protecting naval vessels
- attacking enemy land and naval targets

Rating	Aircraft	Type	Crew	Maximum Speed in MPH	Maximum Range in Miles	Armaments (MG=Machine Gun) (C=Cannon)
	Junkers Ju87 "Stuka" (German)	Dive Bomber	2	255 374 Dive Speed	925	3 MG (2 Forward, 1 Rear)
	Messerschmitt Bf 109 (German)	Fighter	1	350	528	4 MG 1 C in nose
	Supermarine Spitfire (British)	Fighter	1	378	1,140	8 MG
	Hawker Hurricane (British)	Fighter	1	340	600	8 MG
	Mitsubishi A6M Zero (Japanese)	Fighter	1	331	1,200	2 MG 2 C
	Nakajima Ki-84 (Japanese)	Fighter	1	392	1,339	2 MG 2 C
	North American P-51D Mustang (American)	Fighter	1	437	2,080 with Drop Tanks 1,306 without Tanks	6 MG
	Grumman F4F Wildcat (American)	Fighter	1	318	770	6 MG

Note: Specifications for the planes vary according to the model. The specifications in this table were typical near the beginning of World War II.

Let's Fly an Airplane

Download any of the free paper airplanes listed below and let's get flying!
http://www.funpaperairplanes.com/Plane%20Downloads.html

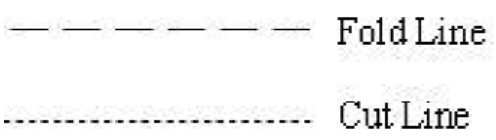
Templates are available for the Arrow, Delta, Classic Dart, Condor and Dragonfly designs. Intermediate, Advanced, and Novelty templates are also available.

Just print out the template onto standard 8.5″ X 11″ printer paper. The fold and cut lines are clearly printed right onto the template, and each design has easy-to-follow instructions. You will need Adobe Reader to view these files. If you don't have Adobe, click on the link provided to download it free from the Adobe website.

Flying Tips to get the best performance out of your models are available at
http://www.funpaperairplanes.com/Flying%20Tips.html

Folding Technique – Folding technique is **very** important for successful flights. Make each of the folds carefully and accurately according to the instructions. Creases should be made by applying pressure to the fold with the edge of your thumbnail. This is best achieved by holding your thumbnail on the fold, applying pressure, and pulling your thumb along the fold line toward you. This will produce clean, crisp folds that will allow for accurate paper planes. If you make a mistake on a fold that you cannot correct, don't be discouraged! Just print another template.

Line Types – There are two main types of lines referenced by the instructions: fold lines and cut lines. Fold lines are dashed and cut lines are dotted.



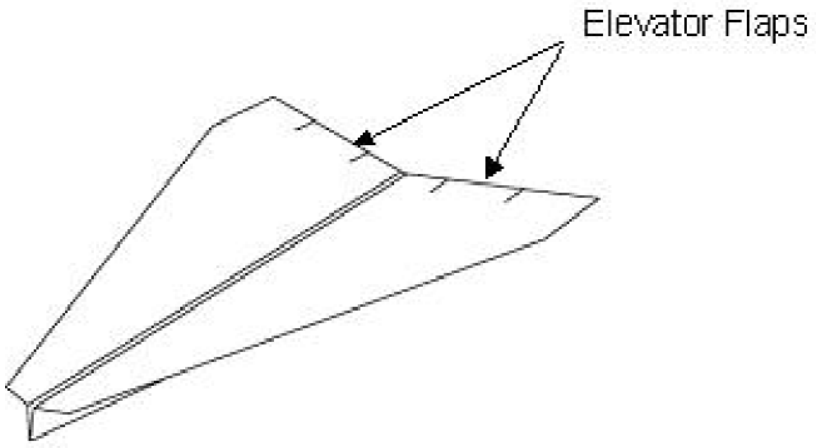
Model Adjustments – No matter what anyone tells you, EVERY paper airplane needs fine-tuning to achieve its best performance. There are several things you should keep in mind while making adjustments to your planes.

Dihedral – Dihedral is a slight upward tilt of the wing tips with respect to the fuselage or body of the airplane. This produces a slight V-shape to the wings when viewed from the front of the plane. Dihedral provides aerodynamic stability to your models by making them want to self-center during flight. Paper airplanes have no intelligent flight controls after they leave your hand, so the plane needs to be naturally stable or else it will crash. All designs on this site perform better when some dihedral is added to the wings.

Front View
With Dihedral, Good

Front View
No Dihedral, Bad

Elevator – Elevator is the aeronautical term for the hinged flap at the tail section of a plane that causes it to either climb (gain altitude) or dive (lose altitude). In paper airplanes these flaps are generally located on the trailing edge of the wings themselves, since there is rarely a separate tail. They are formed by making parallel cuts about 1 inch apart. This produces a small flap that can be folded slightly up or down. Tilting the elevator flaps up will cause the plane to climb. Tilting them down will make the plane want to dive. If you find that your models are heading nose-down toward the ground shortly after launch, you may need to add some up elevator. Likewise, if they are looping-up too quickly or stalling, you may need to add some down elevator. Adding slightly more elevator to one wing than the other will cause the plane to either turn to the right or left.



Paper Airplane Contest – Data Sheet

Step 1: Get together with up to 4 buddies. Each person in your group makes an airplane. Or, you can do this contest alone and make several different plane designs.

Step 2: Job Assignments for Group Experiment

Plane Number	Group Members (Student's First Names)	Job Assignment Throw 1	Job Assignment Throw 2
1		Thrower Measurer Data Recorder	Thrower Measurer Data Recorder
2		Thrower Measurer Data Recorder	Thrower Measurer Data Recorder
3		Thrower Measurer Data Recorder	Thrower Measurer Data Recorder
4		Thrower Measurer Data Recorder	Thrower Measurer Data Recorder
5		Thrower Measurer Data Recorder	Thrower Measurer Data Recorder

Write your NAME and PLANE NUMBER on your airplane.

Step 3: Make a Prediction. Which plane design do you think will fly the farthest? _____

Step 4: Conduct the Experiment

Throw your planes and collect your data in the table below.

Plane Number	Throw 1: Distance in centimeters	Throw 2: Distance in centimeters
1		
2		
3		
4		
5		

Step 5: Analyze the Results

Compare the distance your plane flew to that of the other plane designs.

Name two independent variables that you could change on your plane design that might make it fly farther.

An Introduction to World War II

On December 7, 1941, the alarm "AIR RAID PEARL HARBOR... This is no drill," came without warning for the U.S. armed forces serving on Oahu in Hawaii. During that surprise attack, Japanese bombs killed about 2,400 Americans and damaged or destroyed 21 ships and 347 aircraft. The next day, the United States declared war on Japan and entered World War II. Even as smoke still billowed out of *U.S.S. Arizona* and the other ships of the devastated Pacific Fleet, a stunned nation rallied. In response, nearly sixteen million Americans served in the military to avenge Pearl Harbor. For almost four years of sacrifice and commitment, American Airmen, Coast Guardsmen, Marines, Merchant Marines, Sailors, and Soldiers served their country during World War II.

The USS Arizona seen burning after the attack by the Japanese at Pearl Harbor, Hawaii, the morning of December 7, 1941.

Since 1939, many countries had been fighting World War II. On one side were the **Allies**, made up of Britain, France, and later the Soviet Union. On the other side were the **Axis** Powers, made up of Germany, Italy, and Japan. The United States had stayed out of the war until the Japanese attack on Pearl Harbor, after which they joined the Allies. Eventually, most of the world became involved in the conflict. The war was basically fought on two fronts, Europe and the Pacific. This corresponds to two of the hangars at the Palm Springs Air Museum. Air power played a prominent part in the war.

Many citizens were called upon to do extraordinary things after the attack on Pearl Harbor. Visitors to the Palm Springs Air Museum will meet the men of the 101st Airborne who jumped into Normandy on D-Day and fought the bitter Battle of the Bulge at Bastogne, Belgium. They will fly with the Air Corps 99th Fighter Squadron and 332d Fighter Group. Now better known as the Tuskegee Airman, these African American pilots would distinguish themselves over North Africa, Sicily, and Italy flying more than 3,000 missions in Europe and destroying almost 300 enemy planes.

Several veterans would find their military experiences of use when they later became President of the United States and the Commander-in-Chief. General Dwight D. Eisenhower, Harvard educated John F. Kennedy, Texas congressman Lyndon Johnson, California lawyer Richard Nixon, University of Michigan athlete turned attorney Gerald Ford, Illinois born actor Ronald Reagan, and eighteen year old recent high school graduate George H. W. Bush were among the many patriotic Americans who supported the war effort.

In July 1942, President Franklin Roosevelt signed into law authorization for women's units in all branches of the armed services. The Navy bill established the Navy Women's Reserve (WAVES). The Navy specified that women would be restricted "to the performance of shore duty within the continental United States only and shall not be assigned to duty on board vessels of the Navy or in combat aircraft."

The same law authorized the Coast Guard and the Marine Corps to establish women's units. The Coast Guard set up a women's reserve called the SPARS, an acronym using letters of the Coast Guard motto, Semper Paratus-Always Ready. The Leadership in the Marine Corps opposed setting up a women's reserve and held back for several months. With the high number of Marine casualties in the Pacific war, the Marine Commandant relented and the Marine Corps Women's Reserve (MCWR) was established.

Over 150,000 women served as Women's Army Corps (WAC) offering vital assistance to the Army and Army Air Force. One of the first duties was to serve at Aircraft Warning Service stations. Almost half their volunteers served with the Army Air Force and worked as aircraft mechanics. Some WACs volunteered as flight nurses, a strenuous job that could take them into range of enemy fire.

The Women's Auxiliary Ferrying Squadron (WAFS) delivered aircraft from factories to air training bases. What began as flying light aircraft soon developed into ferrying fighter planes, bombers, and large air transport carriers. Famed pilot Jackie Lee Cochran created the Women's Flying Training Detachment (WFTD) to meet a critical need for more trained pilots to fly the increasing number of planes being produced in American factories. In addition to needing more pilots to ferry aircraft to bases around the world, more women pilots were needed to tow targets and test fly new aircraft. In 1943 the WAFS and WFTD merged to form the Women Airforce Service Pilots (WASP). Despite vocal opposition to training women pilots, the program had marked success. The WASP made important contributions to World War II and enhanced careers for women aviators.

Jacqueline Lee Cochran, pioneer American aviator and celebrated race pilot

These examples are only a few of the nearly 16,000,000 stories of the men and women who proudly wore the U.S. uniform during the Second World War. Some became famous. Others remained in the military after the conflict and made a career in the armed forces. Most returned to their everyday lives, their deeds being remembered by only a close circle of family, friends, and loved ones. And there were those who never returned. This group paid the highest price for freedom. These men and women hailed from every state and territory. Their deeds and sacrifices gave birth to the world we live in today.

After a long and costly struggle, with much sacrifice on the part of Americans and others, the Allies prevailed, bringing an end to the fighting, and freedom to many people around the world. The majority of those who served were ordinary people called upon to make extraordinary sacrifices.

The contributions of these men and women have earned them praise as "the greatest generation." Whether stationed at home or abroad, they fought to preserve freedom.

Nothing can adequately repay the debt owed to these heroes who rallied in the face of one of their country's darkest hours.

Alfred Eisenstaedt renowned image of a sailor kissing a nurse in Times Square on Aug. 14, 1945, during the celebration to mark V-J Day, the end of World War II.

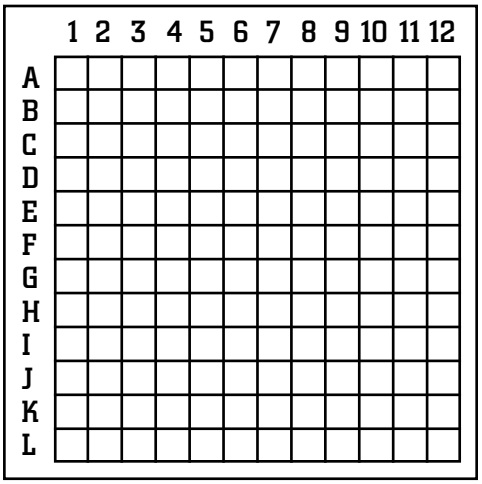
The Game of Naval Attack

The naval Battle of the Coral Sea in May 1942, combined with the Battle of Midway a month later, marked a turning point in the Allies' War against Japan. After Midway, the Japanese made no more advances; instead, they began a slow and steady retreat that ended with their unconditional surrender more than three years later.

The Coral Sea (May 7-8, 1942) and Midway (June 4, 1942) were historic in another way. These battles were the first in history in which the opposing ships never came within sight of each other. The battles were fought almost entirely by warplanes launched from American and Japanese aircraft carriers.

The game of Naval Attack is not unlike the battles of the Coral Sea and Midway as each player attempts to "sink" an enemy fleet without knowing where any of the "ships" are located.

Materials needed: 4 sheets of plain paper or graph paper; ruler, 2 pencils; copy machine, if available; and 2 players



Step 1: On plain paper or graph paper, use a ruler and pencil to make a grid of 144 squares, 12 squares across and 12 squares down. If you are using plain paper, begin by drawing a 6-inch square. Mark dots every 1/2 inch on all four sides of the square, then connect the dots to form a perfect grid.

Step 2: Write the letters A to L down the side of the grid, and the numbers 1 to 12 across the top

Step 3: Copy the grid on separate sheets so that each player has two copies. If you have access to a copy machine, you can run off multiple copies for future games.

Step 4: For each player, label one sheet the Defense Grid and the other sheet the Attack Grid.

Step 5: Each player has five ships, which are placed anywhere on the Defense Grid, making sure the opponent doesn't see those locations. The five ships are:

- two aircraft carriers (shade in 4 squares for each);
- one heavy cruiser (shade in 3 squares); and,
- two destroyers (shade in 2 squares for each).

The ships can be placed horizontally, vertically, or diagonally.

Step 6: The goal of the game is to sink all of your opponent's ships. By any method you wish, determine which player will attack first.

Player One fires a "shot" by calling out a square – "C-10," for example.

Player Two checks his or her Defense Grid. If no part of a ship is on C-10, Player Two says, "It's a miss!" If the shot hits one of Player Two's ships, he or she then says, "It's a hit!" and marks an X on that square on the Defense Grid.

Player One marks his or her Attack Grid for every shot fired, with a dot for a miss and an X for a hit.

Step 7: Player One calls out 9 more shots the same way – a total of 10 shots. A ship is sunk only when all of its squares have been hit. A player who scores a hit, therefore, should concentrate the next shots in the same area until the ship is sunk. When a player's ship is sunk, the player announces, "It's a hit and one of my destroyers has been sunk!"

Step 8: After Player One has fired 10 shots, it's Player Two's turn to attack with 10 shots.

Step 9: Players continue taking turns. But, once a player has lost a ship, he or she fires two fewer shots in the next round for each ship lost. If a player has lost two ships, for example, his or her attack will consist of only 6 shots. If three ships have been lost, his or her next attack will consist of only 4 shots.

Step 10: The battle is over when one player has sunk all of his or her opponent's ships.

Ships participating at the Battle of the Coral Sea were the carriers *Lexington* and *Yorktown* along with their respective task force.

Task Force 17	**Task Force 11**
Yorktown (carrier)	**Lexington (carrier)**
Astoria (heavy cruiser)	Minneapolis (heavy cruiser)
Chester (heavy cruiser)	New Orleans (heavy cruiser)
Portland (heavy cruiser)	
Hammann (destroyer)	Phelps (destroyer)
Anderson (destroyer)	Dewey (destroyer)
Russell (destroyer)	Farragut (destroyer)
Walke (destroyer)	Aylwin (destroyer)
Morris (destroyer)	Monaghan (destroyer)
Sims (destroyer)	

Both the *Lexington* and the *Yorktown* were attacked by Japanese planes. The *Yorktown* was hit once by a bomb but it failed to impede the ability of the carrier to function. The *Lexington* was hit by torpedoes and bombs - one of which hit a supply of ammunition. At 12:47, the carrier was shaken by a huge internal explosion when fuel vapors were ignited. A series of other explosions occurred and by 15:00 'Lady Lex' was beyond help. At 16:30, the crew prepared to abandon ship. Various ships were called up to assist in the evacuation which was disciplined and orderly - even the ship's dog was brought off. The ship's commander was the last to leave. The destroyer *Phelps* was ordered to finish off the *Lexington*, which it duly did with five torpedoes. The *Lexington* sank at 20:00.

Douglas Dauntless dive-bombers, Douglas TBD Devastator torpedo planes, and the Grumman F4F Wildcats made up the U.S. air strike force during the battle. The Japanese lost 43 planes to the Americans 33. The battle is seen as an American victory simply because it stopped Japan from doing what it had set out to do - capture Port Moresby and isolate Australia. In this sense, it was a strategic victory for America.

The Battle of Midway was to do the Japanese far more damage. Considered one of the most decisive battles of World War II, the Battle of Midway effectively destroyed Japan's naval strength when the Americans destroyed four of its aircraft carriers. Japan's navy never recovered from its mauling at Midway and it was on the defensive after this battle.

Read more about these battles at
http://www.historylearningsite.co.uk/battle_of_coral_sea.htm and
http://www.historylearningsite.co.uk/battle_of_midway.htm

Biographical Sketches

Claire Lee Chennault, Military aviator who commanded the "Flying Tigers" during World War II

As you tour the Palm Springs Air Museum, you will be introduced to a number of prominent military leaders and some lesser known, though no less distinguished men and women, who were recognized for leadership during this critical period in American history.

Some of the many individuals featured in the exhibit include:

Douglas Bader
Ira Bong
George H.W. Bush
"Pappy" Boyington
Claire Lee Chennault
Jacqueline Cochran
Benjamin Davis
Jimmy Doolittle
Dwight D. Eisenhower
Gerald Ford
Joe Foss
"Bull" Halsey
Douglas MacArthur
Anthony McAuliffe
Thomas B. McGuire, Jr.
Butch O'Hare
George Patton
Robert J. Pond
Franklin D. Roosevelt

Write a Biographical Sketch

After your tour of the Palm Springs Air Museum, write a biographical sketch or a "newspaper article" about one of the individuals featured in the exhibit. Use specific historical incidents as examples to reinforce the idea that the person was an outstanding leader and worthy of praise. Extend your research by searching through primary and secondary sources.

James Harold "Jimmy" Doolittle, World War II Congressional Medal of Honor Recipient

Richard "Dick" Ira Bong, World War II Ace of Aces who shot down 40 Japanese Planes in the Pacific, Medal of Honor recipient

Edward Henry "Butch" O'Hare, First U.S. Navy Flying Ace, Medal of Honor Recipient, Wildcat Fighter Pilot

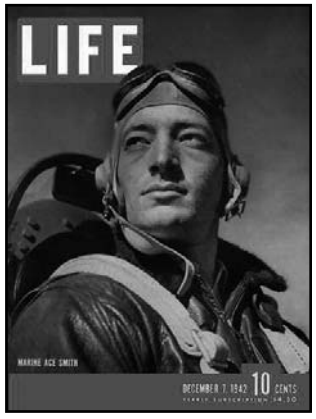
Living History Kiosk

Look for the **Living History Kiosk** located in the Donald and Peggy Cravens Hangar – European Theater of Operations. It includes short video bio-sketches on many docents at the Palm Springs Air Museum and on local citizens whose experiences have been documented through the Veterans History Project of The Library of Congress.

Tony Acevedo* (Medic at Battle of the Bulge; POW)
Dick Brown (Chief Radioman, Yorktown)
Davy Crockett (Pearl Harbor, B-17 Navigator)
Don Cravens (D-Day, Liberation of Paris; Combat Photographer)
Faber Cripps (B-17 Repairs)
Dave Devries (Los Banos POW)
Vivian Eddy* (Aviator)
Glenn A. Glover (Rescue of POWs at Los Banos)
Sandy Hirschhalt (Omaha; Eisenhower's Staff)
Leonard Hanson (B-17; POW)
Harry Hutsell (B-17, Guadalcanal; Tarawa; Mt. Suribachi)
Rob Kranze (Lexington)
Harvey Levine* (Yorktown)
**Videos not yet available*

Aaron Liepe (P-40 pilot in China)
Mary Lou Neale (Aviator)
Mike Pappas (Shot down on 14th mission; POW)
Dick Parker (Aviator; Shot down 7 times)
Evelyn Paterson (8 years old; Escaped Singapore)
Fitz Payne (FRF Fighter Pilot at Guadalcanal; Ace)
Frank Pease (Flew 30 missions 8th Air Force)
Jack Robbins (Shot down; German POW)
Dick Rossi (P-40 Flying Tigers; Ace)
Russell Snell (Normandy on D-Day)
Joe Strauss (Flew 35 missions)
Fritz Young (Quartermaster on the submarine Cobia)
Marne Wilson (Flew 35 missions; Often lead pilot)

The Palms Springs Air Museum Library is located on the 2nd floor of the museum. Additional biographical information is available for each person listed above.



Many books, videos and original magazines of the World War II era are also located in the library of the Palm Springs Air Museum.

While on the 2nd floor of the museum, test your skills with one of the flight simulators. Docents are available to help you learn the basics of flying your own plane.

When you visit the Palm Springs Air Museum, you will find docents whom you can interview about their experiences in the armed services. Many of the volunteers are combat veterans who are willing to share their experiences and sacrifices for the education of future generations.

Teachers: This would be a good time to make arrangements for the Palm Springs Air Museum's Traveling Trunk, "Life of a Soldier" to visit your classroom.

Living History – Conduct an Oral History with a Member of the Armed Services

By asking people questions, you can learn a lot of information. To learn more about the role of citizens in the armed services, interview a member of the U.S. armed services who is currently serving or who has served in the past.

Before the interview, do some research.

What are the different branches of the armed services? What is meant by the term "rank"? What ranks are found in the different services? What is the difference between commissioned officers and enlisted personnel?

Plan some sample questions, such as:

- In which branch of the armed services did you serve?
- What dates did you serve? Where did you serve?
- What was your job?
- Why did you join the armed services?
- What were some of your experiences in the armed services?

Here are some suggestions for planning, conducting and reporting on your interview:

Before the Interview:

1. Write, telephone or email the person.
2. Tell him or her who you are and why you would like an interview.
3. Ask the person to set a time and place to meet.
4. Make a complete list of questions to ask during your interview. Try to think of questions that will lead to interesting answers.

During the Interview:

1. Listen carefully. Make eye contact. Look interested. Do not interrupt the person.
2. Take notes as you talk with the person. If you want to use an audio recorder or video recording, ask the person first.
3. Read back or review with the person all the answers you have recorded. In that way, you make sure your answers are accurate and acceptable to your guest.

After the Interview:

1. Before you leave, thank the person.
2. Follow-up by writing a thank-you note or making a call.
3. Summarize the major ideas from your interview.

Military Dog Tags

As early as the American Civil War, name tags came into use so that the wounded or killed could be identified. By the outbreak of World War II the practice had been adopted for all members of the U.S. armed forces. Nicknamed "dog tags" because of their resemblance to similar dog IDs, the version issued to American military personnel came in pairs. In the event of death, one of the tags is buried with the individual and the other goes with the paperwork of the deceased. Typically, the standard military dog tags contain all the information to identify a soldier and provide emergency information.

Follow this format to create your own dog tag:

1st line, Last Name _____

On the 2nd line, First Name/Middle Initial _____

On the 3rd line, Service Number (Social Security Number) _____

On the 4th line, Bloodtype_____

On the 5th line, Religious Preference_____

Dog Tags are for sale in the lobby of the Palm Springs Air Museum. You don't have to follow the above format. You can put what you want on your tag. Here's what you do:

Step 1: Select a "tag" type, a silencer (black, red, blue or clear), and a chain (brass or silver).
Step 2: Complete the Dog Tag form and take it to the Gift Shop. (You can engrave up to 14 characters per line and up to 5 lines of text.)
Step 3: Pay for your Dog Tag.
Step 4: Before you leave the museum, stop at the Gift Shop to pick up your tag.

The Department of the Army has developed and is currently testing a new tag, which will hold 80% of a soldier's medical and dental data on a microchip. Known as the Individually Carried Record (ICR), it is not intended to replace the present tag, but rather to augment it as part of the "paperless battlefield" concept. This development is in keeping with the Army's dedication to positively identify each and every fallen soldier. The yellow TacMedCS being tested by the Marines uses radio frequency technology, electronics and global-positioning systems to pin-point wounded.

Uncle Sam Wants You

"I Want You" Recruitment Poster

Article 1, Section 8 of the United States Constitution lists the specific powers of Congress, including the power to declare war and to establish and maintain an army and navy. Just because the U.S. Constitution declares Congress has the power to raise an army or navy does not mean enough people will join. The U.S. Military is always recruiting or looking for new members to join.

Look at a copy of the poster, *I Want You*. The poster is available on **http://images.google.com/images** Type in Uncle Sam Poster. Poster size versions are available at Army Recruitment Centers and at the Palm Springs Air Museum Gift Shop.

What is the meaning of the letters U.S.?
The letters U.S. are an abbreviation for *United States*.

What is the meaning of the letters U.S.A.?
U.S.A. is an abbreviation for the *United States of America*.

1. What are the main colors used in the poster? _____

2. What symbols (if any) are used in the poster? _____

3. Are the messages in the poster primarily visual, verbal, or both? _____

4. Who do you think is the intended audience for the poster? _____

5. What does the Government hope the audience will do? _____

6. The most effective posters use symbols that are unusual, simple, and direct.

   Is this an effective poster?_____

The artist of the *I Want You* poster was James Montgomery Flagg. Produced for the Army Recruiting Bureau, Flagg used himself as a model for the illustration. It was used on World War I recruitment posters and revived during World War II. The poster has been described as the best known of any era.

Patriotic Symbols of the United States

The image of Uncle Sam plays a major role in the *I Want You* poster. But who is Uncle Sam?

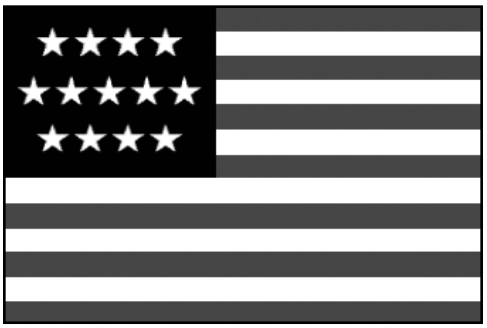
History of Samuel Wilson

During the War of 1812, Samuel Wilson lived in the village of Troy, New York. He was popularly known in the area as Uncle Sam. From time to time, Sam supplied barrels of beef to the soldiers, stamping the barrels U.S. The soldiers from Troy called the beef "Uncle Sam's" implying that it was furnished by Samuel Wilson. The other soldiers, thinking that the term was applied to the letters U.S. standing for the United States, began using the name "Uncle Sam" figuratively for the United States. This interpretation was picked up promptly by other soldiers who began to call everything belonging to the government, "Uncle Sam's." The term, as applied to the United States, quickly sprang into popular favor and the weekly periodicals soon began to sketch a caricature likeness by adding the long white beard and high hat, a typical representation of our government.

By an Act of the 87th Congress of the United States, the following Resolution was adopted on September 15, 1961: "Resolved ... that the Congress salutes "Uncle Sam" Wilson of Troy, New York, as the progenitor (originator) of America's National symbol of "Uncle Sam."

Other Patriotic Symbols

Other than Uncle Sam, what are some patriotic symbols of the United States? Some of these symbols include the American Flag, the Bald Eagle, the Liberty Bell, and the Statue of Liberty. These symbols create a sense of community among our citizens.

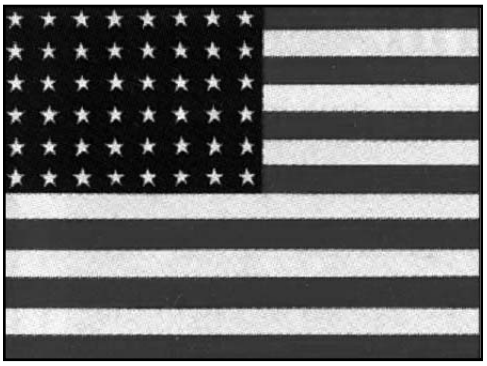


The U.S. flag from 1777 to 1779.

History of the United States Flag

On June 14, 1777, Congress passed a resolution stating "that the flag of the United States be thirteen stripes, alternate red and white, that the union be thirteen stars, white in a blue field, representing a new constellation."

The 13 stars and stripes symbolized the original 13 colonies. The plan was to add a stripe and a star each time a new state joined the union. If this plan were followed, the flag would quickly have become much too large. Congress voted in 1818 to keep the 13 stripes in recognition of the original 13 states and to add a star for every new state thereafter. Our flag now has 50 stars.



The U.S. flag from 1912 to 1959.

Why were the colors red, white and blue selected?
Each color is supposed to stand for a different ideal or characteristic. Historians do not agree on what the colors are supposed to mean, but some of their suggestions are:

RED	WHITE	BLUE
courage	purity	loyalty
blood	cleanliness	freedom
sacrifice	peace	justice
zeal	hope	truth

Create a Flag
Make a flag for your family or for your classroom. Choose the colors of the flag and orally explain or write an explanation for what each color represents. Design symbols that represent ideals you believe are important.

The *"Pledge of Allegiance"*
A pledge is a *promise*. The *Pledge of Allegiance* is a promise that people make to the United States of America. Allegiance means loyalty so when we pledge allegiance to the flag of the United States, we promise to support and be loyal to our country. The American flag is a symbol that stands for the United States of America. People place their hands over their hearts when they recite the pledge because they are making a promise.

There have been several versions of the *Pledge of Allegiance*. The earliest known version was by an unknown author in the mid-1800's. The present pledge can be traced to the one written in 1892 by Francis Bellamy to celebrate the 400th anniversary of Columbus's voyage to America. It appeared in a children's magazine on September 8, 1892. In 1923, the words "my flag" were replaced with "the flag of the United States of America." In 1954, the U.S. Congress added the words "under God." The current wording of the pledge was established on July 7, 1976 with Public Law 94-344.

"I pledge allegiance to the flag of the United States of America and to the Republic for which it stands, one Nation under God, indivisible, with liberty and justice for all."

Note the punctuation. Practice saying the Pledge pausing in the appropriate spots.

Classroom Pledge or Family Pledge
Create a pledge for your family or for your classroom. Decide the types of behaviors you expect from members of your class or your family. Decorate the copy of the pledge, and, if desired, dip it in cooking oil to provide a parchment finish.

The Flag in Works of Art

The United States Flag has often been featured in famous paintings, photographs and monuments.

The Spirit of '76 by Archibald Willard

The photograph by Joe Rosenthal of Marines raising the American flag on Iwo Jima

Other paintings to enjoy include *George Washington Crossing the Delaware* by Emanuel Gottlieb Leutze and Elizabeth (Betsy) Ross, American Flag Maker in the *Birth of Old Glory* by E. Percy Moran.

During your visit to the Palm Springs Air Museum, be sure to view the "History of Our Flag" exhibit in the B-17 Hangar. Also, look for the "Flag of Honor." It contains the names of all who perished in the 9/11 attacks.

Flag Etiquette

★ When the Pledge of Allegiance is recited, when the flag is being raised or lowered, or when it is being carried past, we should face the flag, stand at attention, and salute.

★ Those in uniform or who have served in the military should give the military salute.

★ Men and boys not in uniform salute by removing their hats and holding them over their hearts.

★ We should always handle the flag with respect, neither letting it touch the ground, nor leaving it carelessly about.

★ Outdoors, the flag should be flown only from sunrise to sunset. However, when a patriotic effect is desired, the flag may be displayed twenty-four hours a day if properly illuminated during the hours of darkness.

★ We should never let the flag touch anything beneath it, such as the ground, floor, water, or merchandise.

★ We must keep the flag clean and undamaged at all times.

★ We must never put lettering, design, drawing, or advertising on the flag.

★ We must never use the flag as a decoration to drape tables or walls.

★ The flag should not be used for advertising purposes, nor should an advertising sign be fastened to the pole from which the flag is flown.

★ We must not use the flag as part of clothing. However, it has become acceptable and customary for athletes, Boy Scouts, employees of certain companies, and others to wear flag patches or replicas of the flag.

★ The flag flies at half-mast by presidential proclamation to show respect for important public officials who have died.

★ Traditionally the flag should be left free to fly in the breeze, symbolizing a free citizenry.

How Did the Desert Help Win World War II?

General George Patton and the Desert Training Center

Why was the Desert Training Center located in the desert? What impact did it have upon the local community?

General George Patton

The Coachella Valley, and in fact California, changed forever by playing a part in the winning of World War II. Major General George S. Patton, in 1942, selected a 162,000 square mile area east of Indio to become the **Desert Training Center**. It was in the middle of California's Mojave Desert...a bleak, remote, vast expanse of cactus, scrub and sand. The Center's area was so large that it extended beyond eastern California across the Colorado River and into Nevada and Arizona.

General Patton made his headquarters at Camp Young, near Shavers Summit (now known as Chiriaco Summit). Ten other camps were established within the Desert Training Center. The camps were massive tent cities containing tanks and repair shops, hospitals, aviation facilities and anti-aircraft and field artillery units. Indio was the nearest town to the new army base.

In the years between 1942 and 1944, nearly a million American servicemen were trained for combat readiness at the Desert Training Center (DTC). Training in desert warfare was essential because the American Army fought in North Africa to stop the Axis march toward Egypt and the Suez Canal. The DTC offered endless terrain suitable for armored combat training. The area's elevation ranged from the desert floor to 7,000 feet above sea level. Temperatures ranged from below freezing to 120^0 in the shade.

The Desert Training Center became the world's largest military installation in both size and population. On April 30, 1944, two years after its inception, the training center was closed by the Army and the camps were abandoned to the desert. But their legacy remains.

Why was the desert location APPROPRIATE for the Training Center?

The major reasons the Desert Training Center was located nearby were:

1. varied desert terrain
2. availability of water from the Metropolitan Water District's Colorado River Aqueduct
3. availability of electricity for its headquarters, Camp Young, from the Hayfield pumping station
4. proximity to the Southern Pacific railheads in Indio and Coachella that could be used as supply depots
5. lack of a huge population that would be inconvenienced or hurt
6. contours of the land made it possible to conduct 100 mile marches without opposing troops sighting each other

Life at the Desert Training Center

Picture the following scenario:
You are following a five-mile long convoy of Army vehicles. These include Sherman tanks, jeeps and two and a half ton trucks that carry soldiers and command cars for officers. As the convoy continues, a strong wind from the north fills your eyes with sand. Your eyes are already gritty from the churned-up dust of the vehicles you are following.

As you trudge along, you see thousands of empty acres of wilderness ahead of you. You begin to realize you will have to march as far as you can see in the temperatures of 120 degrees. You have only one quart of water, the amount allowed per man within a six hour period. To prevent heat stroke, you have to suck on salt tablets to prevent dehydration.

You wear your oven-hot steel helmet and carry your rifle that burns like fire from the sun in the cloudless sky. You don't look forward to mealtime because all you have to eat are dried food rations.

At the end of the day, you turn your sleeping bag inside out because you have to check for scorpions, lizards or rattlesnakes before you crawl in quickly and zip the bag up tight to your neck.

After spending days out on maneuvers, what do you think the soldiers would want to do the most when they returned to camp?

Generally, it was a relief to get back to Camp Young, because at the camp they could rest. The *camp* or *base* was a sprawling *tent city* that housed 25,000 men and their equipment; a movie house; a chapel; a hospital; and, several commissaries. Commissaries are government stores where food and other necessary items are available for purchase.

Impact on the Local Communities of the Coachella Valley

Life *Before* the Desert Training Center

In 1942, before the Desert Training Center was established east of the Coachella Valley, Indio was a market town for the local farming, ranching, date-growing area. The Southern Pacific Railroad made it a freight distribution point. The completion of Highway 99 in 1922 helped shape Indio's character as the increased traffic led to the opening of many service stations and garages.

The construction of the Metropolitan Aqueduct (Colorado River Aqueduct) in the 1930s brought thousands of just-paid construction workers into Indio. In early 1942, Indio had a population of about 1,500 people. Downtown Indio consisted of a bank, one motion-picture theater, a few restaurants, two weekly newspapers, two hospitals, a mortuary, five hotels and apartments, courts, auto camps, and two small department stores and grocery stores.

Life *After* the Desert Training Center

Camp Young held 25,000 soldiers at a time. In rotation, around 2,500 troops (10%) had "leave" (a mini-vacation) each evening. Thus, each man was able to go on "leave" every 10 days. Once on leave, the troops stayed in the area since they had such a short time on leave. The closest town to Camp Young was Indio, about 30 miles away.

In the spring of 1942, Indio, Coachella and Palm Springs were overwhelmed with visiting soldiers from Camp Young. None of these small towns was equipped for such an invasion.

What do you think the soldiers wanted to do during their time off?

Looking west in 1944 from today's airport down Tahquitz Canyon toward downtown Palm Springs.

When the soldiers visited town, they wanted to purchase articles they could not find at Camp Young; eat food that was not military issue; visit their families housed in the local area; rest; relax; and, find some recreation.

Examples of the impact of Camp Young's Desert Training Center on the Coachella Valley:

- Movie houses and cafes were filled with servicemen and hardly a seat could be found. At times, soldiers stood eight deep waiting to buy a coke at the drugstore's counter.

- Along with the soldiers came their wives and girlfriends who all needed housing. Women lived in hotels, trailers, one-room cabins, shacks, garages, tents and with local families. In some cases, a bed served three occupants in eight-hour shifts. Some wives came and found no place to stay.

- The payroll for all the military personnel (approximately $2 million to $3 million dollars a month) came by railroad and then it was sent to the Indio branch of the Bank of America and/or the First National Bank of Coachella. The teller's counter at the bank was about thirty feet long to accommodate all of the customers.

- The supply depot at the Southern Pacific Railroad became a bottleneck as so many supplies arrived and had to be unloaded. In January 1943, a roundhouse built for nine or ten steam engines had to handle thirty or more engines.

- The telephone system broke down often and the switchboard was jammed with outgoing calls from so many soldiers wanting to call home.

- The Army purchased the El Mirador Hotel in Palm Springs and converted it into Torney General Hospital, a primary care facility for wounded soldiers returning from the South Pacific Theater of Operations. It is now the Desert Regional Medical Center.

- Hollywood stars came to Palm Springs both to vacation and to entertain the servicemen. Bob Hope and Rudy Vallee performed in the Coachella Valley High School Auditorium to raise money for War Bonds.

- To entertain the troops, nightclubs and hotels' owners in Palm Springs hired famous entertainers such as Louis Armstrong, Nat King Cole and Bing Crosby.

- Palm Springs Airport was converted by the government into a facility to house troop supplies and troop aircraft manufactured near Los Angeles.

Raising the flag as Torney General Hospital takes over the El Mirador Hotel.

- Palm Springs Airport was ideally located in a dry climate away from the fog of the coast.
- Army barracks (buildings with beds to house troops) lined Tahquitz Way.
- Camp Young's Motor Vehicle Pool was located in what is now Palm Desert, on a site across from the present Washington Charter School on Portola Avenue.
- Resorts along the Salton Sea became popular vacation spots.
- Thermal Air Base was established as a backup to March Field in Riverside.
- Valley resident Jacqueline Cochran was named Director of Women's Airforce Service Pilots, the WASPS.
- Coachella's Trading Post became a USO (United Service Organizations, a nonprofit organization whose mission is to support the troops by providing morale, welfare and recreation-type services). Soon, there were two USO's established in Indio.

Think about it - What would it be like, if suddenly 25,000 people moved into our local area today? What type of positive things might happen? What might be some of the problems?"

Let's WRITE about It

RAFT Writing (**R**ole, **A**udience, **F**orm, **T**ense) Note: Tense refers the tense of the verb.
Select and write about one of the following scenarios:

- You are (TENSE) an American soldier (ROLE) stationed in California at the Desert Training Center at Camp Young. In a letter (FORM) to friends (AUDIENCE), you describe the events that happened in a recent training maneuver.
- You are (TENSE) an American soldier (ROLE) arriving on one of the troop trains at Camp Young in California. At the end of your first week, you write several journal entries (FORM, AUDIENCE) to explain any new and different experiences.
- While on leave from Camp Young in January 1943, you are (TENSE) an American soldier who is suddenly stranded at the railroad depot in Indio, California (ROLE). You find a telegraph office (FORM) and send a telegraph to a friend in Los Angeles (AUDIENCE). Write the telegraph message, explaining exactly what has happened to you, making sure you explain your inability to get to Los Angeles.

- You are (TENSE) a business owner (ROLE) in Indio, California, witnessing the arrival of the first 2,500 soldiers on leave from Camp Young. As your family members gather around you at the kitchen table (AUDIENCE), recount your tales using the "fortunately, unfortunately" format (FORM).

- You are a political cartoonist (ROLE) for a Palm Springs, California newspaper (AUDIENCE). Design a cartoon (FORM) that illustrates a major event that occurs (TENSE) when the troops from Camp Young come in to town for a night's leave. Include a caption and your signature as the artist.

Write a Letter to Your Grandchildren

Take on the role of a grandparent who lived during the World War II era. Write a letter to one of your grandchildren. Your letter should describe vividly the things you did, what you learned, what you enjoyed or disliked, and the meaningful experiences you had during this time in your life. Explain the type of work you did and the hardships you had to overcome. Use an appropriate date for the letter.

What impact (effect) did the Camp Young's Desert Training Center have on the Coachella Valley?

Using information from the above activities, complete the following chart.

Effects of the Desert Training Center on the Coachella Valley

	Geographic Location	When? (Key Dates)	Why? (Cause)	Impact (Effect)	Key People
Desert Training Center					

WRITE about it or TELL about it

Describe the effect the Desert Training Center had on the Coachella Valley. Write a multiple paragraph composition, OR tell about it in an oral report. Present major ideas and supporting evidence.

Your composition should include details about:

- the area/location of California affected
- dates when the key events occurred
- why the changes occurred (cause)
- the impact of the changes (effect)
- the key people involved

If you write about it, be sure to:

- Open with an introductory paragraph.
- Include a topic sentence at or near the beginning of the first paragraph.
- Include supporting paragraphs with simple facts.
- Conclude with a paragraph that summarizes the points.
- Draw from more than one source of information (speakers, books, newspapers).
- Capitalize proper nouns.
- Indent paragraphs properly.
- Use legible penmanship or demonstrate basic keyboarding skills.

If you tell about it, be sure to:

- Summarize major ideas and supporting evidence.
- Present effective introductions and conclusions that guide and inform the listener's understanding of key ideas.
- Emphasize points to assist the listener/viewer in following the key ideas.
- Use details and examples to explain or clarify information.
- Use appropriate volume, pitch, phrasing, pace and gestures, expressively to communicate meaning.
- Draw from more than one source of information.

Life on the Home Front

What is the Home Front? (For an answer key, refer to the bottom of page 43.)
Look at a map of the United States, if available.

How many states comprise the United States today?_____

How many of these are contiguous?* _____

Which states are not contiguous? _____

When did Hawaii enter the Union? _____

Was Hawaii considered to be the home front in 1941? Why or why not?_____

_____

**Contiguous means sharing an edge or a boundary; touching.*

Response of the Home Front
Enemy planes could not fly far enough to cross the Atlantic or the Pacific Ocean and bomb American cities, but some Japanese submarines did carry airplanes which were launched off the Pacific Coast. Every time the air raid sirens sounded as a test, people took the alert seriously. Nighttime drills were called "blackouts." Everyone had to be careful their home showed no shred of light that might serve as a guide to enemy bombers or silhouette (highlight) our coastal ships against the lights on the shore.

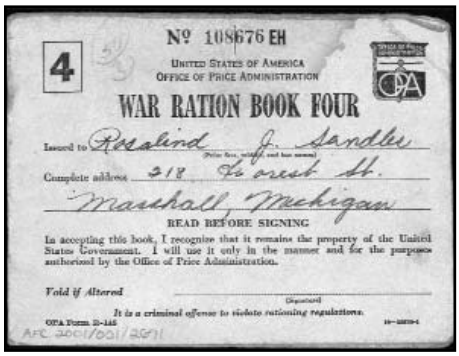
Despite the heroic endeavors of the men and women of the armed services, the war could not have been won without the support of the people on the home front. War required national unity and demanded sacrifices.

What types of sacrifices do you think Americans had to make during World War II?
It became very important to conserve raw materials that were needed for the armed forces.

What types of raw materials did the government need to win the war? What types of shortages do you think occurred? Put a check next to each item you think might have been rationed, or limited in use, during World War II.

❑ rubber	❑ sugar	❑ fuel	❑ canned goods
❑ meat	❑ shoes	❑ coffee	❑ butter and hard cheese

All listed items were rationed. Rubber (sources were cut-off by the Japanese) and fuel were among the earliest commodities to be regulated. This meant that the driving of cars was greatly restricted.



By May 1942 ration books began to be issued to the American public to limit the use of items such as sugar, coffee, meat, butter and other dairy products, canned goods, and shoes. Since everyone received the same number of stamps in their books, no one could buy more than their share of scarce items such as sugar. For gasoline, there was a tiered system depending upon need. Most people accepted the rationing system since it allowed all families to have their fair share. Ration books helped prevent people from hoarding food and supplies. The government encouraged conservation and sponsored scrap paper, tin foil, and scrap metal drives. Kids would often collect scraps to support the war effort.

As the war progressed, the list of rationed items grew. Although the rationing system worked well, there were bound to be shortages. For example, coffee was in short supply because the cargo ships that transported coffee to the United States were needed for shipping war materials. As a result, ration coupons allowed coffee drinkers only one pound of coffee every five weeks – not even a cup a day.

One way to cope with the shortages was to live by the popular slogan:

Patch it up, wear it out,
Make it do, or do without.

The war changed the American economy; factories converted from the production of consumer goods to war machinery and ammunitions; lines for food replaced the lines of unemployed workers; and, women were urged to enter the work force in factories which had previously closed their doors to female employees. The massive American war production effort was perhaps the single most vital factor in winning the war.

Victory Gardens

In 1942, Americans were encouraged to plant "victory gardens" so they could provide fresh vegetables at home and allow the produce from farms to be issued to the military. In 1943, an estimated 21 million victory gardens sprang up. And in 1944, the last full year of the war, these gardens supplied almost forty percent of the vegetables cultivated in the nation during the war. At schools throughout the country, students planted large gardens to supply the school cafeteria. City dwellers planted gardens on rooftops, in vacant lots, and in window boxes.

Project: Plant a Victory Garden

The keys to a successful victory garden include good soil, warmth, plenty of sunshine, adequate water, and enough space between plants. Leaf lettuce, radishes and carrots make good starter plants. The seeds will take a week or more to sprout, so be patient when green shoots fail to appear overnight. If your home or school does not have outdoor gardening space available, you can use flower pots.

The Impact of the War on California Industry.

About 750,000 men and women from California joined the armed forces during World War II. While California's soldiers, sailors and pilots were away fighting the war, Californians at home were doing their part for the war effort. With the United States' entrance into the war, Americans united in the largest production increase in the country's economic history. Almost overnight, the American economy converted to wartime production. 250,000 planes were produced during the war as well as trucks, jeeps and tanks. The shipyards built 5,200 ships, including aircraft carriers. Industry increased its labor force. The average workweek grew from 37.7 hours to 46.6 hours.

California helped meet all of these needs with the massive production of war-related products. The United States Military opened new bases throughout Southern California, including El Toro, March, Norton, Edwards and Camp Pendleton. Oil companies went into full production. Aviation manufacturing companies in Southern California made old factories larger, and built new ones. Lockheed, Consolidated, Vultee, North American, Northrop and Hughes Aircraft established massive production facilities.

Shipbuilding became a huge industry in California. One out of every four ships built during the war was made in California. Many of these were built at a factory in Richmond owned by Henry J. Kaiser. There was a shortage, or lack, of enough workers to build all the ships needed for the war. So Kaiser sent word across the country that workers were needed, and people came west by the thousands. Many of the newcomers who came to work in California were African Americans from the South. During the war, more than 300,000 African Americans came to work in California shipyards and other industries.

In 1942, the United States worked with Mexico to create the Bracero Program. This program brought braceros, or Mexican workers, to California. These workers did much of the farm labor in California during the war and for years afterward.

With all of the new workers coming to California to help in the war effort, the population grew quickly from 6,907,387 in 1940 to 10,586,223 in 1950. (Note: California's population in the census of 2000 reached 33,871,648.) Workers produced tanks, guns, airplanes, ships, and other equipment that helped American forces fight in World War II. What effect do you think this had on California?

California at War is a one-hour documentary on how World War II changed California, and how California changed the war. Created by Ken Burns, this excellent program may be viewed online at **http://www.kcet.org/californiaatwar/**

We Can Do It! by J. Howard Miller. Of all the images of working women during World War II, the image of women in factories predominates. War work – uniforms, tools, and lunch pails – were incorporated into the revised image of the ideal woman.

Women in Industry

As millions of able-bodied men went into military service, new sources of workers entered the job force. During the war, many women went to work outside the home for the first time. They worked in factories, steel mills, shipyards, and offices. They also ran family businesses and farms. Between 1940 and 1944, more than 6 million additional women joined the workforce. Many of them worked in non-traditional factory jobs in the aircraft and shipbuilding industries.

To meet the need for war planes, aviation companies hired more than 200,000 new workers. As in other industries, a large number of the workers in the aviation factories were women. Although the women performed the same work as men in the factories, their wages were not as high as the men's salaries. Men still held most of the supervisory and managerial positions. The women were thought of as temporary substitute workers until the men returned home.

While touring the Palm Springs Air Museum, ask your docent to relate personal experiences of the impact of the war on the home front. View artifacts from the home front located in a display case in the European Hangar.

Longing Won`t Bring Him Back Sooner...Get a War Job! by Lawrence Wilbur, 1944

Answer Key:

- How many states comprise the United States today?
  (**50**)
- How many of these are contiguous?
  (**48**)
- Which states are not contiguous?
  (**Alaska and Hawaii**)
- When did Hawaii enter the Union?
  (**August 21, 1959 as the 50th state**)
- Was Hawaii considered to be the home front in 1941? Why or why not?
  (**Hawaii was a territory of the United States that maintained a naval base at Pearl Harbor.**)

Description of Palm Springs Air Museum Airplanes

U.S. Air Power was the deciding factor that determined the outcome of World War II. The progression of time has only enhanced the relevance and significance of Air Power upon the course of contemporary world events. In order to learn from the past and better prepare us for the challenges of the future, the Palm Springs Air Museum maintains the following airplanes on display:

- **Bell P-63 King Cobra**
- **Boeing B-17 Flying Fortress**
- **Boeing Stearman PT-17/N3N Kaydet**
- **Consolidated PBY Catalina**
- **Curtiss P-40 Warhawk**
- **Douglas A-26 Invader**
- **Douglas A-4 Skyhawk**
- **Douglas DC-3 I C-47 Skytrain**
- **Douglas SBD Dauntless**
- **Grumman A-6 Intruder**
- **Grumman C1A COD**
- **Grumman F-14 Tomcat**
- **Grumman F4F Wildcat**
- **Grumman F6F Hellcat**
- **Grumman F7F Tigercat**
- **Grumman F8F Bearcat**
- **Grumman G-21 Goose**
- **Grumman (General Motors) TBM Avenger**
- **Lockheed Martin F-16 Fighting Falcon**
- **Lockheed T-33 Shooting Star**
- **McDonnell Douglas F/A-18 Hornet**
- **McDonnell Douglas F-4 Phantom II**
- **North American AT-6/SNJ Texan**
- **North American B-25 Mitchell**
- **North American P-51 Mustang**
- **Piper Cub J-3C Grasshopper**
- **Republic P-47 Thunderbolt**
- **Ryan PT-22 Recruit**
- **Supermarine Spitfire Mk.XIV**
- **Vought/Goodyear FG-ID Corsair**

Bell P-63 King Cobra

With a 37mm cannon firing through the propeller hub, this ground-hugging attacker was the last thing any German tank commander wanted to see. Approximately 2,400 P-63s were built for the Red (Soviet) Air Force and used to hold off the Nazis as they threatened Moscow and Stalingrad. Its predecessor, the P-39, saw duty with the USAAF and other countries.

Boeing B-17 Flying Fortress

The B-17 was designed to meet the strategy of bombardment. In the words of General Hap Arnold, "We must hit the enemy before he hits us." It carried 6,000 pounds of bombs. When a "chin turret" was added, it really became a Flying Fortress. Some 13,000 were built and thousands were lost as portrayed in the movie, *12 O'clock High, Command Decision and Memphis Belle*.

Boeing Stearman PT-17/N3N Kaydet

The essential basic trainer of World War II was flown by hundreds of thousands of allied aviators on their way to fighters, bombers and transports. Commonly referred to as "the Yellow Peril" among training squadrons, both the Navy and the Army Air Corps used this bi-plane trainer.

Consolidated PBY Catalina

Able to land on water or land, the PBY could be equipped with depth charges, bombs, torpedoes, and M2 Browning machine guns. It was one of the most widely used multi-role aircraft of World War II. PBYs served with every branch of the United States Armed Forces and in the air forces and navies of many other nations. After the war, the Catalina was used for firefighting, as it could land in a lake, scoop up water and drop it on the fires.

Curtiss P-40 Warhawk

Though it was flown in every World War II theater, the P40 is best known as the "Flying Tiger" of General Claire Chennault's American Volunteer Group (AVG) in China from 1941 to 1942. Thousands sliced through the skies above the Solomons and New Guinea, the Aluetions as well as North Africa and Italy in 1942-43.

Douglas A-26 Invader

Faster and more maneuverable than some of the pursuits of its day, this light bomber entered service in the Ninth Air Force campaigns supporting the Normandy Invasion. The A-26 served in Korea. It was retired after slugging it out with the Vietcong in Southeast Asia 25 years later! This airplane was used in the Richard Dreyfus film *Always*.

Douglas A-4 Skyhawk

This carrier-capable, ground-attack aircraft was designed for the United States Navy and U.S. Marine Corps. The delta winged "Skyhawk," powered by a single turbojet, was designed and produced by Douglas Aircraft Company (later McDonnell Douglas). The "Skyhawk" was originally designated the A4D under the U.S. Navy's pre-1962 designation system.

Douglas DC-3 I C-47 Skytrain

The wartime modifications to this airplane are too numerous to mention. They were used in all theaters and performed above and beyond all expectations in virtually all weather, altitude and airfield conditions. They pulled gliders, hauled freight, passengers, wounded, gasoline, VIPs, weapons, animals, and jeeps. They hauled gasoline and freight "over the Hump" in the China-Burma-India (CBI) Theater.

Douglas SBD Dauntless

The SBD Dauntless was the scourge of the Japanese Imperial Fleet during the early, crucial years of the war in the Pacific. An exceptionally stable aircraft, it was perfectly suited to the task of dive bombing. Almost single-handedly, the SBD and its determined crews handed the Japanese Navy its worst defeat in 600 years at the Battle of Midway, a defeat from which it would never recover.

Grumman A-6 Intruder

This American twin jet engine, mid-wing attack aircraft was built by Grumman Aerospace. In service between 1963 and 1997, the Intruder was designed as an all-weather replacement for the piston-engined A-1 Skyraider medium attack aircraft. A specialized electronic warfare derivative, the EA-6BAs, the A-6 was slated for retirement when its precision strike mission was taken over by the Grumman F-14 Tomcat.

Grumman C1A COD

The C-1A "Trader" was developed from the S-2F "Tracker," the highly successful twin engine, carrier-based antisubmarine warfare aircraft. The C-1A was designed to carry 9 passengers and cargo from ship to shore or vice versa. COD stood for Carrier Onboard Delivery. The first C-1A flew in January 1955 and the last of the 87 built was delivered in December 1958.

Grumman F-14 Tomcat

The Navy's premier shipboard fighter of the post-Vietnam era was made famous in the film *Top Gun*. This non-flying example, loaned by the Navy to Palm Springs Air Museum in December, 1996, was flown in the Gulf War in 1991.

Grumman F4F Wildcat

The only truly effective carrier-based fighter available in the Pacific Theater at the outset of World War II was the Grumman F4F Wildcat. It fought in the defense of Wake Island where it sunk a destroyer, a submarine and destroyed Japanese aircraft. It was used in the Pacific until 1943 when the F6F came aboard. This aircraft was used in the television mini-series *War and Remembrance*.

Grumman F6F Hellcat

The Navy's answer to the P-47 Thunderbolt had the power and armament to run down and shred the lightly built Mitsubishi Zero. With a kill ratio of 19 to 1, Hellcat pilots swept the skies of the enemy at the Battle of the Philippine Sea, called the Mariana Turkey Shoot, and elsewhere from 1943 to 1945. Grumman built 12,275 Hellcats.

Grumman F7F Tigercat

Developed late in the conflict, this twin-engined terror never saw combat in World War II. It was used extensively post-war by U.S. Marines in the Pacific Theater and was also used in Korea. They were withdrawn from service in 1954. Only 364 were built.

Grumman F8F Bearcat

Designed as a smaller fighter, the F8F Bearcat was easier to fly off smaller (Jeep) carriers. The Bearcat just missed wartime service in World War II, but was given to the French who were fighting in Indo China. It went on to earn a reputation as one of the finest piston-engined fighters ever built in the postwar years.

Grumman G-21 Goose

Designed late in 1936, the G-21 was a 6 or 7 seater for airline or executive use. It was the first twin-engine Amphibian Flying Boat used by both military and commercial services. This plane weighed 8,000 pounds. The U.S. Army Air Corps and U.S. Navy ordered 21 modified for photography and target towing. The U.S. Coast Guard bought ten for Air Sea Rescue.

Grumman (General Motors) TBM Avenger

The Navy's carrier-based torpedo bomber was big and successful. The first one in service saw action at the tide-turning Battle of Midway in June of 1942. Former President George H. W. Bush bailed out successfully in a TBM three years later.

Lockheed Martin F-16 Fighting Falcon

This multirole jet fighter aircraft was originally developed by General Dynamics for the United States Air Force. Designed as a lightweight fighter, it evolved into a successful multirole aircraft. The Falcon's versatility is a paramount reason it has proven a success on the export market, having been selected to serve in the air forces of 25 nations. The F-16 is the largest Western fighter program with over 4,400 aircraft built since production was approved in 1976.

Lockheed T-33 Shooting Star

This was the first plane a pilot flew before he/she was qualified to fly any other airplane. It was developed from the Lockheed P-80/F-80 by lengthening the fuselage and adding a second seat, instrumentation and flight controls. The two-place T-33 proved to be a suitable advanced trainer, and it has been used for such tasks as drone director and target towing. Some T-33s retained 2 machine guns for gunnery training. In some countries, the T-33 was even used as a combat aircraft.

McDonnell Douglas F/A-18 Hornet

This all-weather carrier-capable multirole fighter jet was designed to attack both ground and aerial targets. Built in the 1970s for service with the United States Navy and Marine Corps, the Hornet is also used by the air forces of several other nations. It has been the aerial demonstration aircraft for the U.S. Navy's Blue Angels since 1986. Its primary missions are fighter escort, fleet air defense, suppression of enemy air defenses (SEAD), interdiction, close air support and reconnaissance.

McDonnell Douglas F-4 Phantom II

The F-4 Phantom II is a two-seat, twin-engined, all-weather, long-range supersonic interceptor fighter bomber originally developed for the U.S. Navy by McDonnell Aircraft. Proving highly adaptable, it became a major part of the air wings of the U.S. Navy, U.S. Marine Corps and U.S. Air Force. It was used extensively by all of these services during the Vietnam War, serving as the principal air superiority fighter, as well as being important in the ground-attack and reconnaissance roles.

-North American AT-6/SNJ Texan

More than 100,000 allied aviators graduated into the big time during World War II in this 600-horsepower advanced trainer for fighter pilots. They learned to pay attention or they got in trouble quick.

North American B-25 Mitchell

Famed as the first American aircraft to carry the battle to the Japanese home islands in the Doolittle raid in 1942, the B-25 became the USAAF's workhorse medium bomber in the North African Theatre. This particular aircraft was used in the Mel Gibson film *Forever Young*.

North American P-51 Mustang

German Reichsmarshall Hermann Goering knew the war was lost when he saw the first P-51s over Berlin in 1944. Faster, more maneuverable, rugged and heavily armed than Axis fighters of the period, the P-51 Mustang turned the tide in the strategic bombing campaign that brought Germany to its knees.

Piper Cub J-3C Grasshopper

The Cub served as an observation aircraft for spotting enemy troops, artillery and target identification for low level bombing. It was ideally suited as an air taxi for transporting ground officers and was also fitted with stretcher stations, enabling them to evacuate wounded from areas that were inaccessible by any other means. A large number of these beautiful little aircraft are still flying – a real tribute to this small machine.

Republic P-47 Thunderbolt

With its huge R-2800 engine and its eight .50 machine guns, the "Jug" could stare down any Messerschmitt or FW 190 intent on a B-17 or B-24 in the skies over western Germany in early 1944. It also became a ground attack terror during the Normandy campaign.

Ryan PT-22 Recruit

The PT-22 was built in San Diego by the same company that designed and built the famous Spirit of St. Louis for Charles Lindbergh. It was derived from the Ryan STA, one of the sleekest and classiest aircraft of its day. Ryan Field at Hemet was one of the primary flight schools using the PT-22.

Supermarine Spitfire Mk.XIV

This later version of the plane that sent Hitler packing after the Battle of Britain could go head-to-head with the German Focke-Wulf 190 and Messerschmitt Bf-109 when no other allied fighter could. This example was used in the film *Iron Eagle III*.

Vought/Goodyear FG-ID Corsair

The Corsair was a World War II Pacific Theater land and carrier-based fighter bomber that was also used during the Korean and Indo-China Wars. This particular aircraft was used in the television series *Baa Baa Black Sheep*, starring Robert Conrad as Marine ace "Pappy" Boyington.