

# THE ELDRED WORLD WAR II MUSEUM



## RESOURCE GUIDE

### For Educators

The Eldred WWII Museum

201 Main Street

Eldred, PA 16731

(814) 225-2220



This plaque is located outside the Eldred World War II Museum. There will come a time when the veterans of this war are no longer among us. Yet we still owe them a great deal of gratitude and respect for many of the freedoms we all too often take for granted today. It was they who halted the advance of tyranny during the Second World War, one of the most horrific conflicts in history. We owe it to the men and women of the Greatest Generation to preserve the memory of their sacrifices. This resource guide is provided as a tool for the educator towards that end.

We as a nation must never forget.



This resource guide is designed to be a useful tool for educators in school districts wishing to bring students to the museum on field trips. It contains two broad sections: The European Front and the Pacific Front. Each section contains historical detail with both math/science and literary content. In addition, this guide outlines activities students could do to enhance their visit. Answers are given on pages 22 - 23. Below is a list of standards addressed by this guide in conjunction with museum exhibits. These standards are indexed by number, and these numbers are referenced in the appropriate areas of the guide.

### STANDARDS

- CC.8.6.6-8.B:** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
- CC.8.5.6-8.D:** Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
- CC.8.6.6-8.F:** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
- CC.8.5.6-8.G:** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- 3.2.C.A3:** Describe the three normal states of matter in terms of energy, particle motion, and phase transitions. identify the three main types of radioactive decay and compare their properties. Describe the process of radioactive decay by using nuclear equations and explain the concept of half-life for an isotope.
- 3.2.8.B6: PATTERNS** - Explain how physics principles underlie everyday phenomena and important technologies.
- 1.1.6.D:** Demonstrate comprehension/understanding before reading, during reading, and after reading on grade level texts through strategies such as summarizing, note taking, extending ideas from the text, comparing and contrasting texts, determining fact from opinion, and supporting assertions and text with evidence from text.
- 2.1.7.C:** Use ratio and proportion to model relationships between quantities.
- 2.7.8.E:** Find the experimental or theoretical probability of the outcomes of a simple or compound event.
- R8.A.2.4.1:** Identify and/or explain stated or implied main ideas and relevant supporting details from text.
- 1.4.8.A:** Write poems, short stories, and plays.
- 1.4.8.B:** Write multi-paragraph informational pieces (e.g. letters, descriptions, reports, instructions, essays, articles, interviews).
- 1.5.8.A:** Write with a clear focus, identifying topic, task, and audience and establishing a single point of view.
- 1.2.6.D:** Draw inferences and conclusions based on a variety of information sources, citing texts to support generalizations.

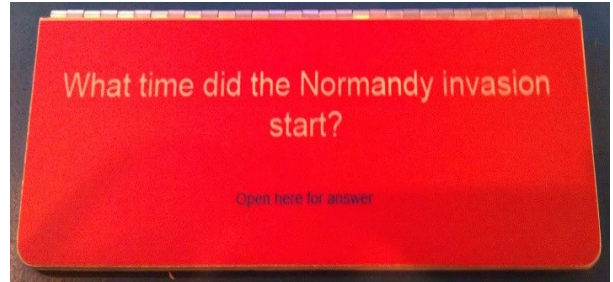
# RECONNAISSANCE MISSION

At first glance [looking at the map], you may be overwhelmed at the number of exhibits and the amount of information presented in the museum. A scavenger hunt will make this task a little less daunting.

The first activity is designed to help your students learn while exploring the museum.

In the first room, several of the exhibits have question placards like the one shown on the right. Flipping the placard over reveals the answer to the question. At the end of the guide, you'll find a key with all of the answers. The second activity

allows your students to put themselves in the shoes of the average wartime American citizen. The end of the guide suggests in-class activities to enrich your visit!



## ACTIVITY I

What time did the Normandy Invasion start?

Which American unit made the greatest advances on D-Day?

What troops were the first to invade Fortress Europe by sea on D-Day?

Who made the recommendation to divide Germany into three parts after the war was over?

What was the most famous Japanese fighter of the war?

Who participated in the Casablanca Conference?

Who was the American commander at the battle for Monte Cassino?

What was the greatest US Naval loss at sea?

What was the largest aircraft carrier built during the war?

What four things did Eisenhower say won the war for the Allies?

Who developed the first jet fighter to see combat?

What bomber had the greatest range and payload of the war?

What Allied fighter turned the tide of the war in Europe?

See page 22 for answer key.

# ESPIONAGE

## ACTIVITY II

Rather than a traditional hunt, have your students take on one of the following roles. Encourage them to learn everything they can about their role, along with other roles. Below are some guided questions that may lead your students to think creatively, along with activities you can do in your classroom with the information they collect during their museum visit.

**Roles (Feel free to explore and develop options. This is a basic outline.)**

Mitchell Paige, an American soldier in the Pacific Front	An American female nurse on any Front	An American soldier on the European Front
A civilian during a Japanese/German occupation	An American civilian reading propaganda/relative of a soldier	A journalist or media broadcaster
A woman working in a man's job while he is in the war	A Japanese/German soldier	And many other creative options...

### Guided Questions

What are examples of your role and/or things that someone in your role did during WWII?

What are events that happened at the time/location of your role? How might these have impacted your role?

What types of people (soldiers/civilians, nationalities, etc.) would your role interact with on a daily basis? What kind of interactions might these be?

What are some items or possessions your role might have? Why might your role have/need these things?

See page 23 for activities.

The attached graphic organizers might be helpful for Activity II.

# THE EUROPEAN THEATER

## PRELUDE

**March 1936:** Adolf Hitler begins to remilitarize the Rhineland, which was forbidden under the Treaty of Versailles that ended World War I. No reaction is taken by Britain or France; only Joseph Stalin pushes for sanctions.

**September 30<sup>th</sup> 1938:** Neville Chamberlain agrees to give the Sudetenland to Germany.

Winston Churchill is one of many to attack the *appeasement* process.

**March 1939:** Germany occupies Czechoslovakia.

**September 1<sup>st</sup> 1939:** Germany invades Poland

**September 3<sup>rd</sup> 1939:** Britain and France declare war on Germany. The appeasement strategy of Britain and France ends in a complete failure of diplomacy. Once Hitler realizes that the limitations are not being enforced, he decides to test the "new" limits. This ends with the invasion of Poland, starting World War II in Europe.

**Reflection:** (Standard CC.8.6.6-8.B)

Why was the appeasement of Germany critical to Hitler succeeding in his goals?

**Keywords:** (Standard CC.8.5.6-8.D)

Appeasement

Rhineland

Sudetenland

Treaty of Versailles



# THE EUROPEAN THEATER

## WAR IN EUROPE



This map shows the extent of German conquest in Europe. (Standard CC.8.5.6-8.G)

**April 9th, 1940:** German forces invade Denmark and Norway to counter the British blockade.

**May 10th 1940:** Hitler launches his Blitzkrieg - Fast, mechanized warfare, spearheaded by advancing Panzer units. The invasion of Western Europe is considered to be associated

with Blitzkrieg. Holland and Belgium both fall victim to this new tactic of "Lightning Warfare." (Neville Chamberlain resigned on May 13th.)

**June 11th 1940:** Italy joins the Axis powers.

**June 22nd 1940:** France falls to Germany and signs an armistice.

**June 10th - October 31st 1940:** **Battle of Britain** - This is the Luftwaffe's air campaign against Britain. The British defeat Herman Goering's air forces.

**June 22nd 1941:** Germany attacks the Soviet Union; the USSR joins the Allies.

**Summer and Autumn of 1941:** German troops push deep into the USSR; Soviet resistance forces the Germans to flee Leningrad and Moscow.

**December 6th 1941:** Soviet counteroffensive drives the Germans out of Moscow permanently.

**December 7th 1941:** Pearl Harbor - The United States enters the war against Japan. Germany and Italy declare war against United States; Britain declares war on Japan. This significantly widens global hostilities.

**May 1942:** The Allies commence massive air raids against Germany.

**Summer of 1942:** Axis aggression against the Soviets continued.

**November 1942:** Battle of Stalingrad - Turning point in the war; first Soviet victory.

**June 6th 1944:** D-Day - Allied attack on German forces in Normandy, led by American General Dwight D. Eisenhower. This attack is essential in establishing a beachhead and liberating France; Operation Overlord is a success.

# THE EUROPEAN THEATER

## WAR IN EUROPE (CONTINUED)



This map shows military movements leading to the defeat of Nazi Germany. (Standard CC.8.5.6-8.G)

**August 25th 1944:** The Allies liberate Paris from the Germans.

**September 11th 1944:** First US troops cross into Germany.  
Battle of the Bulge - The Germans unsuccessfully attempt to halt the Allies' advance in Western Europe.

**January 12th 1945:** The Soviets enter Germany.

**March 7th 1945/ April 16th 1945:** US and Soviet forces cross the Rhine River.

**May 7th 1945:** Germany unconditionally surrenders to the Allies.

**Reflection:** (Standard CC.8.6.6-8.B)

Which aspect of the European Front was the most critical for the success of the Allies? What could the Axis powers have done instead for a different outcome?

**Keywords** (Standard CC.8.5.6-8.D)

Armistice  
Battle of Stalingrad  
Blitzkrieg  
D-Day / Operation Overlord  
Luftwaffe  
Panzer

[be sure to include information on the Holocaust here: key dates]



# THE EUROPEAN THEATER

## SUPPLEMENTAL: THE NORDEN BOMBSIGHT



If you're afraid of heights, then this isn't the place for you. This picture is the view from the bombardier's compartment in a [B-17 Flying Fortress](#).

Airmen of the Eighth Air Force flew dangerous missions in these planes, facing German fighters and withering barrages of anti-aircraft artillery or "flak." The object in the window is the *Norden Bombsight*. This device allowed bomber crews to drop their bombs accurately. In fact, the Norden would automatically fly the airplane during the final moments of the bombing run!

### Interesting Math Connection...



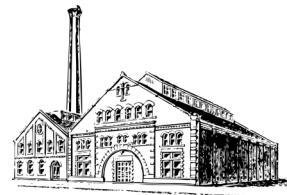
As a bomb is dropped from the plane it falls, but it also travels forward at the same velocity as the plane it was dropped from. Let's assume the effects of aerodynamic drag on the bomb are negligible as it falls.

A B-17 is flying at a groundspeed of 220 mph in the final moments of its bombing run. From a typical bombing altitude of 30,000 ft, a bomb takes about 45 seconds to fall to the ground.

This means the bombardier must release the bomb at a certain distance from the target. In this example, what is the horizontal distance from the target the bomb must be released in order to score a direct hit?

30,000 ft

Horizontal Distance



Answer: 2.75 miles. (Common Core Math Standard 2.1.7.C)

$$220 \frac{\text{miles}}{\text{hour}} \times 45 \text{ seconds} \times \frac{1 \text{ hour}}{3600 \text{ seconds}} = 2.75 \text{ miles}$$

The Norden Bombsight was capable of doing basic calculations like this, as well as more complicated ones!

### DID YOU KNOW??

The Norden Bombsight was considered so secret during WW2, that downed bomber crews were instructed specifically to destroy the device rather than allow it to fall into enemy hands!

# THE EUROPEAN THEATER

## SUPPLEMENTAL: WAR IN NORTH AFRICA AND ITALY

**August 1942:** General Harold Alexander receives instructions from Prime Minister Churchill to attack German and Italian armies in Egypt and Libya. General Bernard Montgomery leads the attack.

**October 23 1942:** Second Battle of El Alamein - Montgomery attacks the German-Italian armies and war rages across North Africa.

**November 1942:** British and American forces under Eisenhower land in Northwest Africa to begin Operation Torch, a campaign against the Germans.

**May 12th 1943:** The Axis forces surrender; British and American forces are victorious in North Africa.

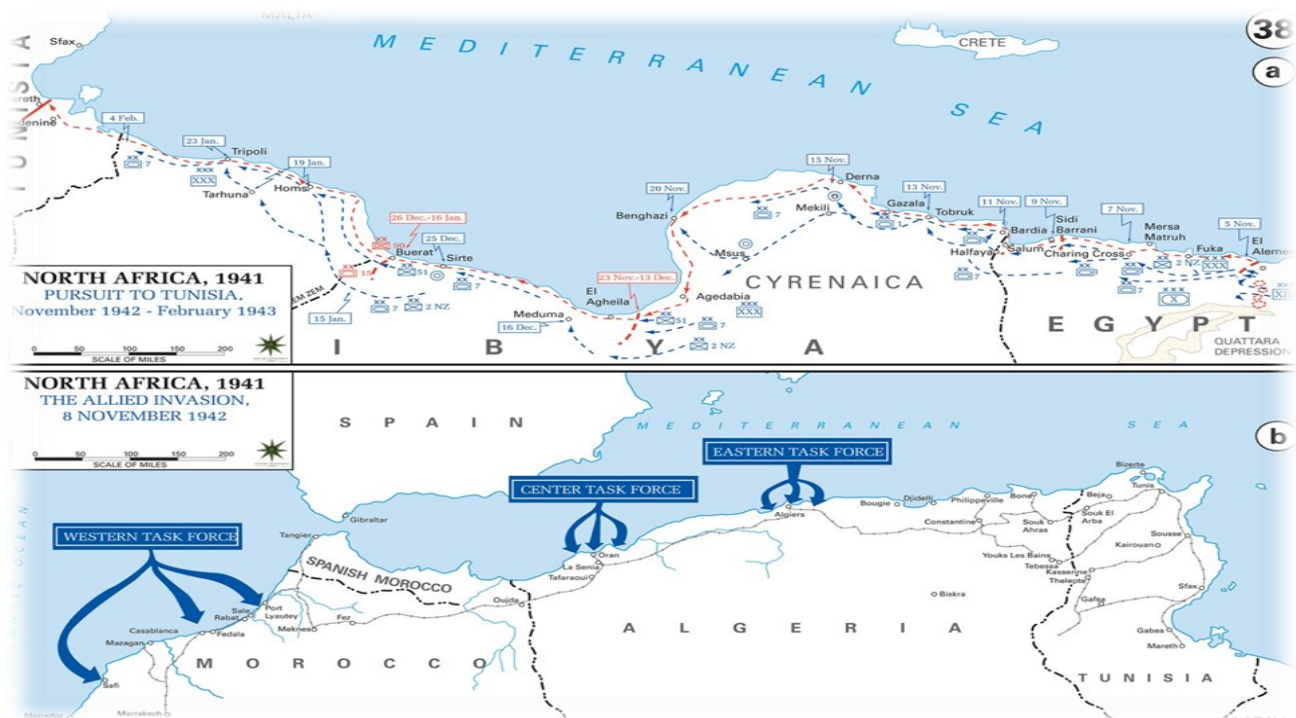
**July 1943:** Allied forces invade Sicily in Operation Husky.

**August 1943:** The Allies occupy Sicily.

**September 3rd 1943:** Italy surrenders and Benito Mussolini is thrown out of office. The new Italian government surrenders to Britain and the United States. Meanwhile, Germany establishes a puppet regime in northern Italy.

**June 1944:** Rome is finally liberated from the Germans.

The map below depicts Allied and Axis movements in North Africa. (Standard CC.8.5.6-8.G)



# THE EUROPEAN THEATER

## SUPPLEMENTAL: WAR IN NORTH AFRICA AND ITALY (CONTINUED)

**Keywords** (Standard CC.8.5.6-8.D)

Operation Husky

Operation Torch

### KEY LEADERS FROM THE WAR IN EUROPE

**Harold Alexander:** British General

**Neville Chamberlain:** Prime Minister of Britain

**Winston Churchill:** Prime Minister of Britain and successor to Chamberlain

**Dwight Eisenhower:** Allied General

**Hermann Goering:** Commander of German Air Forces

**Adolf Hitler:** Chancellor of Germany

**Benito Mussolini:** "Il Duce," the leader of the Fascist Party of Italy

**Bernard Montgomery:** British General

**George S. Patton:** American General

**Franklin Delano Roosevelt:** President of the United States

**Joseph Stalin:** Premier of the Soviet Union

**Harry Truman:** President of the United States and successor to Roosevelt

**Reflection:** (Standard CC.8.6.6-8.B)

With the information you're seeing in the museum, make two connections between the European Theater and the war in North Africa and Italy.

What effect did the opening of a second front have on the outcome of the war in Europe?

What was the importance of Operation Torch in terms of the success of the European Front?



# THE EUROPEAN THEATER

## THE HOLOCAUST

What we saw earlier was a timeline of only the military events of the Second World War. Before and during the war however, there was a truly horrific thing happening. [The Holocaust](#) is the name given to Nazi Germany's [Final Solution](#) - the systematic murder of six million human beings. The museum has some items related to The Holocaust that are not on display on the first floor, some of which may be beyond the maturity level of your students. It is up to the museum curators and you as an educator to decide how you wish to approach this topic. Below is a timeline listing some of the events of this dark time.

**March 1933:** [Dachau](#) opens. Reichsführer [Heinrich Himmler](#) describes Dachau as "the first concentration camp for political prisoners."

**July 1936:** [Sachsenhausen](#) opens in Oranienburg, north of Berlin.

**July 1937:** [Buchenwald](#), one of the largest [concentration camps](#), opens in Weimar.

**May 1938:** [Flossenbürg](#) opens with the intent of using forced labor to mine granite.

**August 1938:** 300 prisoners from Dachau are forced to build [Mauthausen](#).

**December 1938:** The [SS](#) opens [Neuengamme](#) as a subcamp of Sachsenhausen.

**May 1939:** [Ravensbrück](#) opens as a concentration camp for women. Many of the prisoners here are forced to undergo cruel medical experiments.

**1940:** [Gross-Rosen](#) is established as another subcamp of Sachsenhausen.

**May 1940:** [Auschwitz](#), the largest concentration camp opens. Of the estimated 1,300,000 people who were imprisoned here, 1,100,000 were killed by the Nazis.

**May 1941:** The Nazis establish the [Natzweiler-Struthof](#) concentration camp near the town of Natzweiler.

**January 1942:** The [Stutthof](#) Camp is established east of Danzig.

This timeline lists only a portion of the Nazi concentration camps. More camps were operating between 1933 and 1945. Below is a timeline from later in the war, including important liberation dates.

**January 1945:** Soviet forces liberate Auschwitz. In addition, the Soviets also liberate the [Majdanek](#), [Belzec](#), [Sobibor](#), and [Treblinka](#) extermination camps.

# THE EUROPEAN THEATER

## THE HOLOCAUST (CONTINUED)

**April 11, 1945:** US soldiers of the 6th Armored Division liberate Buchenwald. In anticipation of the Americans' arrival, many prisoners stormed the watchtowers and took control of the camp.

US forces also liberate [Dora-Mittelbau](#), Flossenbürg, Dachau, and Mauthausen.

**April 15, 1945:** British forces liberate the [Bergen-Belsen](#) concentration camp. [Anne Frank](#) was a teenager when she died here in March of 1945. Of her family, only her father Otto survived the Holocaust.

The preceding timeline is but a brief overview of the Holocaust. All told, approximately six million Jewish men, women, and children were murdered during the Holocaust, along with many others. Again, it is up to you as the educator how you want your students to approach this topic. The following reflection question might give you an idea of where to start.

**Reflection:** (Standard CC.8.6.6-8.B)

How were the Nazis able to convince so many people to commit the atrocities of the Holocaust? What can we learn from the Holocaust to prevent such a thing from ever happening again?

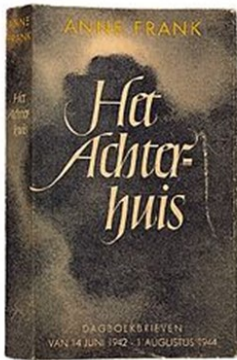
The map below depicts the liberation of major Nazi concentration camps. (Standard CC.8.5.6-8.G)



# THE EUROPEAN THEATER

## PAIRED READING: THE HOLOCAUST

Consider at the museum the many artifacts from the European front. How many items can your students find from the Holocaust? The artifacts can later support and reinforce what they will find in these books.



**Lexile: 1080.** *The Diary of Anne Frank* by Anne Frank  
The Diary of Anne Frank is a book of the writings from the Dutch language diary kept by Anne Frank while she was in hiding for two years with her family during the Nazi occupation of the Netherlands. The family was apprehended in 1944 by the Nazis. Anne Frank ultimately died of typhus in the Bergen-Belsen concentration camp.



**Lexile: Approximately 700-800.** *The Promise* by Eva Schloss  
Told simply and clearly for younger readers, *The Promise* is an unforgettable story written by Eva Schloss, the stepdaughter of Otto Frank and close friend of Anne Frank. This is the remarkable true story of a young Jewish girl and her brother growing up during the Second World War, caught in a world turned upside down by the Nazis.

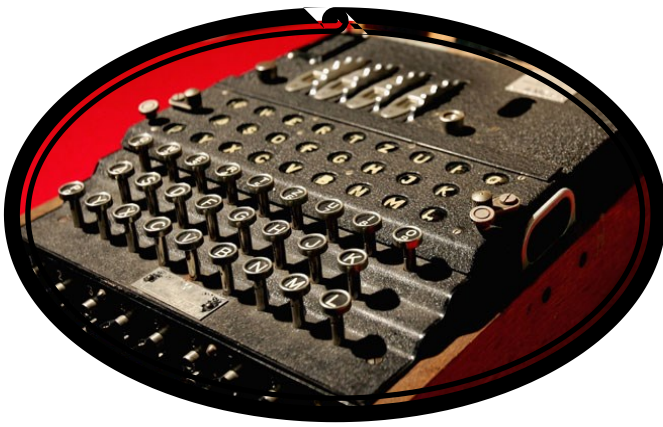
## PAIRED READING HOLOCAUST TEXT CONNECTION

In Young Adult Literature, there are three types of connections: *Text to Self*, *Text to World*, and *Text to Text*. With this paired reading, while there are obvious implications of *Text to World*, there will be also implications for *Text to Self*. Rather than separating the class between higher and lower level readers and assigning one book, have them read *The Promise* as a gateway to move them into the higher level *The Diary of Anne Frank*, which will not only create engagement while challenging students' reading skills, but will also create connections between both texts, *Text to Text*.



# THE EUROPEAN THEATER

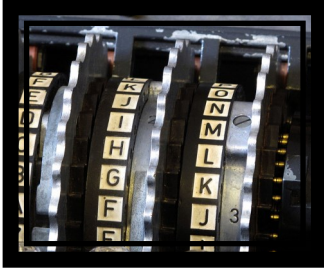
## SUPPLEMENTAL: THE ENIGMA CIPHER



You're looking at a picture of the German Enigma Machine. This was a sophisticated device used to transmit and receive encoded messages. Nazi scientists were so confident in their creation, they considered the code to be unbreakable. Configured properly, the device could scramble secret military messages over  $1.5 \times 10^{20}$  ways. *Ultra* was the codename given to British efforts to

break enemy codes. British computer scientist [Alan Turing](#) was instrumental in breaking the Enigma cipher. Allied commanders, now able to decipher the "unbreakable" code, were able to use this information to sink nearly half of the ships supplying the Wehrmacht in North Africa!

### Interesting Math Connection...



The Enigma machine relied on sets of wheels that could be positioned independently in many different combinations. If that wasn't complicated enough, other components of the machine further added to the strength of the encryption!

Each Enigma wheel had 26 possible settings (A through Z). Imagine you're trying to break the code, and you must guess the exact setting of all four wheels. What is the probability that your random four-letter guess will be correct?

Answer: 1 in 456,976. (PA Math Standard 2.7.8.E)

Remember, the wheel settings are independent of one another. The probability of guessing one wheel setting correctly is 1 in 26. But you must guess all four correctly. The following expression shows how we go about calculating this...

$$\frac{1}{26} \times \frac{1}{26} \times \frac{1}{26} \times \frac{1}{26} = \frac{1}{456976}$$

This might be good enough for our activity, but it wasn't good enough for the British code breakers. Remember, the machine had additional circuitry that would add significantly to the encryption strength. The 1 in  $1.5 \times 10^{20}$  probability of guessing the actual Enigma cipher makes our answer of 1 in 456,976 look very easy!

### DID YOU KNOW??

Alan Turing committed suicide after the war by eating an apple laced with cyanide. The Apple® Computer logo pays tribute to the late British computer scientist.

# THE PACIFIC THEATER

**December 7, 1941:** The Japanese attack [Pearl Harbor](#). The United States enters the war against Japan and Germany.

**December 22, 1941:** Japanese troops invade the [Philippines](#).

**February 1942:** Japan takes [Singapore](#) - Japan is able to take Singapore from the British, capturing some 60,000 British prisoners in the process.

**May 7-8, 1942:** [Battle of the Coral Sea](#) - This is the first battle in history where all of the fighting is done by carrier-based aircraft.

**June 1942:** [Battle of Midway](#) - Critical battle where the United States defeats the Japanese Navy. Following this point, the United States is able to turn the tide of the war in the Pacific.

**February 1943:** American forces defeat the Japanese on the island of [Guadalcanal](#). Allied forces are gaining supremacy in the Pacific front.

**October 1944:** [Battle of Leyte Gulf](#) - Japanese aircraft sink the [USS Princeton](#), an *Independence*-class light aircraft carrier. This is the last US ship sunk by the Japanese during the war.

**Late 1944:** American forces led by [General Douglas MacArthur](#) liberate the [Philippines](#). This gives US Army Air Forces a base for subsequent air attacks against the Japanese mainland. This is significant in the eventual use of the atomic bombs.

**June 1945:** [Okinawa](#) is captured by American forces after heavy casualties.

**August 6<sup>th</sup> 1945:** An American [B-29 Superfortress](#) bomber drops an [atomic bomb](#) on the Japanese city of Hiroshima. Three days later, a second bomb is dropped on Nagasaki.

**August 8<sup>th</sup> 1945:** The Soviet Union declares war on Japan.

**August 14<sup>th</sup> 1945:** Japan surrenders. The official ceremony takes place on the decks of the [USS Missouri](#), an *Iowa*-class battleship.

**Reflection:** (Standard CC.8.6.6-8.B)

How was the Pacific Theater similar to, yet different from the European Theater? As your tour progresses, encourage your students to find as many exhibits in the museum that relate to the content of this resource guide as they can. There are a lot of them!

The following page contains a map showing all key military movements in the Pacific Theater. (Standard CC.8.5.6-8.G)

# THE SECOND WORLD WAR

## THE PACIFIC THEATER, 1941 - 1945



### FIRST PHASE

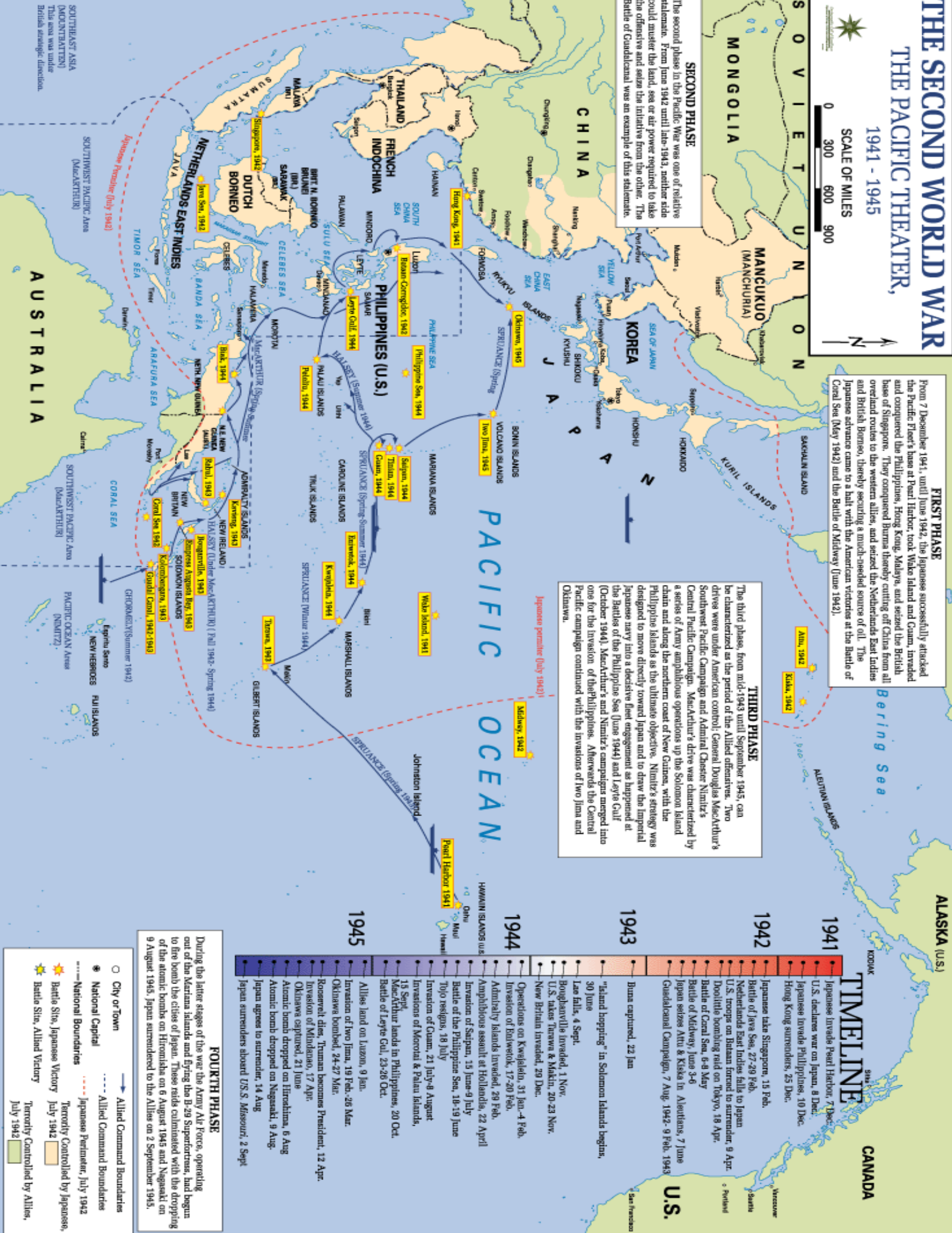
From 7 December 1941, until June 1942, the Japanese successfully attacked the Pacific Fleet's base at Pearl Harbor, took Wake Island and Guam, invaded and conquered the Philippines, Hong Kong, Malaya, and seized the British base of Singapore. They conquered Burma thereby cutting off China from all overland routes to the western allies, and seized the Netherlands East Indies and British Borneo, thereby securing a much-needed source of oil. The Japanese advance came to a halt with the American victories at the Battle of Coral Sea (May 1942) and the Battle of Midway (June 1942).

### THIRD PHASE

The third phase, from mid-1943 until September 1945, can be characterized as the period of the Allied offensives. Two drives were under American control: General Douglas MacArthur's Southwest Pacific Campaign and Admiral Chester Nimitz's Central Pacific Campaign. MacArthur's drive was characterized by a series of Army amphibious operations up the Solomon Island chain and along the northern coast of New Guinea, with the Philippine Islands as the ultimate objective. Nimitz's strategy was designed to move directly toward Japan and to draw the Imperial Japanese navy into a decisive fleet engagement as happened at the Battles of the Philippine Sea (June 1944) and Leyte Gulf (October 1944). MacArthur's and Nimitz's campaigns merged into one for the invasion of the Philippines. Afterwards the Central Pacific campaign continued with the invasions of Iwo Jima and Okinawa.

### SECOND PHASE

The second phase in the Pacific War was one of relative stalemate. From June 1942 until late-1943, neither side could answer the land, sea or air power required to take the offensive and seize the initiative from the other. The Battle of Guadalcanal was an example of this stalemate.



**FOURTH PHASE**

During the latter stages of the war the Army Air Force, operating out of the Marianas Islands and flying the B-29 Superfortresses, had begun to bomb the cities of Japan. These raids culminated with the dropping of the atomic bombs on Hiroshima on 6 August 1945 and Nagasaki on 9 August 1945. Japan surrendered to the Allies on 2 September 1945.

- City or Town
- ★ National Capital
- National Boundaries
- Allied Command Boundaries
- Japanese Perimeter, July 1942
- ★ Battle Site, Japanese Victory
- ★ Battle Site, Allied Victory
- Territory Controlled by Japanese, July 1942
- Territory Controlled by Allies, July 1942



# THE PACIFIC THEATER

## MITCHELL PAIGE: A PENNSYLVANIA HERO

Mitchell Paige is an American war hero from Pennsylvania. His efforts in the war resulted in his receiving the Congressional Medal of Honor. Paige joined the Marines in 1936 and retired from a successful career in 1964. During the war, Paige was a platoon sergeant in the Marine Corps. His rise to fame occurred during the first American ground assault in the Pacific front. The Battle of Guadalcanal found Mitchell Paige defending the line with his 33 men against an onslaught of approximately 3,000 Japanese soldiers. Paige will be forever remembered for his bravery. Touring the museum, your students will be sure to find plenty of information about Mitchell Paige!

For more information, visit:

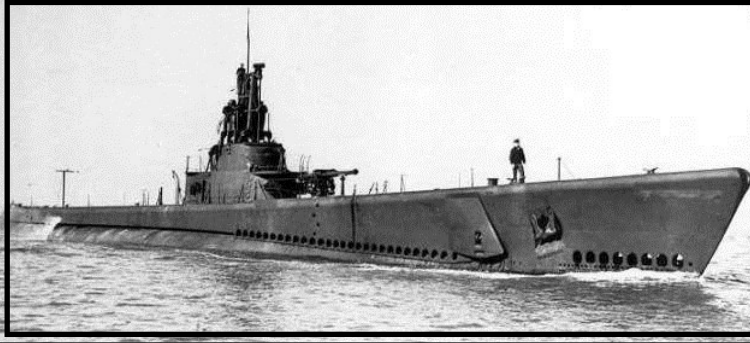
[http://www.eldredwiimuseum.org/mitchell\\_paige.html](http://www.eldredwiimuseum.org/mitchell_paige.html)



Department of Defense Photo (USMC) 56749

*2dLt Mitchell Paige, third from left, and PltSgt John Basilone, extreme right, received the Medal of Honor at a parade at Camp Balcombe, Australia, on 21 May 1943. MajGen Vandegrift, left, received his medal in a White House ceremony the previous 5 February, while Col Merritt A. Edson was decorated 31 December 1943. Note the 1st Marine Division patches on the right shoulders of each participant.*

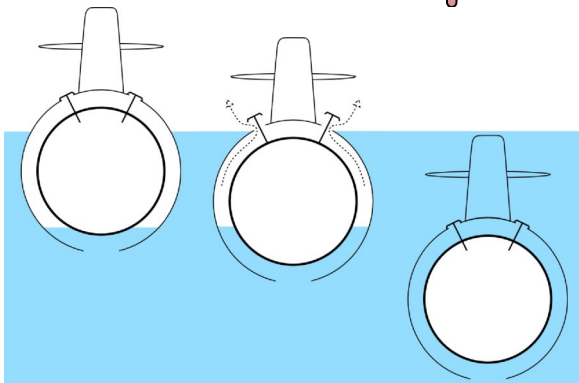
## SUPPLEMENTAL: GATO-CLASS SUBMARINES



Walking through the museum, you might notice the submarine exhibit. This exhibit is very much like the control room of an American *Gato*-class submarine. The US Navy used subs like the one in this picture extensively against the

formidable Imperial Japanese Navy. This was before the days of nuclear propulsion, so these subs ran on two types of power - diesel and electric. Large diesel engines would propel the sub and recharge its batteries while it was on the surface, and quiet electric motors would propel the sub underwater. These electric motors used the power stored in the sub's batteries. Why do you think the diesel engines couldn't be used while the sub was deep underwater?

### Interesting Physics Connection...



Here, we see an animation of a submarine diving beneath the surface. It's really a simple concept - the submarine has inside what are called "ballast tanks." While the sub is on the surface, these tanks are filled with air. This makes the sub lighter than the amount of water it displaces, therefore it floats. When the sub dives, these ballast tanks fill with water. The total weight of the sub becomes greater than the weight of the water it displaces, and it sinks. When the sub needs to resurface, compressed air forces the extra water out of the ballast tanks.

Everybody knows that a coin tossed into a sink full of water will not float. Metal is denser than water, and subs are made out of metal. Unlike subs however, coins do not have ballast tanks or empty space inside for the crew.

Something to consider: An empty glass placed in a sink full of water will float. How much water do you need to put in the glass before it sinks to the bottom?

If you don't need to fill the glass the entire way to get it to sink, what does that tell you about the density of glass? Is it more or less dense than water? (PA Standard 3.2.8.B6)

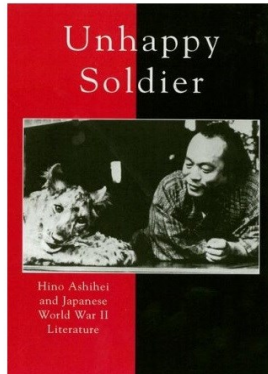
### DID YOU KNOW??

Diesel-electric subs like the *Gato*-class were fitted with snorkels. The diesel engines drew air from one tube in the snorkel and vented exhaust from another. That way, the subs could run stealthily on diesel power just below the surface.

# THE PACIFIC THEATER

## PAIRED READING: THE PACIFIC FRONT

For this paired reading, ask your students to collect as much information as they can on their graphic organizers on Japan and the Philippines, comparing and contrasting the events in both countries. This will help them understand the events in these books.



**Lexile: Approximately 1100.** *Unhappy Soldier: Hino Ashihei and Japanese World War II* by David M. Rosenfeld  
*Unhappy Soldier* chronicles the writings of Hino Ashihei, Japan's most popular World War II writer. Ashihei rose to national celebrity status during the Pacific War for his accounts of campaigns in China and Southeast Asia, works that identified and sympathized with the common soldier.



**Lexile: Approximately 900.** *Beyond Paradise* by Jane Hertenstein

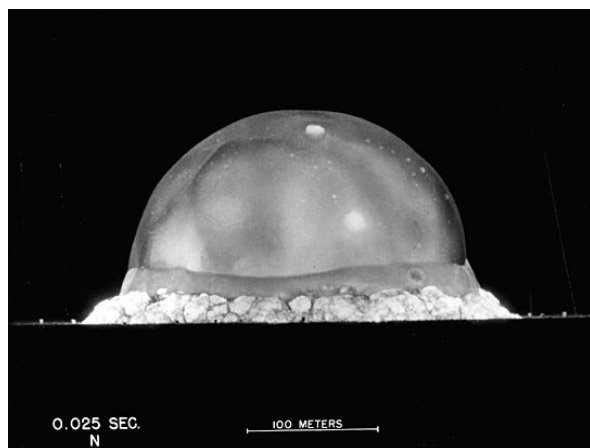
This unusual novel is based on true accounts of the imprisonment of American citizens in Japanese detention camps in the Philippines during World War II. At first the country seems like paradise, but soon Louise and her family are captured by the Japanese and forced to live in internment camps.

## PAIRED READING PACIFIC FRONT - TWO SIDES TO EVERY STORY

Each story in history has two sides: the victors and the defeated. For this paired reading, we get two perspectives on the Pacific Front. We hear from a noncombatant civilian and a common soldier. In these readings, neither of the readings politically attack the other, which allows students to gather information and form their own opinions on this very political event.



## SUPPLEMENTAL: THE ATOMIC BOMB

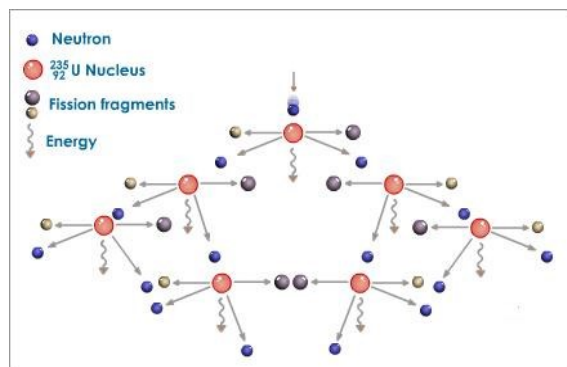


This is a high speed camera image of the world's first nuclear blast, taken a fraction of a second after detonation. Observe the scale to get an idea of how powerful a nuclear weapon actually is.

The United States was the first nation to create an atomic bomb. [The Manhattan Project](#) was our top secret race against our enemies to produce such a weapon. Had

Germany or Japan succeeded in developing a bomb of their own, the Second World War might have ended very differently.

### Interesting Physics Connection...



An atomic bomb gets its energy by a process completely different from a conventional bomb. Reactants in a conventional bomb release energy in a *chemical reaction*, while the atomic bomb gets its power from a *nuclear reaction*. *Albert Einstein* first proposed the theory that matter and energy are interchangeable. Tiny amounts of matter can be converted directly to massive amounts of energy according to Einstein's famous equation,  $E = mc^2$ . The image on the left shows a nuclear chain reaction involving Uranium 235.

In a nuclear chain reaction, a neutron splits the nucleus of an atom. As the nucleus splits, a portion of its mass is converted to energy. Along with this energy, the nucleus releases neutrons. These additional neutrons then split other nuclei, and the process repeats itself. This happens *extremely* fast, and a nuclear explosion can result.

If your students are particularly ambitious, they might like the following activity. Otherwise, the discussion above satisfies PA Standard 3.2.C.A3.

The atomic bomb dropped on Hiroshima was nicknamed "Little Boy." It exploded with a force of approximately 16 kilotons of TNT - that's  $6.7 \times 10^{13}$  Joules. In the equation  $E = mc^2$ ,  $E$  represents energy,  $m$  represents mass, and  $c$  represents the speed of light. That's  $3 \times 10^8$  meters per second. How many grams of mass were converted to energy?

Answer: 0.74 grams - a very small amount. (PA Standard 3.2.C.A3, Common Core Math Standard 2.1.7.C)

$$1\text{J} = 1\text{kg} \frac{\text{m}^2}{\text{s}^2}$$
$$E = mc^2 \text{ or } m = \frac{E}{c^2}$$
$$m = \frac{6.7 \times 10^{13}\text{J}}{(3 \times 10^8 \frac{\text{m}}{\text{s}})^2}$$
$$m = 7.4 \times 10^{-4}\text{kg} = 0.74\text{g}$$

### DID YOU KNOW??

The bomb dropped on Nagasaki, nicknamed "Fat Man," used Plutonium-239 as its fuel source. "Fat Man" was identical to the bomb detonated in the *Trinity* test. "Little Boy" used Uranium-235, but its design was simpler than that of "Fat Man." It was therefore untested before it was used on Hiroshima.

# SCAVENGER HUNT KEY

## ACTIVITY I

What time did the Normandy Invasion start?

2015 (8:15pm) When Allied pathfinders illuminated the way for the airborne divisions.

Which American unit made the greatest advances on D-Day?

The 4th Division moved inland far ahead of schedule.

What troops were the first to invade Fortress Europe by sea on D-Day?

The 4th and 24th US Cavalry landed on two islands that were three miles out from Normandy.

Who made the recommendation to divide Germany into three parts after the war was over?

British Foreign Minister and later Prime Minister, Anthony Eden in 1943.

What was the most famous Japanese fighter of the war?

The Zero Fighter, also known as the Zero, or the Zero Sen.

Who participated in the Casablanca Conference?

President Roosevelt, Prime Minister Churchill, and General de Gaulle

Who was the American commander at the battle for Monte Cassino?

General Mark Clark, who was criticized for bombing the monastery.

What was the greatest US Naval loss at sea?

The sinking of the Cruiser Indianapolis with the loss of nearly 900 men.

What was the largest aircraft carrier built during the war?

The Japanese Carrier *Shinano*, at almost 900 feet long, was the largest carrier built during the war.

What four things did Eisenhower say won the war for the Allies?

The Jeep, the bazooka, the DC-3, and the Atomic Bomb.

Who developed the first jet fighter to see combat?

Messerschmitt.

What bomber had the greatest range and payload of the war?

The Boeing B-29.

What Allied fighter turned the tide of the war in Europe?

The North American P-51 Mustang.

# SCAVENGER HUNT KEY

## ACTIVITY II

Here are a few activities that you can do in your classroom with the information gathered through questions such as the guided questions:

Have your students complete a RAFT (Role-Audience-Format-Topic) creative writing assignment using their role and information from their museum visit. (Standards 1.4.8.A, 1.4.8.B, 1.5.8.A)

Have the students dress up for a day and act out their roles as if they were all to sit together after the war. Group students according to what home country/nationality they are in or where they were during the war. (Standard 1.2.6.D)

## THINGS TO DO ON THE BUS HOME

Have the students react to each of these questions with time to reflect on each one. You may have to ask the students in the front half of the bus and move to the back in order to get organized student responses.

What did you see that surprised you?

What did you hear?

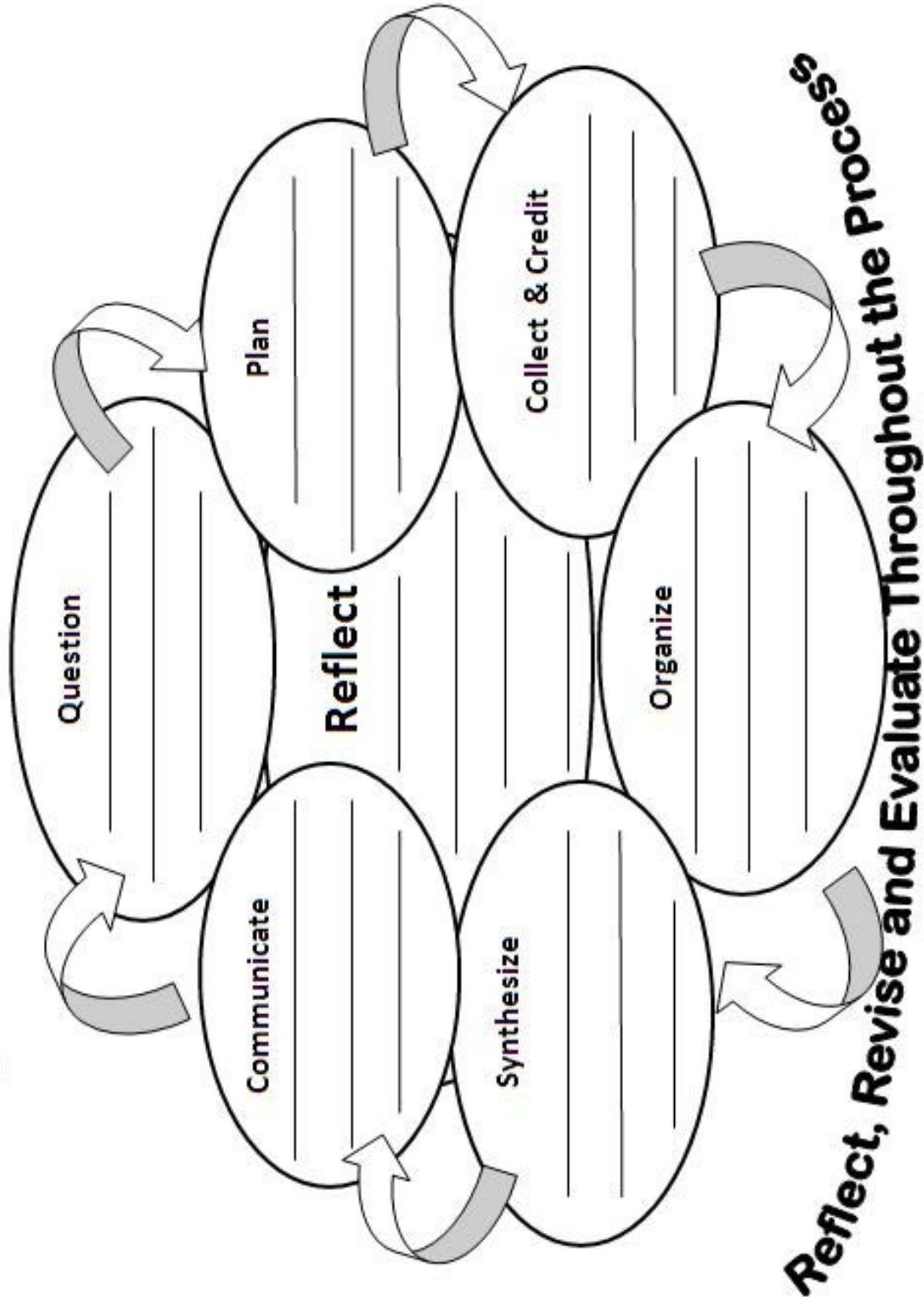
What did you smell?

What did you touch?

What sticks out the most to you right now? Why do you think that had such an impact on your mind? If you could take one thing from the museum back home to our classroom, what would it be? Why?



**Start with what you know**



Key Topic

is about...

Main idea

Main idea

Main idea

Main idea

Four vertical lines, each starting with a small circle at the top.

Four vertical lines, each starting with a small circle at the top.

Four vertical lines, each starting with a small circle at the top.

Four vertical lines, each starting with a small circle at the top.

Main idea

Main idea

Main idea

Main idea

Four vertical lines, each starting with a small circle at the top.

Four vertical lines, each starting with a small circle at the top.

Four vertical lines, each starting with a small circle at the top.

Four vertical lines, each starting with a small circle at the top.

So What? (What's important to understand about this?)

A large, empty rounded rectangular box for writing.

# FEEDBACK FORM

Your opinion as an educator matters to us. We'd really appreciate your constructive feedback about what you found particularly useful in this resource guide, as well as areas in which you think we can make improvements. Below are a couple of questions. Again, we appreciate your time and are grateful that you chose to bring your students to the Eldred World War II Museum!

## RESOURCE GUIDE SPECIFIC QUESTIONS

Is there any information not in this guide that you would like to see added in the future?

Is there any information in here that you thought was extraneous?

Did you find the format of this guide to be useful? If not, how can we improve it?

Is there any feedback you have that's not covered by these questions?

## GENERAL FEEDBACK

Do you or your students have any additional feedback they'd like to give to the museum?

Feel free to answer as many of these questions as you'd like. Please send your feedback to the museum director, Steve Appleby at [steve@eldredwwiimuseum.org](mailto:steve@eldredwwiimuseum.org). Your help is appreciated!

This guide was written by Ms. Penny Amacher, Mr. Vincent Berrettini, and Mr. David Taylor. Special recognition goes to Dr. Wayne Brinda of the University of Pittsburgh at Bradford, without whose help, this guide would not have been possible.