

# The Arsenal of Democracy: The United States in World War II

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## Lesson Authors

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## Standards and Benchmarks (see page 20)

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## Lesson Description

In this lesson, students look at the social history and data related to scarcity in the United States during World War II. An analysis of wartime propaganda leads to a discussion about resource use on the home front. Students use a production possibilities frontier (PPF) to examine how resources were allocated between “guns” and “butter,” and how increased productivity and labor force participation by women and African Americans increased total production levels.

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## Grade level

7-12

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## Concepts

Capital resources	Production possibilities frontier (PPF)
Index	Productivity
Labor	Propaganda
Land	Scarcity
Opportunity cost	Trade-off

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## Objectives

Students will be able to

- identify economic resources;
  - describe how gains in productivity lead to increases in total production;
  - analyze visual propaganda to identify economic messages from the government;
  - analyze the “guns or butter” trade-off of war using the PPF;
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- describe how propaganda efforts were used in an effort to shift the PPF outward; and
  - describe the change in the guns or butter trade-off from the end of the Great Depression to World War II and from the end of World War II back to peace time.
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## Compelling Question

How did the United States increase production of war goods during World War II?

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## Time Required

60 minutes

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## Materials

- Handout 1, nine copies (printed on both sides)
  - Handouts 2 and 3, one copy of each for each student
  - PowerPoint slides
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## Procedure

1. Introduce the lesson by asking the following:
    - What things come to mind when you think of WWII? (*Students will likely mention cannons, guns, soldiers, war planes, Nazis, Adolf Hitler, Joseph Stalin, and Winston Churchill.*)
    - Were there any major battles on American soil? (*Aside from Pearl Harbor, no; the major fronts were in Europe and Asia.*)
    - What was happening in the United States during that time? (*Answers will vary.*)
  2. Explain that while most of the attention during WWII was focused on the battlefield, there were a number of economic changes going on in the United States to support the war effort.
  3. Display slide 2. Ask students to look at the FRED® graph of the Industrial Production Index. Explain that these data provide a measure of the production of goods in factories. Discuss the following:
    - What is the period from 1929 to 1939 called? (*The Great Depression*)
    - Explain that the shaded areas indicate recessions—economic downturns. Within the period of the Great Depression (1929 to 1939) there were actually two severe recessions.
    - When, specifically, did these recessions within the Great Depression occur? (*From 1929 to 1933, and another from 1937 to 1938. Students might also notice the recession that occurred in 1945.*)
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- What does the graph show was happening to industrial production during the Great Depression? (*Industrial production declined steadily from the business cycle peak in mid-1929 to the end of the recession in 1933. Industrial production recovered somewhat, but then suffered a steep decline in the recession from 1937 to 1938.*)
  - What happened to the economy in general during the Great Depression? (*The economy suffered a severe contraction—that is, national income and output fell sharply, by about one-third.*)
  - What happened to industrial production between 1938 and 1945? (*It increased dramatically.*)
  - What was happening in the world during much of this time period? (*World War II*)
4. Tell students that this graph displays the data as an **index**, which is a way of showing a change in value of a magnitude (in this case, how much industrial production was occurring in the United States) between a base date and different date. An index usually has a value of 100 on the base date. Explain that the recession ended in June 1938 and the index is equal to 100 at that time. In 1944, the index was equal to 293.4; this means that industrial production was nearly three times higher in 1944 than in 1938. Discuss the following:
- How was the U.S. economy able to increase industrial production nearly three times above what it had been just six years earlier? (*Answers will vary.*)
5. Remind students that the United States had just weathered the Great Depression, which means many economic resources were not being used to their potential. But these resources were still available for use. For example, many people were unemployed, and many factories and warehouses sat empty and unused. Even so, this does not fully explain the dramatic increase in production.
6. Display slide 3 and ask students to examine the images. Explain that these images were common in the United States during WWII. Discuss the following:
- Who is the character depicted in Image 1? (*Uncle Sam*)
  - Who does Uncle Sam represent? (*The U.S. government*)
  - What is the intended message? (*Uncle Sam wants people to enlist in the U.S. Army.*)
  - How did the artist portray Uncle Sam? (*He is determined, bold, and wearing red, white, and blue—patriotic colors.*)
  - Ask students to describe what is happening in Image 2. (*Two men are featured; one is in battle and the other is producing something in a factory.*)
  - What is the intended message? (*There are two ways to fight in the war: going into battle and building goods for the war.*)
  - Tell students that Image 3 is a famous WWII poster. The woman in the poster is known as Rosie the Riveter.
  - What is the intended message? (*Women can work hard and contribute to the war effort.*)

- How did the artist portray Rosie the Riveter? (*Rosie is wearing red, white, and blue—patriotic colors. She is pictured as strong and dressed for manual labor, which was an unusual portrayal of women in the 1940s. Rosie appears determined and confident.*)
7. Explain that these posters were sponsored by various U.S. government agencies. Discuss the following:
- What similarities do you see in the posters? (*They encourage people to join the war effort and contribute where they can.*)
  - What differences do you see in the posters? (*The first encourages people to join the armed forces; the second encourages people to work in U.S. factories; the third shows a woman actively involved in the war effort.*)
  - Why do you think the U.S. government wanted people to do these things? (*Many people were needed to fight in the war directly; others were needed to produce the goods necessary to fight the war.*)
8. Display slide 4. Read the Roosevelt quote and discuss the following:
- Was the United States fighting in the battlefields when President Roosevelt made this speech? (*No, the speech was given in 1940; the United States had not yet entered the war.*)
  - What was President Roosevelt calling the American people to do? (*Answers will vary.*)
  - The “arsenal of democracy” slogan was popularized by President Roosevelt in a speech in which he called on the American people to contribute to the war effort by producing the war goods necessary to fight the advance of Nazi Germany.
  - President Roosevelt promised the United States would help the United Kingdom fight Nazi Germany by lending and leasing military supplies to that country.
  - President Roosevelt hoped the United States would be the arsenal of democracy because it would supply so many goods and weapons to its allies.
  - Once the United States entered the war on December 8, 1941 (the day after the bombing of Pearl Harbor), a large segment of the traditional American workforce (men) became actively involved in fighting the war by enlisting in the armed services (or later, being drafted). This left a much smaller number of men available to produce goods and services.
  - The needs of war were tremendous. Not only did the United States produce the goods it needed to fight the war, the country also continued to supply weapons and other goods to its allies, Great Britain and the Soviet Union.
9. Explain that goods and services are produced using economic resources; these economic resources are land, labor, and capital. Display slide 5 and define the economic resources as follows:
- **Land** (or natural) resources are things that occur naturally in and on the earth that are used to produce goods and services.

- **Labor** is the quantity and quality of human effort directed toward producing goods and services. Also known as human resources.
- **Capital resources** are goods that have been produced and are used to produce other goods and services. They are used over and over again in the production process. Also called capital goods and physical capital.

10. Explain that land, labor, and capital resources are scarce as follows:

- **Scarcity** is the condition that exists because there are not enough resources to produce everyone's wants. Because we don't have enough resources to produce everything we want, we must choose which goods and services to produce.
- Scarcity forces people to make trade-offs. A **trade-off** involves giving up some of one thing to gain some of something else. In other words, using a resource one way means that it cannot be used in another way.
- When individuals or nations make a choice regarding how they will use their resources, they incur an **opportunity cost**, which is the value of the next-best alternative when a decision is made; it's what is given up.
- For example, during World War II factories and workers used to produce tanks for the war effort could not be used to produce automobiles for consumers.
- In this case, the opportunity cost of using a factory and workers to produce tanks is the lost opportunity to use the same resources to produce automobiles.

11. Display slide 6. Explain that the posters viewed are labeled **propaganda**, which is communication meant to influence the attitude of people toward some cause or position. While propaganda can be used in a variety of ways, in this lesson we will focus on the ones the government primarily used during WWII:

- *Appealing to fear*—Building support by instilling anxieties and panic in the general population.
- *Flag waving (patriotism)*—Justifying an action on the grounds that doing so will make one more patriotic or in some way benefit a country, group, or idea the targeted audience supports.
- *Jumping on the bandwagon*—Promoting involvement based on the idea that "everyone else is doing it, and so should you."

12. Display slide 7 and ask students to analyze each poster to determine which propaganda strategies are evident.

- **Poster 1:** What propaganda technique is portrayed? (*Flag waving/patriotism: Using terms like "united" and displaying the American flag foster feelings of patriotism. It is important to note that during the 1940s, showing a desegregated workforce was a point of emphasis in increasing wartime production in many parts of the country.*)

- **Poster 2:** What propaganda technique is portrayed? (*Jumping on the bandwagon: The purpose of this poster is to encourage all Americans in the workforce to join a wartime industry.*)
  - **Poster 3:** What propaganda technique is portrayed? (*Appealing to fear: This campaign to encourage car-pooling creates anxiety that by driving alone a commuter is assisting the enemy.*)
13. Continue to display slide 7. Ask students to analyze each poster again. What type of economic resources are being referenced and what action should be taken? (NOTE: Refer back to slide 5 for a description of land, labor, and capital resources to refresh students' previous learning.)
- **Poster 1:** What economic resource is highlighted in this poster campaign? (*Labor: This poster appeals to workers' patriotic duty and encourages them to unite for the war effort by showing two men building a plane.*)
  - **Poster 2:** What economic resource is highlighted in this poster campaign? (*Capital Resources: By using a bandwagon strategy, this poster encourages Americans to produce arms and other weaponry that can be used repeatedly on the battlefield.*)
  - **Poster 3:** What economic resource is highlighted in this poster campaign? (*Land/natural resources: This poster encourages conservation of natural resources through car-pooling—gasoline (a natural resource) can be better used by the military.*)
14. Explain that during "normal" times it is the interaction of consumers and firms in the marketplace that determines what gets produced and how resources are used. However, during wartime, these decisions are sometimes made by the government. In fact, during a war these decisions are often discussed as "guns or butter" decisions. The word "guns" does not literally mean guns and the word "butter" does not literally mean butter.
15. Display slide 8. Ask students what they think the terms "guns" and "butter" represent in the quotes. (*Answers will vary.*)
- Goebbels: "We can do without butter, but, despite all our love of peace, not without arms. One cannot shoot with butter, but with guns." (*Goebbels wanted resources to be spent on arms—guns—rather than consumer goods—butter.*)
  - Goering: "Guns will make us powerful; butter will only make us fat." (*Goering wanted resources to be spent on guns to make Nazi Germany powerful.*)
16. Explain that the word "guns" is often used to represent the production of all military goods and services produced for national defense (e.g., weapons, tanks, and warplanes) or, in the context of WWII, any good allocated to the war effort. The word "butter" is often used to represent non-military goods and services produced for consumption by citizens (e.g., food, cars, education, and medical care).
17. Remind students that many resources needed to be reallocated during the war effort. Discuss the following:

- For land/natural resources
    - Much land that was used for production of food for domestic consumption was used for production of food that was sent overseas to soldiers and allies.
    - How did shipping food overseas to soldiers and allies affect the supply of food at home? *(There were shortages of basic commodities. People grew their own produce in victory gardens. Rationing was used to allocate some of these goods.)*
  - For labor
    - Many people who provided labor resources producing consumer goods and services before the war volunteered or were drafted into the military.
    - Who took the place of working men who were drafted into military service? *(Many men who would have previously been considered too young or too old to work joined the labor force. Many women also joined the labor force.)*
  - For capital resources
    - Many factories (capital) that once produced consumer goods (e.g., sewing machines) were retooled to produce military goods (e.g., gun parts).
    - How did retooling factories alter the availability of consumer goods at home? *(Many consumer goods were no longer available or shortages existed. People were encouraged to reuse old goods when they might have normally purchased new goods. Rationing was used to allocate goods that where shortages existed.)*
18. Display slide 9. Explain that in 1953 President Dwight Eisenhower used the guns or butter trade-off to describe the buildup of arms during the Cold War: “Every gun that is made, every warship launched, every rocket fired signifies, in the final sense, a theft from those who hunger and are not fed, those who are cold and are not clothed. This world in arms is not spending money alone. It is spending the sweat of its labors, the genius of its scientists, the hopes of its children.” Note that President Eisenhower was a former U.S. Army five-star general and the Supreme Commander of the Allied Forces in Europe during WW II. Discuss the following:
- According to President Eisenhower, what trade-off exists between guns and butter? *(Using resources to build weapons means giving up the opportunity to produce other goods and services.)*
  - According to President Eisenhower, why is this trade-off about resources rather than money? *(When it creates arms, society is giving up feeding the hungry, building other things, inventing new things, and creating a better society for children to grow up in.)*
19. Explain that the guns or butter trade-off can be discussed using the production cards. Hold up *Handout 1: Guns or Butter Production*. Show students that each production card has guns on one side and butter on the other. Explain that the card represents a nation’s ability to either produce 1 unit of guns (military goods) or 1 unit of butter (consumer goods)—but not both. Discuss the following:
- What likely happens to the production of butter during wartime? *(As more resources are used to produce guns, less butter will be produced.)*



20. Explain that this trade-off illustrates opportunity cost, which is the value of the next best alternative when a decision is made; it's what is given up. Discuss the following:
- (Display the guns side of the card and then flip to the butter side.) What is the opportunity cost of producing one unit of guns? (*The opportunity cost is 1 unit of butter.*)
  - (Display the butter side of the card and then flip to the guns side.) What is the opportunity cost of producing one unit of butter? (*The opportunity cost is 1 unit of guns.*)
21. Ask for six volunteers to stand at the front of the classroom. Give each student a production card (from Handout 1) with the butter side facing the rest of the class.
22. Distribute *Handout 2: Production Possibilities*. Have seated students complete Production Possibilities Table 1 using the information displayed by students in the front of the classroom. Standing students should start with all six showing the butter side of their card. Then slowly transition to the guns side by having one student at a time (from left to right) turn his or her card from butter to guns. When finished, the table should include the following information:

## Handout 2: Production Possibilities—Answer Key

**Production Possibilities Table 1**

Production	A	B	C	D	E	F	G
Butter	6	5	4	3	2	1	0
Guns	0	1	2	3	4	5	6

23. After students have produced their production possibilities grid, ask the following:
- If this nation was producing at point D, what would its production of “guns” and “butter” be? (*This nation would produce 3 units of butter and 3 units of guns.*)
  - Imagine this nation chose to use all of its resources to produce military goods—moving from point D to point G. If it did this, how many units of military goods (“guns”) could it produce? (*6 units of guns*)
  - How many units of guns would it gain by moving from point D to point G? (*It would increase by 3 units of guns.*)
  - How much “butter” would it have to give up achieving that level of “gun” production? (*It would give up 3 units of butter.*)
  - In what way does this illustrate a trade-off? (*The nation is giving up butter to gain guns.*)
  - In what way does this illustrate opportunity cost? (*The opportunity cost of increasing the production of guns is the lost production of butter.*)



24. Display slide 10. Explain that economists have developed a model to discuss the trade-off that nations face called the **production possibilities frontier (PPF)**, which is a graphic representation of output combinations that can be produced given an economy's available resources and technology. It is a useful tool for understanding economic choices made by societies. It is also a useful model for understanding economic growth.
25. Explain that a production possibilities table can be used to produce a PPF (also on Handout 2). Ask the students to plot the production points from Production Possibilities Table 1 and then connect the points to create a PPF. Display slide 11 and then discuss the following:
- The PPF is a graph that shows how a country might allocate scarce resources to produce goods and services.
  - The PPF can be used to discuss the guns or butter trade-off that nations face during war.
  - The line connecting points A-G is the PPF and represents the maximum quantity of guns and butter an economy can produce with its current available resources.
  - Remember that economic resources are land (natural resources), labor (workers, or human resources), and capital resources (goods used to produce other goods and services).
  - A society might produce a combination reflected by point F, which shows a large quantity of guns produced (5 units) and a much smaller quantity of butter produced (1 unit). This society would enjoy a greater sense of security but it would have fewer goods and services available for consumption.
  - Or, the society might produce the combination reflected by point B, which shows a larger quantity of butter produced (5 units) and a much smaller quantity of guns produced (1 unit). Now, the society has chosen to forgo some national security in exchange for a higher level of consumption.
  - In both cases, the society is producing on the frontier, which indicates that the society is using all of its available resources and producing at an efficient level.
26. Display slide 12. Explain that production at a point inside the PPF shows the resources in the economy are underutilized. Discuss the following:
- A society might produce at point X, which indicates a much smaller production of both guns (2 units) and butter (2 units).
  - Production at a point inside the PPF (such as X) shows the resources in the economy are **underutilized**, which means the economy is using fewer resources than it is capable of using, or it is not using resources to their fullest potential. Remind students that as discussed earlier, this situation occurred during the Great Depression and might occur during an economic recession when some factories sit idle and some workers are unemployed.
  - Societies would want to produce at a point outside their PPFs because they would want more butter and more guns. Point Y is outside the frontier and shows production of 4 units of guns and 4 units of butter. However, this economy cannot produce that combination because its current level of resources and technology will not allow it to do so.

- An economy might be able to produce the combination at point Y in the future if the PPF shifts outward (to the right).
  - The PPF might shift to the right if the country acquires more resources (land, labor, or capital).
  - The PPF might also shift to the right if the country experiences an increase in productivity. **Productivity** is measured as the ratio of output per worker per unit of time. Increasing productivity allows a nation or firm to produce more output with the same number of inputs (or the same amount of output with fewer workers).
27. Tell students that the class will represent the increase in resources and productivity by adding two new production cards to the production possibility table.
28. Ask two more students to join the others with production cards. Have students repeat the process used earlier in the lesson to complete Production Possibilities Table 2 (bottom of Handout 2).

## Handout 2: Production Possibilities—Answer Key

**Production Possibilities Table 2**

Production	A	B	C	D	E	F	G	H	I
Butter	8	7	6	5	4	3	2	1	0
Guns	0	1	2	3	4	5	6	7	8

29. Ask students to use the information on Production Possibilities Table 2 to draw a new frontier line on their PPF graphs. Discuss the following:
- What happened to the graph? (*The frontier shifted outward [to the right].*)
30. Display slide 13. Discuss the following:
- What caused the PPF to shift outward? (*This shift was primarily due to an increase in the number of resources.*)
  - At the previous PPF position point Y, production of 4 units of guns and 4 units of butter was unattainable. Can that combination be produced now? (*Yes; the rightward shift of the frontier as a result of economic growth makes it possible to produce 4 units of guns and 4 units of butter at point Y.*)
  - Why is a rightward shift of the PPF beneficial? (*More guns and more butter can be produced. Previously when production was on the frontier, an increase in the production of butter meant giving up some guns or vice versa. When the PPF shifts to the right, more of both types of goods can be produced. However, there are still trade-offs along the new PPF.*)

## Historical Data

31. Tell students they will examine historical data from WWII. During that time, government spending was a much smaller part of the total economy and most federal government spending was for defense purposes.
32. Display slide 14. This graph shows the portion, expressed as a decimal, of total government spending dedicated to defense spending between 1930 and 1950. To convert a decimal to a percentage, move the decimal to the right two spaces (e.g., 0.20 becomes 20 percent). Discuss the following:
  - Prior to 1940, approximately what percentage of spending by the federal government was allocated to defense? (*Defense spending fluctuated between 20 and 30 percent of total government spending in the years just before 1940. In fact, defense spending fluctuated between 24 percent and 27 percent of federal spending from 1936 to 1939.*)
  - Between 1942 and 1945, approximately what portion of spending by the federal government was allocated to defense? (*Defense spending was above 90 percent in each of those years. In 1943-45, it made up 97 percent of total government spending.*)
  - Explain that since nearly all government spending was for defense during the war years, federal spending will be used to approximate spending on guns.
33. Display slide 15. Distribute *Handout 3: U.S. Spending on Guns versus Butter: 1929-1950*. Ask students to examine the data under the heading “Total gross national product (GNP)” (column 1). Discuss the following:
  - GNP is a measure of total production by U.S. firms. During this period, GNP was a good indicator of the size of the economy. Today, gross domestic product (GDP) is the indicator used most often.
  - The data are stated in 1982 dollars, which means they have been adjusted for inflation.
  - Based on the data in column 1, what happened to the size of the economy between 1939 and 1944? (*The economy nearly doubled in size, increasing from \$716.6 billion to \$1,380.6 billion.*)
34. Tell students that the data in the remaining columns are from two sets of data: Federal purchases of goods and services and civilian purchases of goods and services.
  - The federal purchases (U.S. government spending) represent guns since much of federal spending during this period was for defense purposes.
  - The civilian purchases represent butter—spending for consumer goods and services.
35. Explain that the allocation decision between guns and butter changed dramatically from 1939 to 1944. Even while the economy was producing more goods and services (GNP), the share of production of goods and services was shifting from an emphasis on butter to an emphasis on guns.

36. Tell students that the answers to the following questions are in columns 3 and 5 and should be stated as percentages:
- In 1939, what percentage of GNP was spent on guns—military goods and services—by the federal government? (*7.51 percent*)
  - In 1939, what percentage of GNP was spent on butter—consumer goods and services—by civilians? (*92.49 percent*)
  - In 1939, was the emphasis on guns or butter? (*Nearly all spending was on butter, or consumer goods.*)
  - How did the proportion of resources allocated to guns change from 1939 to 1944 (use column 3)? (*In only five years, guns increased from 7.51 percent to 52.33 percent of total production.*)
  - In 1950, what percentage of GNP was spent on guns by the federal government? (*9.70 percent*)
  - In 1950, what percentage of GNP was spent on butter by civilians? (*90.30 percent*)
  - How did the guns and butter trade-off change from 1944 to 1950? (*In only six years, spending on guns decreased from 52.33 percent to 9.70 percent of GNP and spending on butter by civilians increased from 47.67 percent to 90.30 percent.*)
37. Remind students that the United States officially entered WWII on December 8, 1941, and the war ended in 1945. Discuss the following:
- Stated in a few words, how did the guns or butter trade-off shift (i) between 1939 and 1944 and (ii) by 1950? (*Production shifted toward guns before and during the war and then back toward butter after the war.*)
38. Explain that the total production of goods and services increased dramatically. Refer students to the GNP column (column 1). Remind students that these figures are adjusted for inflation, so changes in the stated dollar value reflect changes in output. Discuss the following:
- Did GNP change much between 1929 and 1939? (*No, the economy had about the same output in 1929 as 1939.*)
  - What was happening in the United States between 1929 and 1939? (*The Great Depression*)
  - How much did GNP change between 1939 and 1944? (*Output nearly doubled, from \$716.6 billion to \$1,380.6 billion.*)
  - How was the U.S. economy able to increase production so dramatically from 1939 to 1945? (*Many resources that were underutilized in 1939 were easily put back into production. Also, the war mobilization meant that many new resources were added, such as women entering the workforce.*)

39. Refer students to columns 2 and 4 on Slide 15. Remind students again that the figures are adjusted for inflation, so changes in the stated dollar value reflect changes in output. Discuss the following:
- How did the spending on butter—civilian goods and services—change from 1939 to 1944? (*It very slightly decreased: from \$662.8 billion to \$658.1 billion.*)
  - How did the spending on guns—military goods and services—change from 1939 to 1944? (*It increased nearly 14 times: from \$53.8 billion to \$722.5 billion.*)
40. Tell students to use the data in columns 2 and 4 in the table to plot each year on the PPF on Handout 3.
41. Tell students to connect the points from 1929 to 1945 (in chronological order) using a red crayon (or pencil) and the points from 1945 to 1950 using a blue crayon (or pencil). Display Slide 16 as a reference. Discuss the following:
- Follow the red line you drew. What happened to spending from 1929 to 1945? (*Spending on consumer goods remained relatively flat, but spending on guns increased greatly.*)
  - Follow the blue line you drew. What happened to spending from 1945 to 1950? (*Spending shifted back toward butter.*)
42. Explain that it is difficult to know for sure where the PPF was in 1939 because relatively little economic data were collected then and the nation was emerging from the Great Depression—a time when many resources were underutilized. The civilian unemployment rate dropped from 20 percent in June 1938 to 3.4 percent in August 1941, which indicates a large transition in resource utilization. (Data are from Federal Reserve Economic Data (FRED®), Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/graph/?g=1ehwO>.)
43. Explain that you will use 1941 as the first frontier and assume that the war mobilization had brought the economy to near-full utilization. Instruct students to draw a curved line that intersects the 1941 data point. Display slide 17 for reference. Explain the following:
- Starting in 1941, the efforts to bring more resources to market and increase the utilization of resources were already being used.
  - By October 1944, the unemployment rate had reached 0.9 percent, which indicates that nearly everyone who wanted a job was able to find work. (Data are from FRED®, <https://fred.stlouisfed.org/graph/?g=1ehxd>.)
44. Explain that you will use the 1944 data point as the second frontier. Instruct students to draw a curved line that intersects the 1944 data point. Display slide 18 for reference. Explain the following:
- The increase in resources and productivity shifted the PPF outward, or to the right.

45. Point out that slides 17 and 18 feature curved lines, but the lines were straight in the quantity of butter and guns graph created earlier in the lesson (slide 13). Explain the following:
- In a large, diverse economy such as the United States, some resources are better suited to some tasks than others.
  - For example, some of the workers who went to work in the factories building aircraft (guns) might have been farmers before the war (producing butter). Over many years of farming they had likely become very efficient and productive, but when they went to work in the factory they had to learn new skills, and (at least for a while) were not as productive at that task.
  - As a result, when a worker transitioned from butter production to guns production, there was a loss of butter production that was greater than the gain to guns.
  - The loss of production concept is true for many resources, not only farmers.
  - So, because not all resources are equally good at all tasks, in reality the PPF for an entire economy is concave.
46. Refer again to slide 18. Discuss the following:
- Where is the 1939 frontier in reference to the 1941 frontier? (*1939 is well inside the frontier, which means many resources were underutilized.*)
  - Why were so many resources underutilized in 1939? (*The United States was just emerging from the Great Depression.*)
  - In 1939, which had higher production, guns or butter? (*Butter, or civilian goods*)
  - In 1944, which had higher production, guns or butter? (*Guns, or military goods*)
  - Why did the PPF shift to the right by 1944? (*More resources were added and productivity had increased.*)
  - Why had production shifted back toward butter by 1950? (*WWII ended in 1945, and many resources that had been used to produce guns were now used to produce butter.*)
  - The mix of guns and butter in 1939 was similar to the mix in 1950 (in percentage terms). What was the major different between 1939 and 1950? (*The economy was much larger; there was much more production of butter in 1950.*)

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## Closure

47. Review the important content of this lesson by asking the following:
- What is propaganda? (*Communication meant to influence the attitude of the people toward some cause or position*)
  - What propaganda strategies did the U.S. government use during WWII? (*Appealing to fear, flag waving [patriotism], and jumping on the band wagon*)
  - What are the economic resources used to produce goods and services? (*Land, labor, and capital*)

- What is scarcity? (*The condition that exists because there are not enough resources to produce everyone's wants.*)
- What is a trade-off? (*Giving up some of one thing to gain some of something else*)
- Explain the guns or butter trade-off. (*Producing more guns—military goods— means producing less butter—civilian goods.*)
- What is a PPF? (*A production possibilities frontier; a graphic representation of output combinations that can be produced given an economy's available resources and technology*)
- What shifts a PPF outward? (*An increase in economic resources [land, labor, or capital] or an increase in productivity*)
- How did WWII change U.S. production decisions in terms of guns and butter? (*The United States shifted its production so that it made less butter—civilian goods—and more guns—military goods.*)
- Women, the old, and the young entered the workforce. What economic resource increased and what did it do to the PPF? (*Labor resources increased, shifting the PPF to the right.*)
- Many African Americans moved from agricultural jobs in the South that relied on manual labor to factory jobs in industrial centers with more physical capital. This access to physical capital likely led to higher productivity. How might this shift in productivity shift the PPF? (*An outward shift, or a shift to the right*)
- People grew victory gardens. What economic resource increased and how did it shift the PPF? (*Land resources increased, shifting the PPF to the right.*)
- People worked longer hours. What economic resource increased and how did it shift the PPF? (*Labor resources increased, shifting the PPF to the right.*)
- What happened to U.S. production after WWII in terms of guns and butter? (*Production shifted back toward butter—civilian goods and services.*)



**Handout 1: Guns or Butter Production** (page 1 of 2)

# Guns = 1 Unit



**Sherman tank**

**Handout 1: Guns or Butter Production** (page 2 of 2)

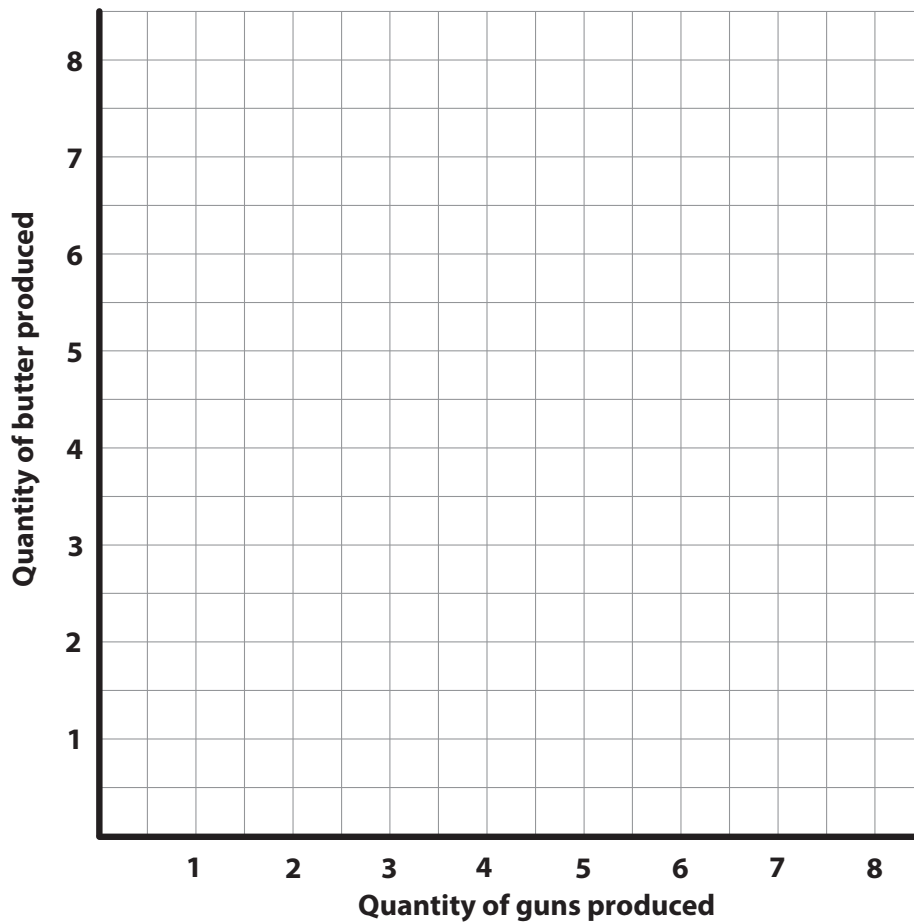
# Butter = 1 Unit



## Handout 2: Production Possibilities

**Production Possibilities Table 1**

Production	A	B	C	D	E	F	G
Butter	6	5	4	3	2	1	0
Guns	0	1	2	3	4	5	6



**Production Possibilities Table 2**

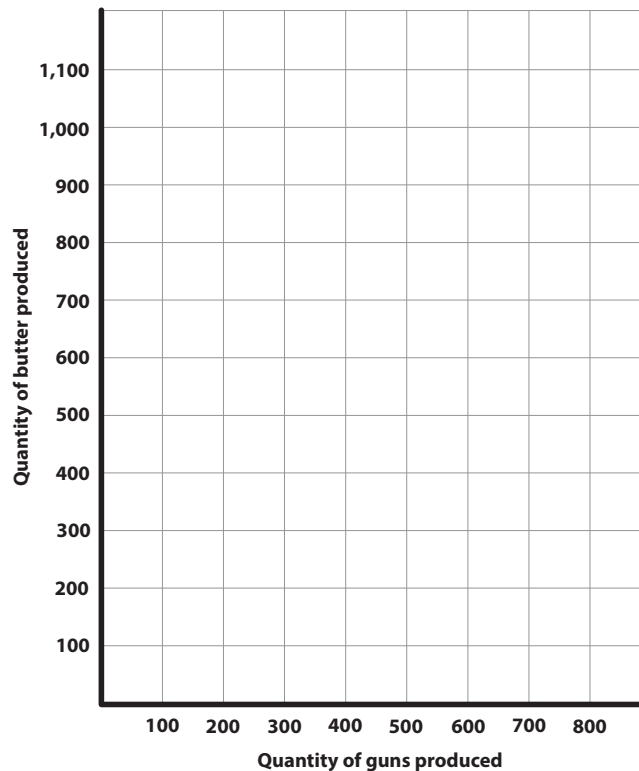
Production	A	B	C	D	E	F	G	H	I
Butter	8	7	6	5	4	3	2	1	0
Guns	0	1	2	3	4	5	6	7	8

### Handout 3: U.S. Spending on Guns versus Butter: 1929-1950

	1	2	3	4	5
Year	Total gross national production (GNP)*	Spending on guns <sup>†</sup>	Guns as a % of GNP	Spending on butter <sup>‡</sup>	Butter as a % of GNP
1929	\$709.6	\$18.3	2.58	\$691.3	97.42
1939	\$716.6	\$53.8	7.51	\$662.8	92.49
1940	\$772.9	\$63.6	8.23	\$709.3	91.77
1941	\$909.4	\$153.0	16.82	\$756.4	83.18
1942	\$1,080.3	\$407.1	37.68	\$673.2	62.32
1943	\$1,276.2	\$638.1	50.00	\$638.1	50.00
1944	\$1,380.6	\$722.5	52.33	\$658.1	47.67
1945	\$1,354.8	\$634.0	46.80	\$720.8	53.20
1946	\$1,096.9	\$159.3	14.52	\$937.6	85.48
1950	\$1,203.7	\$116.7	9.70	\$1,087.0	90.30

NOTE: \*In billions of 1982 dollars. †Guns represent total federal purchases of goods and services. ‡Butter represents total civilian purchases of goods and services.

SOURCE: Walton, Gary M. and Rockoff, Hugh. *History of the American Economy*. Eleventh Edition. Mason, OH: South-western Cengage Learning, 2010.



## Standards and Benchmarks

### National Standards in Economics

**Standard 1: Scarcity.** Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

- **Benchmarks: Grade 8**

1. Scarcity is the condition of not being able to have all of the goods and services that one wants. It exists because human wants for goods and services exceed the quantity of goods and services that can be produced using all available resources. Scarcity is experienced by individuals, governments, and societies.

- **Benchmarks: Grade 12**

1. Choices made by individuals, firms, or government officials are constrained by the resources to which they have access.

### United States History Content Standards for Grades 5-12

#### Era 8: The Great Depression and World War II (1929-1945)

**Standard 3:** The cause and course of World War II, the character of the war at home and abroad, and its reshaping of the U.S. role in world affairs.

**Standard 3C:** The student understands the effects of World War II at home.

- **Grade level 5-12:**  
Explain how the United States mobilized its economic and military resources during World War II.
- **Grade level 7-12:**  
Analyze the effects of World War II on gender roles and the American family.