

The Castaways Discover GDP

Lesson Authors

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Standards and Benchmarks (see page 15)

Lesson Description

In this lesson, students learn the definition of gross domestic product (GDP) and the four expenditure categories of GDP. Then, they participate in a readers' theater about castaways on an island who learn about GDP. Students record examples of items produced on the island that are examples of consumer, government, and investment spending. They recognize that, without trade, there is no net export category for the island.

Grade Level

6-9

Concepts

Consumer expenditures

Exports

Final goods

Government expenditures

Gross domestic product (GDP)

Imports

Intermediate goods

Investment expenditures

Market value

Net exports

Output

Objectives

Students will be able to

- define consumer expenditures, exports, final goods, government expenditures, gross domestic product (GDP), imports, intermediate goods, investment expenditures, market value, net exports, and output;
- give examples of consumer, investment, and government expenditures;
- explain the difference between intermediate and final goods; and
- explain the categories that make up investment spending—capital, construction, and inventory.

Essential Question

How do we measure the size of the economy?

Time Required

45-60 minutes

Materials

- *Handout 1: "The Castaways Discover GDP,"* one copy for each student
- *Handout 2: GDP by Category,* one copy for each student
- *Handout 3: Assessment,* one copy for each student
- *Handout 4: Assessment Answer Key,* one copy for the teacher
- Props for the play as described below

Preparation

Prior to the class in which you will use the play, assign roles to eight students and provide each of the cast members a copy of *Handout 1: "The Castaways Discover GDP."* Explain that this is readers' theater—students do not need to memorize parts.

If possible, the following props would make the play more fun: a captain's hat for Captain Jonah, a sailor cap for Little Buddy, a feather boa and fancy dress for Cinnamon, a bowl of plastic fruit for Bobbie Sue, an ascot and a small suitcase for Mr. Howler, a fake fur and elegant toy ring for Mrs. Howler, and an economic textbook and calculator for Professor Econ.

Visit <https://fred.stlouisfed.org/series/GDPC1> if you would like to share the most current dollar amount of GDP with your students.

Procedure

1. Explain that the students are going to participate in a readers' theater about castaways on an island to help them understand the economic concept of gross domestic product or GDP. Distribute a copy of Handout 1 to each student not assigned a role so that they can follow along.
2. Distribute a copy of *Handout 2: GDP by Category* to each student and encourage students to use it to take notes.
3. Explain that in order to tell if something has grown, it must be measured. Then, the measurements can be compared over time. Explain that GDP measures the output (size) of an entire economy. **Output** is all goods and services produced in an economy. **GDP** is the market value of all final goods and services produced in a country in a given year. Discuss the following:
 - **Market value** is the dollar value or price of final goods and services.
 - **Final goods** are goods produced for use by consumers. **Intermediate goods** are things used in production that become part of a final product. To prevent double counting, an intermediate good is not counted separately as part of GDP. Only a final good is counted. Discuss the following:
 - If you buy flour for baking at home, the flour is a final good. If you buy tires for your car, the tires are final goods. However, if a bakery buys flour, the flour is an intermediate good because the bakery uses the flour to produce cookies, bread, and cakes. The cookies, bread, and cakes are counted as final goods (including the value of the flour). Likewise, if a car manufacturer buys tires to put on new cars, the tires are intermediate goods. They are not counted separately as part of GDP. The car itself is counted (including the value of the tires) when it is sold.
 - Only new final goods are counted as part of GDP. If you sell your house that was built 15 years ago, the sale isn't part of this year's GDP. A new home, built and sold this year is counted as part of this year's GDP as investment goods—new construction. A house built this year that remains unsold also counts in this year's GDP but is counted as investment—inventory.
 - **Consumer expenditures** are expenditures on goods and services produced to satisfy households. These include food, doctor visits, dry cleaning, streaming television, furniture, and appliances.
 - **Government expenditures** are purchases of goods and services for use by all levels of government (local, state, and federal). These include military equipment for national defense, new roads and bridges, salaries for government employees, and public education.
 - **Investment expenditures** include the following:
 - Tools, machines, and equipment (capital) produced for use by businesses. These capital goods can be used over and over, such as a milkshake machine at a fast-food restaurant.

- All kinds of construction—from homes and apartments to malls and factories—are part of investment.
 - Products sitting on shelves or in warehouses waiting to be sold are the part of investment called inventory.
 - A fourth category of GDP is net exports. Things that we produce in the United States and sell abroad are **exports**. These are counted as part of GDP. We also purchase goods produced in other countries. These are **imports**. When we purchase these items, they are added to GDP as consumer expenditures. However, GDP includes only goods and services produced within the borders of a country. So, these imports must be subtracted from GDP. **Net exports** are a country's exports minus its imports.
4. Tell the students that they are now going to participate in a readers' theater. Ask those students who were assigned roles to come to the front of the room. Provide them with any appropriate props.
 5. Tell the remaining students that as they listen to the play and follow along on Handout 1, they should record on Handout 2 examples of consumer, government, and investment expenditures on the island.
 6. Allow time for the class to perform the readers' theater.

Closure

7. At the conclusion of the readers' theater, discuss the following:
 - What are some things produced on the island that would be examples of consumer expenditures back home? (*Guava jelly, fruit, yoga lessons, singing performances, weather-proofing for the huts*)
 - What are some things produced on the island that would be examples of investment expenditures back home? (*Supply hut, other huts, equipment for hunting, fish nets, fishing hooks and lures, glass reflectors, guava jelly on shelves in the supply hut*)
 - Which of these are examples of new construction? (*Huts, supply hut*)
 - Which of these are examples of capital? (*Equipment for hunting, fish nets, fishing hooks and lures, glass reflectors*)
 - Which of these are examples of inventory? (*Guava jelly on shelves in the supply hut*)
 - What are some things produced on the island that would be examples of government expenditures back home? (*Equipment for defense, the fence*)
 - What are intermediate goods? (*Things used in production that become part of a final product*)

- What are some examples of intermediate goods from the island? (*Bamboo poles used to make the fence, tree sap and jellyfish used to make the weatherproofing*)
- Why are these examples of intermediate goods? (*Because they became part of another good—a final good*)
- Why did Bobbie Sue say the castaways couldn't really measure GDP? (*GDP is measured using market value—or prices. There were no prices on the island. Also, people have to actually buy and sell goods and services to calculate GDP.*)
- What was needed to ensure that the castaways could buy and sell goods and services on the island? (*They needed a money supply.*)
- Why weren't there any exports or imports to count in the island's GDP? (*The castaways weren't selling any goods or services to other islands/countries nor were they buying any goods or services from other islands/countries.*)
- How do we measure the size of an economy? (*By calculating GDP*)
- What is GDP? (*The market value of all final goods and services produced in a country in a given year.*)
- What are the four expenditure categories used to measure GDP? (*Consumer expenditures, investment expenditures, government expenditures, net exports*)

Assessment

8. Distribute a copy of *Handout 3: Assessment* to each student. Allow time for the students to complete the work and then review student answers using *Handout 4: Assessment Answer Key*.

Handout 1: “The Castaways Discover GDP” (page 1 of 5)

Characters

Narrator
Mr. Howler
Mrs. Howler
Professor Econ
Captain Jonah
Little Buddy
Cinnamon
Bobbie Sue

[NOTE: The Castaways represent a microcosm of American life: Captain Jonah as military, Professor Econ as academia/science, Mr. and Mrs. Howler as capitalist aristocracy, Bobbie Sue as Midwestern heartland, Cinnamon as Hollywood and popular culture, and Little Buddy as Everyman. Many of these naturally correspond to specific economic sectors and related goods and services of GDP.]

Narrator: Our 7 castaways have been marooned for 3 months on a deserted island. No cell phone apps, no internet. Not a bit of technology. Like the childhood of your grandma, it’s as inconvenient as can be. Let’s see how they’re getting along...

[Mr. Howler grumbles as he fiddles with a radio. His suitcase of money is next to him. Professor Econ enters the scene.]

Professor Econ: Good morning, Mr. Howler. What seems to be the trouble?

Mr. Howler: Oh, hello, Professor...of Economics, I’m still trying to find a radio station to get the latest stock reports—or any economic news, since we’re trapped on this abysmal island without any business or economic activity of any kind.

Professor Econ: Well, Mr. Howler, there’s an economy right here on this island, you know. It’s obviously not as formal as it is back home, but...

Mr. Howler: Oh, fiddlesticks. How can you have an economy without jobs? I mean, really, Professor. I expect more from you.

[Enter Captain Jonah (directing) and Little Buddy (carrying bamboo).]

Captain Jonah: OK, Little Buddy, just drop those bamboo poles over here and we’ll get started on the new fence.

[Enter Cinnamon (stretching) and Bobbie Sue (carrying fruit).]

Handout 1: “The Castaways Discover GDP” (page 2 of 5)

Cinnamon: I think the new yoga program I started for us will get us all into great shape, mentally and physically.

Bobbie Sue: And we’ll need all these fruits I’ve been cultivating to keep up our strength.

[Captain Jonah, Little Buddy, Cinnamon, and Bobbie Sue continue to enthusiastically engage in their activities.]

Professor Econ: Mr. Howler, just look at all this economic activity happening right here on this island. The Captain, Little Buddy, Cinnamon, and Bobbie Sue...they are all contributing to our economic output. And I’ve been hard at work developing a weatherproofing solution made out of tree sap and jellyfish for our huts...

Mr. Howler: *[skeptically shaking head]* Hmmm...

Professor Econ: You see, Mr. Howler, we’ve all been working very hard...

Mrs. Howler: *[enters theatrically checking nails, fixing hair, sipping coconut drink]* Oh, good morning, everyone. Am I in time for brunch?!

Professor Econ: *[staring at Mrs. Howler]* Well, most of us have been working hard.

Little Buddy: *[proudly]* I’ve sure been working hard. Just last week, I built a fence all by myself all the way around our supply hut!

Captain Jonah: *[sarcastically]* Which is why we have to build the fence again this week! *[strikes Little Buddy with his hat]* And, yes, I’ve also been working hard...especially at making equipment for hunting and for island defense.

Bobbie Sue: And I’ve been gathering fruit and planting new trees. In fact, we’ve grown so much guava, I made gallons of guava jelly and stored it in coconut shells. We never had guava on the farm back in Kansas. Grandpa always said tropical fruit just wasn’t decent!

Professor Econ: You know, I bet we could add up the value of all these goods we’ve produced on this island, and then we could derive our very own gross domestic product—most commonly known as GDP!

Cinnamon: *[looking sad]* Professor, I guess I haven’t contributed to our GDP at all. Because I haven’t made anything.

Professor Econ: Cinnamon, you may not have produced any goods, but you’ve certainly provided services. What about all your singing performances? Those are entertainment services people pay good money for back home. And the yoga classes you teach? Services are definitely part of GDP.

Handout 1: “The Castaways Discover GDP” (page 3 of 5)

Cinnamon: Oh, I feel so much better! For a second there, I thought I was unemployed! But wait! I did make something: I made a fish net out of my fishnets!

Professor Econ: Excellent! This is all measurable output! And we can tally it up every three months throughout the year so we can see how well we’re progressing.... [*dreamily*] Maybe we could even make our very own economic database...just like the world-renowned FRED database, provided by the diligent and talented staff of the Research Division of the St. Louis Fed...which is absolutely the only data source where one can freely access 582,000 time series from 87 national and international sources in a well-organized platform that includes amazing graphing capabilities and...

All: Professor Econ!!

Professor Econ: Oh, sorry...what was I saying?

Bobbie Sue: Professor, I seem to remember learning that you need prices to calculate GDP. We don’t have any price tags on anything we’ve produced. And don’t we need to actually buy and sell these things in a real marketplace for it to count as part of GDP?

Professor Econ: Yes, that’s right, Bobbie Sue. At home, we had to buy things from businesses or receive goods and services from the government through our tax dollars. But on this island, we create these things ourselves. We may have informal markets here, but we do have real output. [*turns to Mr. Howler*] You see, Mr. Howler: We’ve all been in the business of making goods and providing services. And we’re all using those goods and services as well. So, we’re acting as both consumers and producers.

Mr. Howler: [*to Mrs. Howler*] But, Lovey, don’t you and I simply consume? I mean, acting as both consumers and producers? That sounds like communism!

Professor Econ: That’s actually not communism, Mr. Howler. It’s completely unrelated to...

Mr. Howler: Enough of your academic mumbo-jumbo. Mrs. Howler and I are part of the 1 percent: We don’t work!

Mrs. Howler: Technically, Darling, there are 7 people on this island, so the two of us are actually the 28.6 percent.

Mr. Howler: 28.6 percent?! Egad! We’ve definitely dropped in the rankings...but of course we want to contribute to our island GDP. Now, what about the millions of dollars we have stored in our suitcase? Surely that must contribute to our GDP!

Professor Econ: Well, no. Money all by itself doesn’t contribute to GDP. That money you’re saving—apparently in a suitcase?—was a part of GDP in the past. It doesn’t count toward current GDP unless you spend it on something or invest it.

Handout 1: “The Castaways Discover GDP” (page 4 of 5)

Bobbie Sue: [*with slow realization*] Wait a minute: You brought millions of dollars in a suitcase for a 3-hour boat cruise?!

[*Mr. Howler shrugs.*]

Mrs. Howler: Well, now I do remember we contributed some of our less-expensive accessories to help around the island. We used our Rolexes to make fishing hooks and lures, and the glass was used to reflect sunlight to make campfires. Well, we didn’t make these things.... [*shudders*] I mean Little Buddy made them. So I suppose that doesn’t count either?

Professor Econ: But it does, Mrs. Howler! Those items could be considered a capital investment to help with the production of goods and services. See! You are definitely part of the island’s GDP!

Mr. Howler: Well, Professor...of Economics, I’m starting to see your point. But as Bobbie Sue said, how can we measure any of this if we don’t spend money to pay for these things? That’s how we calculate GDP, right—by using the dollar value of all these goods and services?

Professor Econ: Good point, Mr. Howler. We can measure spending only if we have some money to put into circulation...

Captain Jonah: And no one brought more than a few dollars on the boat trip...except...you, of course...

[*All stare at Mr. Howler’s suitcase full of money.*]

Mr. Howler: What are you looking at? My money? You want to use my money? Don’t even think about it! We might be sharing space on this island, but the buck stops here!

Professor Econ: Mr. Howler, we need to circulate the money so we can measure GDP in terms of prices. Because there’s a limited supply of money in your suitcase, we won’t need to worry about inflation. But, perhaps, in the long run, we’ll need to create a central bank to ensure a more-elastic money supply...and we’ll need to constrain the creation of money to maintain price stability.... Perhaps we should set an inflation target of...2 percent! Now, our central bank will require some degree of independence to ensure it can function properly...

All: Professor!!

Professor Econ: Oh, sorry...what was I saying?

Bobbie Sue: You were talking about using Mr. Howler’s money.

Mr. Howler: [*hugging suitcase*] Objection! I know the island needs money, but this sounds like a bailout!

Handout 1: “The Castaways Discover GDP” (page 5 of 5)

Professor Econ: We’ll give all the money back if we’re rescued, Mr. Howler. But in the name of science—economic science—may we please use your money? How about if we name the new island currency Howlers...?

Mr. Howler: Hmm...Howlers...? I like the sound of that. [*theatrically*] “I won’t pay more than 50,000 Howlers for that Mercedes...!” Well, it’s not the stock market, but I suppose tracking GDP will be enjoyable. [*Hands over the suitcase and picks up the radio.*]

Cinnamon: That’s the spirit! I always knew you had a heart behind that money belt.

Bobbie Sue: I’ll sell you a coconut full of guava jelly for 3 Howlers...

Mrs. Howler: Sold! [*digging into suitcase*]

Cinnamon: Yoga lessons, anyone...?

Captain Jonah: We’ll need to pool some of our spending to make sure we support the proper amount of island defense...

Professor Econ: And of course we’ll need to allot some funding for scientific research...

Mr. Howler: [*with the radio to his ear, now overjoyed*] Wait! I’ve found a radio station that’s discussing business! Finally some good old-fashioned capitalism! Ah, the radio program is called Marketplace! Sounds wonderful! It’s...wait...NPR? National? PUBLIC?! Radio? Egad! I’ve never done anything public in my life! [*puts down radio and walks away from it*]

Little Buddy: Hey, Professor...of Economics, you know about science, right? At least the dismal science. We’ve been listening to this radio all day, every day, ever since we got marooned here on this island. How are the batteries still working?

[*All turn and silently stare at the audience.*]

Narrator: THE END!

Handout 2: GDP by Category (page 1 of 2)

Directions: Use this section of the handout to record notes about GDP.

Notes about gross domestic product (GDP)

Gross domestic product (GDP) is the _____ value of all _____ goods and services produced in a country in a given year.

Market value is _____

Final goods are _____

Flour used by a baker is a(n) _____

Flour used at your home is a(n) _____

Consumer expenditures are _____

Examples of consumer expenditures are _____

Government expenditures are _____

Examples of government expenditures are _____

Investment expenditures are _____

Examples of investment expenditures are _____

Net exports are _____

Handout 2: GDP by Category (page 2 of 2)

Directions: Listen carefully to the play “The Castaways Discover GDP.” Help the castaways determine the island’s GDP for the year by answering the questions below.

<p>Consumer expenditures: Expenditures on consumer goods and services. In the case of the castaways—goods and services produced to satisfy households/consumers.</p> <p>What consumer goods and services were produced on the island?</p>	<p>Investment expenditures: Expenditures on (1) tools, machines, and equipment (capital) produced for use by businesses; (2) all kinds of new construction—from homes and apartments to malls and factories; and (3) products sitting on shelves or in warehouses waiting to be sold—inventory.</p> <p>Even though there are no “businesses” on the island, were there items produced that might be considered investment?</p>
<p>Government expenditures: Expenditures on goods and services produced or purchased for use by all levels of government.</p> <p>What goods and services produced on the island would you expect to be purchased by some level of government back at home?</p>	<p>Net exports: Exports are goods and services produced in one country and sold to people in other countries. Exports are counted as part of GDP because they are produced within the country and sold in another country. Imports are goods and services produced in one country and purchased by people in another country. When people in the United States buy cars produced in another country, the cars are first counted in U.S. GDP as part of consumer expenditures—but that amount must be subtracted as an import to ensure that GDP counts only products produced within U.S. borders. For example, a \$30,000 car produced in Germany is first counted as a consumer expenditure, but then the \$30,000 is subtracted as an import. So, imports have no direct impact on GDP.</p> <p>Will the castaways have any exports to count in their GDP? What about imports? Why or why not?</p>

Handout 3: Assessment

Directions: Indicate in which expenditure category of GDP each of the following items would be placed by writing a "C" for consumer expenditure, a "G" for government expenditure, and an "I" for investment expenditure.

- | | | |
|--|--------------------------------|------------------------------------|
| ___ new roads and bridges | ___ new apartment building | ___ family meal at a restaurant |
| ___ Grandma's new car | ___ 3 new aircraft carriers | ___ new cleats for soccer |
| ___ salaries for state senators | ___ new jeans | ___ new computers for a law office |
| ___ ovens and microwaves in a storeroom at a big-box appliance store | | |
| ___ new computers for a mayor's office | ___ new computer for your home | |

What is GDP?

What does GDP measure?

Use an example to explain the difference between intermediate and final goods.

Use an example to explain what exports are. Are exports counted in GDP?

Use an example to explain what imports are. Are imports counted in GDP?

Handout 4: Assessment Answer Key

Directions: Indicate in which expenditure category of GDP each of the following items would be placed by writing a “C” for consumer expenditure, a “G” for government expenditure, and an “I” for investment expenditure.

- | | | | | | |
|---|--|---|----------------------------|---|--------------------------------|
| G | new roads and bridges | I | new apartment building | C | family meal at a restaurant |
| C | Grandma’s new car | G | 3 new aircraft carriers | C | new cleats for soccer |
| G | salaries for state senators | C | new jeans | I | new computers for a law office |
| I | ovens and microwaves in a storeroom at a big-box appliance store | | | | |
| G | new computers for a mayor’s office | C | new computer for your home | | |

What is GDP?

The market value of all final goods and services produced in a country in a given year.

What does GDP measure?

The size of an economy.

Use an example to explain the difference between intermediate and final goods.

If I buy ground beef and make hamburgers at home, the ground beef is counted as a final good. If a restaurant buys ground beef to make hamburgers, the ground beef is counted as an intermediate good because it becomes part of the hamburgers. The hamburgers are counted as final goods (including the value of the ground beef).

If I buy thread and fabric to make a new shirt, the thread and fabric are counted as final goods. If a clothing manufacturer buys thread and fabric, they are counted as intermediate goods because they become part of the clothing items. The clothing items are counted as final goods (including the value of the thread and fabric).

Use an example to explain what exports are. Are exports counted in GDP?

Companies in the United States produce oil in the United States and export (sell) it to people in other countries. Oil is an export. The oil is counted as part of U.S. GDP because it is produced in the United States.

Companies in Mexico produce bananas and export (sell) them to people in other countries. Bananas are counted as part of Mexico’s GDP because they are produced in Mexico.

Use an example to explain what imports are. Are imports counted in GDP?

Companies in Japan produce cars. These cars are imported by the United States and purchased by people in the United States. Initially the cars are counted in U.S. GDP, but the price of a car must be subtracted from U.S. GDP because the cars weren’t produced in the United States. (They are counted as exports in Japan’s GDP.)

Companies in Vietnam produce articles of clothing. This clothing is sold in the United States—the clothing is an import. Initially the clothing is counted in U.S. GDP, but the price of the clothing must be subtracted from U.S. GDP because the clothing wasn’t produced in the United States. (It is counted as an export in Vietnam’s GDP.)

Standards and Benchmarks

National Standards in Economics

Standard 1: Scarcity

- **Benchmarks: Grade 4**

6. Productive resources are the natural resources, human resources, and capital goods available to make goods and services.
7. Natural resources, such as land, are “gifts of nature”; they are present without human intervention.
8. Human resources are the people who do the mental and physical work to produce goods and services.
9. Capital goods are goods that are produced and used to make other goods and services.

Standard 18: Economic Fluctuations

- **Benchmarks: Grade 8**

1. GDP is a basic measure of a nation’s economic output and income. It is the total market value, measured in dollars, of all final goods and services produced in the economy in one year.
2. GDP can be computed by summing household consumption spending, investment expenditures, purchases by federal, state, and local governments, and net exports.
3. Net exports equal the value of exports (goods and services sold to other countries) minus the value of imports (goods and services bought from other countries). Net exports can be either positive (trade surplus) or negative (trade deficit).

Common Core State Standards

English Language Arts Standard