

Name \_\_\_\_\_

Period \_\_\_\_\_



## Economic Efficiency Worksheet

### Preview Questions

1. What is a productive level of efficiency for the port?
2. What type of business is JAXPORT?
3. What types of competition does the port have?

### Key Terms

Efficiency, Capacity, Marketplace, Specialization

The Jacksonville Port Authority (JAXPORT) is located on the St. John's River seven miles from the Atlantic Ocean. The port loads and unloads cargo for use in the eastern two-thirds of the United States and around the world.

The types of cargo that goes through the port are **automobiles**, **containers** (holds different types of goods from computers to toys), **break bulk** (paper, chicken and steel) and **liquid bulk** (turpentine and corn syrup). These imports and exports flow through three terminals. The Talleyrand Marine Terminal, located on the west side of the St. John's River near downtown, handles containers, break bulk and liquid bulk. The Blount Island Marine Terminal, located east of the Dames Point Bridge, handles containers, break bulk, automobiles and any other type of roll on/roll off equipment. The Dames Point Marine Terminal, located just west of the Dames Point Bridge, handles bulk, or **aggregate** (sand, gravel, etc.).

### JAXPORT'S CAPACITY



JAXPORT has the same problem any other producer has: How efficient are they? have to look at several different factors that would affect the efficiency of JAXPORT. A factor we need to look at is the ships that come into the port. The length of the ship can

vary from 300 to 900 feet, with the average being 700 feet. You also must have space between the ships, or the port becomes nothing more than a rush hour traffic jam on the water. Another factor to consider is the cargo type. Berthing space available at each terminal and the depth of the harbor water are other factors to be considered.

The chart below shows the different cargo types and the average length of stay for a ship at each terminal.

### Average Length of Stay Per Cargo Type

(Statistics provided by JAXPORT)

Cargo	Talleyrand Marine Terminal	Blount Island Marine Terminal	Dames Point Marine Terminal
Containers	10 hours	10 hours	n/a
Break Bulk	2 to 10 days	2 days	n/a
-Chicken	10 to 21 days	n/a	n/a
-Steel	2 days	2 days	n/a
Liquid Bulk	8 to 10 hours	8 to 10 hours	n/a
Automobiles	3 to 10 hours	3 to 10 hours	n/a
Aggregate Bulk	n/a	n/a	12 hours

**Specialization** takes place at JAXPORT. The Jacksonville Port Authority has placed berthing capacity at different locations. For example, it is easier to unload steel at the Talleyrand Marine Terminal because of access to railroads. Also, JAXPORT has invested in improved equipment at the Blount Island Marine Terminal, allowing ships there to be loaded and unloaded faster when loaded with the same products. The chart below shows the capacity factors at the port.

### Berthing Space

(Statistics provided by JAXPORT)

Marine Terminal	Berthing Space (in linear feet)	Average Number of Ships That Can Berth at One Time
Talleyrand	4,800	6
Blount Island	7,140*	8
Dames Point	1,200	1

\*Blount Island has three berthing spaces: one of 600 linear feet, one of 750 linear feet and one of 5,740 linear feet.

If you add the three terminals together, JAXPORT has a total capacity of 13,140 linear feet. That's almost 2.5 miles of berthing space. It's enough room to have eighteen 700 foot ships and one 540 foot ship in the port at once. But when you add in the room needed between ships, the capacity of the port is reduced.

### FIGURING CAPACITY

Since the port is open 24 hours a day, 365 days a year, we should be able to figure the capacity of each terminal. Let's figure the **maximum capacity** of the Dames Point Marine Terminal.

#### Capacity: Dames Point Terminal

Average number of ships at one time	1
Average stay	12 hours
Number of ships in one day	2
Number of ships in a year	730

So how did we do this? If the terminal can handle one ship at a time and the stay is 12 hours, then the terminal should be able to handle 2 ships a day. Multiply this times 365 days in a year and you have a maximum capacity of 730 ships a year. But that also means that 1) ships enter the berth one after another and 2) nothing breaks down. We all know that no business can do that. The times ships arrive can be off and machines do break down. Most economists consider a business efficient at 80% of its capacity, so JAXPORT should target itself for 80% capacity, or 584 ships a year using the Dames Point Terminal (You figure this by multiplying 730 times .8 = 584). If the port has 584 ships a year using the Dames Point Terminal, that is when the terminal is being used at its **maximum efficiency**.

### WHY WORRY ABOUT EFFICIENCY?

To answer that question, you must remember why someone starts a business. No one goes into business planning to lose money, so they started the business to make a profit. However, JAXPORT is not a business. It is a public authority run like a business. They have to compete with other ports, like Savannah,

Georgia and Charleston, South Carolina for business. The port sells a service: the space to load and unload cargo. They must be competitive in that market.

JAXPORT earns **income** when a ship berths at the port. This income is used to pay **costs**, such as employee wages and benefits, utilities and so on. This income is also **invested** into the port, repairing machinery and upgrading equipment. Let's look at an example.

A ship enters the port with automobiles. The captain of the ship has one goal: to get the ship unloaded and reloaded as fast as possible. The ship owner makes money while the ship is at sea, not in port. The ship has an arrangement to pay the port \$2.00 per linear foot for each hour the ship is docked. Let's say the ship is 700 feet long and will be docked for 10 hours.

$$700 \text{ feet} \times \$2 \times 10 \text{ hours docked} = \$14,000$$

JAXPORT realizes \$14,000 for "renting" a space. However, it took millions of dollars to build the port and takes millions more to maintain, secure and expand the port. The profit for the port in the case of this one ship might be as small as \$140.

