

Name _____

Fishing Responsibly

The Rocky Banks Fishery

Fishers can choose:

- a surface trawl, mid-water trawl, or bottom trawl
- where to trawl (what area will have more of the species they are after)
- when to trawl. The season and even the time of day have a great affect on the location of the fish. Many species of fish are highly mobile, they move to different areas and even move vertically in the water column between day and night.
- they can choose the net mesh size. The larger the mesh (e.g. 4 inch opening instead of a 2 inch opening), the fewer fish that will be caught. However, smaller mesh sizes may catch unwanted fish, fish too small to legally keep, and smaller mesh nets may be “clogged” with debris. Dragging a fine mesh net through the water demands more power for the ship and costs more in fuel.

Bill has a nice large boat for trawling and different types of gear and net mesh sizes to choose from when planning his trawl.

Bill knows the Rocky Banks Fishing grounds very well. The Atlantic cod is the main species they will harvest using an otter trawl. This is a bottom fish (demersal) species. The harvest takes place year round, but Bill will fish

for cod in late summer. One problem will be catching fish that are not allowed. Fish that are not wanted in the catch are called by-catch. He and his crew have several decisions to make.

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Bill Fishes In the Summer For Atlantic Cod

- In late summer, the cod catch rate is **1000 cod** for every hour they otter trawl.
 - They also catch **5 individuals per hour** of a protected species, the **Yellowtail Flounder** (this is by-catch).
 - It costs Bill **\$800 per hour** in fuel and crew expenses to trawl near the bottom for cod.
 - When they return to the dock, they sell the cod for **\$2 each**.
 - If they catch more than **35 protected Yellowtail Flounder** in one day, they will lose their fishing license because of fishing regulations.
 - For **each** Yellowtail Flounder caught they must pay a fine of **\$125**.
1. How many hours should Bill set the trawl to make sure they do NOT break the law but still catch as many cod as possible?
 2. How many cod will they catch during this time?
 3. How much will it cost Bill for expenses (not including any fines) to fish during this one day trip?

3. How much will he get paid at the dock when they sell the cod?
4. How much will he have to pay in fines?
6. How much profit will Bill make?

Be sure to show your work.

Name _____

Bill Fishes for Mackerel in Early Winter

- In the winter, fishing in the Rocky Banks is very difficult and more expensive.
- The catch rate is **700 fish** for every hour they trawl.
- The total catch of 700 fish per hour includes **15%** of a restricted species, the American Shad as by-catch.
- It costs Bill **\$950 per hour** in fuel and crew expenses to trawl in the winter.
- When they return to the dock, they sell the mackerel for **\$ 2.75 each**.
- They pay a fine of **\$ 4.75 for each protected shad** they harvest.

If the crew can trawl for 6 hours in one day, how much money will Bill make after he pays all of the expenses, including the fines? Be sure to show your work.

Name _____

Bill Fishes for Haddock in the Fall

- Haddock are not as abundant as cod and Bill and his crew only catch **500 fish** for every hour they trawl.
- They also catch **60** American Lobsters each hour as by-catch.
- They can trawl **6** hours before returning to a port.
- They can sell the haddock at Port A, in their home state, for **\$3.25** per fish. But they are not allowed to sell any lobsters in this state.
- They can travel to Port B in another state and sell the lobster for **\$6.25** each, but they only receive **\$2.75** for each of the haddock. To travel to Port B in this state, it will cost an extra **\$260** more for fuel for the entire voyage.

After one day of trawling, Bill must decide if he will make more money selling their catch in Port A or Port B. Help Bill decide where to go and be sure to show your work.

