**Go Fish!**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date & Period: \_\_\_\_\_\_\_\_\_ , \_\_\_\_

Measuring the effects of fishing regulations on future harvests

**A. Introduction**:

This module will discuss fisheries and the ways they impact you, and the fish you like to eat. This first part of the module will introduce you some concepts relating to fishing and fisheries.

**1. Your fisheries experience**

a. Which fish do you like to eat? Please list both the common and scientific names.

i. Common name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Scientific name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ii. Common name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Scientific name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

iii. Common name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Scientific name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. Fish size and fish price**

 **a.** How are fish sold at the supermarket? Circle one:

 **$ per fish $ per pound $ per # of scales**

**b.** If you were a fisherman, knowing the answer above, which fish would you want to catch? Circle one.



**OR**

 **c.** Let’s create a **graphical hypothesis** about the relationship between fish size and fish price:

*Graphical hypotheses are tools to help you plan your investigation by thinking about your question, which variables you want to compare, what you need to measure, and what your predicted outcomes will be. They help you determine which variables are independent and which are dependent.*

Independent Variable (X): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent Variable (Y): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Prediction (full sentence): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. Fish size and reproductive output**

* 1. The amount of babies a fish can have is related to how large it is. Knowing this, rank the fish from fewest -> middle -> most amount of eggs that will be produced:



 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. Let’s graph the relationship between fish size and number of eggs produced:

Independent Variable (X): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dependent Variable (Y): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Prediction (full sentence): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4. The problem:**

Take a look back at your graphs. Are the fish that produce the most eggs the most expensive fish or the cheapest fish? Explain why this might be a problem.

**5. Conclusions**

Now that you have seen the effects that different types of regulations have on fisheries, and the impacts they have on the remaining fish in the ocean, which regulation do you think would allow the fish population to persist into the future?

Do you think that different species of fish require different regulations? Why or why not?

**C. Data Table**

Your group will be given one of the following roles:

**1)** NOAA – Your job is to record data on how many of each species are left after a season of fishing. You are also in charge of making sure that everyone (including scientists) is following the appropriate fishing regulations!

**2)** Scientists – Your job is to record data on the number of eggs that the remaining fish species have after a season of fishing.

**3)** Fisherman – Your job is to catch a certain species of fish, within the bounds of the fishing regulation(s). You must record how many fish you catch, as well as the total weight of your catch, and come up with how much money you’ve made during your fishing trip.

**The datasheets below are for certain groups! Pay attention and make sure you are entering data into the correct datasheet! You will leave any datasheets blank for groups that you are not in!**

**Summary Datasheet for *NOAA*:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Regulation** | **# yellow eye****remaining** | **# china remaining** | **# blue remaining** | **# halibut remaining** | **# sole remaining** | **# hake remaining** | **# greenling remaining** |
| **None** |  |  |  |  |  |  |  |
| **Minimum size** |  |  |  |  |  |  |  |
| **Seasonal closure** |  |  |  |  |  |  |  |
| **Gear restriction** |  |  |  |  |  |  |  |
| **Marine Protected Area (MPA)** |  |  |  |  |  |  |  |

**Summary Datasheet for *SCIENTISTS:***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Regulation** | **# yelloweye eggs remaining** | **# china eggs remaining** | **# blue eggs remaining** | **# halibut eggs remaining** | **# sole eggs remaining** | **# hake eggs remaining** | **# greenling eggs remaining** |
| **None** |  |  |  |  |  |  |  |
| **Minimum size** |  |  |  |  |  |  |  |
| **Seasonal closure** |  |  |  |  |  |  |  |
| **Gear restriction** |  |  |  |  |  |  |  |
| **Marine Protected Area (MPA)** |  |  |  |  |  |  |  |

**Datasheet for *FISHERMAN:***

**Your species:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Regulation** | **Number of fish caught** | **Total weight of catch** | **Total Price of catch**  |
| **No regulations** |  |  |  |
| **Minimum size** |  |  |  |
| **Seasonal closure** |  |  |  |
| **Gear restriction** |  |  |  |
| **Marine Protected Area (MPA)** |  |  |  |
|  |  |  |  |  |  |