

## Math 7H - Unit 6

## Day 4 - Random Samples

## Lesson Objectives:

- I understand generalizations about a population from a sample are valid only if the sample is representative of that population.

What does it mean to be random? We're going to conduct an experiment to understand what random really means.

You are a marine biologist. It is your responsibility to give information about a recently discovered marine species called JellyBlubbers to a cable television show so they can complete a special on this new species.

It is your task to find the average length in millimeters (measured horizontally) of a JellyBlubber.



Do **NOT** turn your paper over until instructed!!!

Method #1

You will have five seconds to look at the colony of JellyBlubbers. After the five seconds, turn your paper back over and make an estimate of how long the average JellyBlubber is in millimeters. Record your estimate on your data sheet.

Method #2

Turn your paper over to see the colony of JellyBlubbers. Close your eyes and place your finger on the sheet of paper in a random spot. Chose the blubber that your finger is closet to. Record the number and length in millimeters of this blubber on your data sheet.

Record your estimates for methods #1 and #2 on the dot plots provided on the whiteboard. Record the class's data on your data sheet.

Method #3

Choose a representative sample of 10 JellyBlubbers. Record your choice on your data sheet. Use the table of lengths to calculate the average (mean) length of the JellyBlubbers. Record your average on your data sheet and on the whiteboard. Be sure to complete the dot plot for the class's combined data.

As nice as all of the methods have been, **NONE** of them are truly random.

In a **simple random sampling**, all objects are equally likely to occur. We need to take the "human element" out of our experiment. We cannot rely on our eyes or minds to create something that is truly random. Statisticians use random number lists or programs to select the objects they need.

Method #4

Use a random number table (or calculator) to select 10 numbers from 1 to 100. Record these numbers on your data sheet. Then record the length of the corresponding JellyBlubbers. Calculate the average (mean) length of the JellyBlubbers on your data sheet and on the whiteboard.

How to generate random integers on Mrs. Call's calculators.

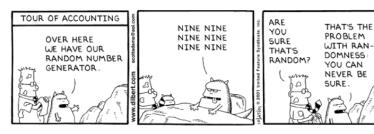
- Turn the calculator on.
- Press the PRB key diagonal to the 2nd key.
- Arrow over to RANDI, and press ENTER.
- Press 1, COMMA, 100, and ).
- Press ENTER to get a random integer.
- Press ENTER again to get another random integer.

How to "seed" a graphing calculator.

- Turn the calculator on.
- Enter in a long number (such as your phone number) and press ENTER.
- Press the STO key next to the number 1.
- Arrow over and select RAND, and press ENTER.
- Press ENTER again.

Class Discussion Questions

- Look at the four different dot plots. How are they similar? How are they different? (Consider location of dots, the spread of dots, dots in groups, dots by themselves, etc).
- From previous years of math, how else could we arrange our data to make easy comparisons?
- The actual average length of a JellyBlubber is 19.4 mm. Which method gave YOU the best estimate? Which method gave the CLASS the best estimate? How accurate was this method? How much spread was there around the correct value?



## Homework

### Random Sample WKS

#### \* Individual Think Time \*



#### What to do if you get stuck...

1. Reread the problem. Did you write it down correctly?
2. Reread your notes. Is there a problem similar that we did together in class?
3. Find a problem similar in your book. Try this one to see if it helps.
4. Skip the problem until the end of Individual Think Time. Then ask an "educated" question of a neighbor or Mrs. Call.

#### Today we're working by...

