

# The JellyBlubber Colony

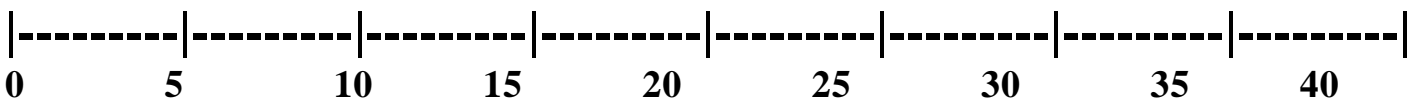
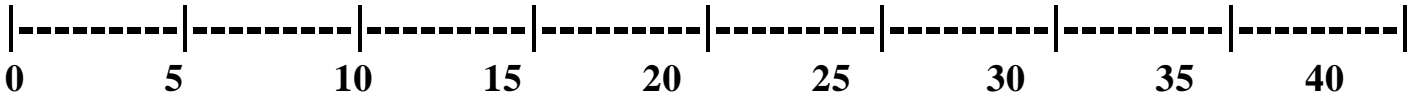
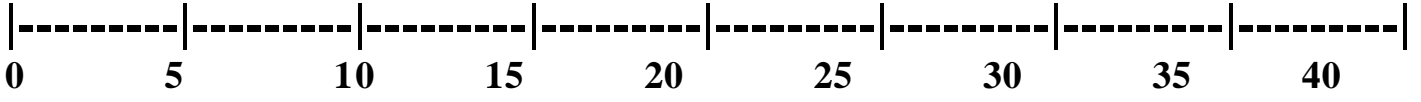
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective:</b>    | <p>This activity introduces the Simple Random Sample (SRS) to students, and shows why this process helps to get an unbiased sample statistic.</p> <p>Relying on our perceptions can often be deceiving. In this exercise students are asked to determine the average length of a jellyblubber (a recently discovered marine species) using a variety of techniques. The student will learn that a Simple Random Sample (SRS) is the most accurate method of determining this parameter, and that intuition can be deceptive.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Materials:</b>    | One 'The JellyBlubber Colony' worksheet and one ruler per student.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Time:</b>         | 1 period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Instructions:</b> | <p>Pass out the worksheet upside down. Ask students to not look at the sheet until they are instructed.</p> <p>Tell the students a story about the recently discovered colony of jellyblubbers, a new marine species, and that our task is to try to determine the average length (measured horizontally) of a blubber.</p> <p>Allow the students to look at the Colony for five seconds. They will then estimate the average length of a blubber. The teacher plots the students' guesses as a dotplot, then leads the entire class in a discussion of the dataset.</p> <p>The student is now told to choose a representative sample of 10 blubbers. Once they have made their choice, they measure the length of each blubber and calculate the mean length. The teacher plots these values on a new dotplot, followed by a whole class discussion of dataset.</p> <p>Now the student takes a SRS of 10 blubbers, as follows. Each blubber is numbered from 1 to 100. They generate 10 random numbers from a random number table in the range 1 to 100. They calculate the mean length of those ten blubbers. The teacher plots these means on a third dotplot. Each dotplot must have the same scale for comparison purposes.</p> <p>The class discusses the difference in the distributions - location, spread, outliers, etc.</p> <p>The actual average length of a blubber is 19.4 cm. Which method gave the best estimate? How accurate was it? How much spread was there around the correct value?</p> |
| <b>Discussion:</b>   | <p>A student decides to generate a random sample by closing her eyes and pointing at the sheet of blubbers randomly. She chooses the blubber to which her finger is closest. Comment on this method of generating a SRS.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Extension:</b>    | <p>A similar exercise can be conducted by putting a number of pieces of string of varying lengths into a bag and having students pull out a 'random sample' of lengths of string. Since a longer piece is more likely to be selected than a shorter</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|  |                                                                                                      |
|--|------------------------------------------------------------------------------------------------------|
|  | one, the sample generated in this fashion is likely to give a biased result - one that is too large. |
|--|------------------------------------------------------------------------------------------------------|

|                    |                                                                            |
|--------------------|----------------------------------------------------------------------------|
| <b>References:</b> | <i>Statistics, Concepts and Controversies, 4th Edition, David S. Moore</i> |
|--------------------|----------------------------------------------------------------------------|

| Blubber # | Length |  | Blubber # | Length |
|-----------|--------|--|-----------|--------|
| 1         | 9      |  | 51        | 35     |
| 2         | 5      |  | 52        | 37     |
| 3         | 9      |  | 53        | 9      |
| 4         | 33     |  | 54        | 25     |
| 5         | 22     |  | 55        | 5      |
| 6         | 5      |  | 56        | 10     |
| 7         | 10     |  | 57        | 9      |
| 8         | 40     |  | 58        | 45     |
| 9         | 20     |  | 59        | 40     |
| 10        | 10     |  | 60        | 8      |
| 11        | 12     |  | 61        | 20     |
| 12        | 5      |  | 62        | 25     |
| 13        | 8      |  | 63        | 10     |
| 14        | 41     |  | 64        | 8      |
| 15        | 5      |  | 65        | 37     |
| 16        | 32     |  | 66        | 8      |
| 17        | 5      |  | 67        | 20     |
| 18        | 10     |  | 68        | 13     |
| 19        | 21     |  | 69        | 34     |
| 20        | 20     |  | 70        | 42     |
| 21        | 34     |  | 71        | 40     |
| 22        | 5      |  | 72        | 40     |
| 23        | 32     |  | 73        | 40     |
| 24        | 5      |  | 74        | 30     |
| 25        | 9      |  | 75        | 20     |
| 26        | 40     |  | 76        | 7      |
| 27        | 5      |  | 77        | 5      |
| 28        | 49     |  | 78        | 25     |
| 29        | 9      |  | 79        | 17     |
| 30        | 41     |  | 80        | 8      |
| 31        | 5      |  | 81        | 8      |
| 32        | 20     |  | 82        | 5      |
| 33        | 43     |  | 83        | 13     |
| 34        | 7      |  | 84        | 42     |
| 35        | 20     |  | 85        | 10     |
| 36        | 10     |  | 86        | 5      |
| 37        | 5      |  | 87        | 10     |
| 38        | 14     |  | 88        | 27     |
| 39        | 15     |  | 89        | 30     |
| 40        | 10     |  | 90        | 10     |
| 41        | 41     |  | 91        | 42     |
| 42        | 5      |  | 92        | 6      |
| 43        | 17     |  | 93        | 10     |
| 44        | 15     |  | 94        | 25     |
| 45        | 40     |  | 95        | 7      |
| 46        | 5      |  | 96        | 40     |
| 47        | 30     |  | 97        | 8      |
| 48        | 8      |  | 98        | 5      |
| 49        | 5      |  | 99        | 40     |
| 50        | 40     |  | 100       | 20     |

# *The Jelly Blubber Colony*



The JellyBlubber Colony

