**Do Skittles or M&Ms have more orange candies?**

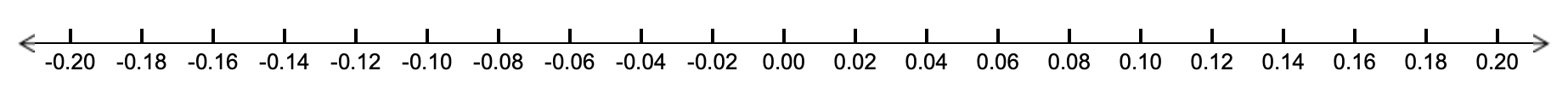


Mr. Wilcox believes that Skittles have a higher proportion of orange candies than M&Ms, while Mrs. Gallas believes the opposite. Who is correct?

1. Take an SRS of 50 Skittles and an SRS of 50 M&Ms. Calculate the proportion of orange candies in each sample and find the difference between proportions (Skittles – M&Ms).

Skittles:\_\_\_\_\_\_\_ M&Ms:\_\_\_\_\_\_\_ Difference (Skittles – M&Ms):\_\_\_\_\_\_\_

1. Write the difference on a sticker dot and place on the dot plot at the board. Copy the class dot plot below.



Difference between proportions (Skittles – M&Ms)

1. What does each dot represent?
2. For the dotplot above, make a prediction about the following:

Shape:

Center (mean):

Variability (SD):

A Google search reveals that 21.6% of Skittles are orange and 20% of M&Ms are orange.

1. Describe the sampling distribution of the sample proportion of orange for Skittles (*X*) and the sampling distribution of the sample proportion of orange for M&Ms (*Y*) for samples of size 50.

|  |  |  |
| --- | --- | --- |
|  | Skittles (*X*) | M&Ms (*Y*) |
| Shape: |  |  |
| Mean: |  |  |
| SD: |  |  |

1. Describe the sampling distribution of the difference between proportions of orange Skittles and M&Ms (*X – Y*).

Shape:

Mean of difference between proportions:

Standard deviation of the difference between proportions:



1. Mr. Wilcox and Mrs. Gallas calculated a difference between proportions of 0.08 from their samples. Calculate the probability of getting this difference in proportions or higher.

The Sampling Distribution of

Important ideas:

Check Your Understanding

At Westville High School there are 315 seniors and 389 juniors. 65% of the seniors have parking passes and 42% of the juniors have parking passes. The statistics teacher selects a SRS of 30 seniors and a separate SRS of 30 juniors. Let be the difference in the sample proportions of seniors and juniors that have parking passes.

1. What is the shape of the sampling distribution of ? Why?
2. Find the mean of the sampling distribution.
3. Calculate and interpret the standard deviation of the sampling distribution.
4. What is the probability that the difference in sample proportions (senior – junior) of students with parking passes is greater than 30%?