

What Does the Normal Distribution Sound Like?

Utah Secondary Mathematics Core Curriculum Standards

Displaying data, using graphical representations and numerical summaries to answer questions and interpreting data, computing and comparing range, understanding the normal curve

GAISE Guidelines for Assessment and Instruction in Statistics Education

Level B Understanding – formulate questions, collect data, analyze data, and interpret the results

Teacher generated question – What does a normal distribution look like? What does it sound like?

Student generated questions – What does the rate of popping look like when graphed? How does this compare to a normal distribution?

Learning Outcomes

- Students become interested in statistics
- Students create and conduct a statistical investigation
- Students are introduced to the concept of the normal distribution

Specific Skills

- Students chart results
- Students analyze results
- Students draw a normal curve

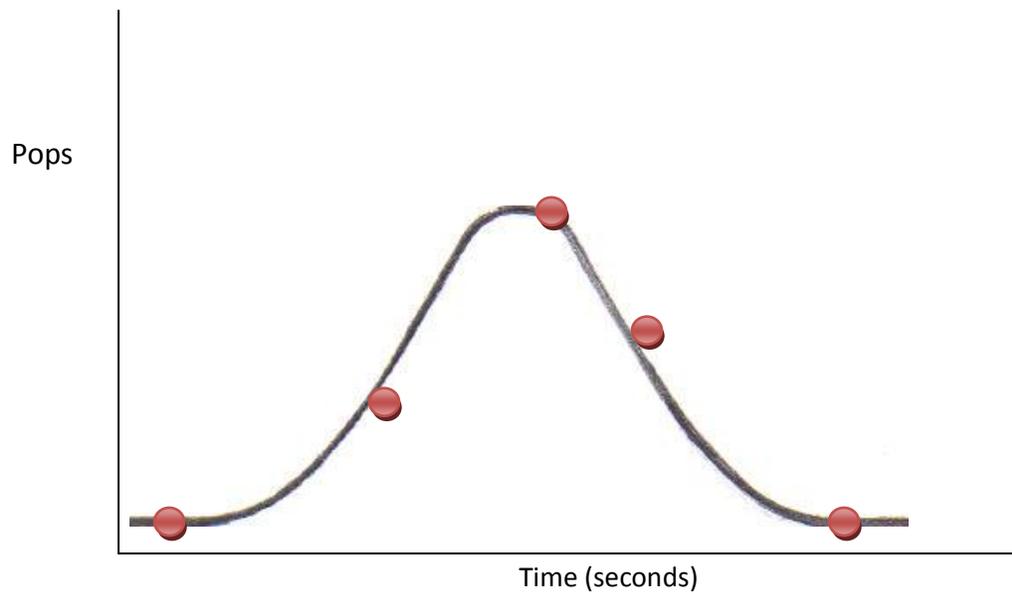
Materials Needed

- Microwave oven
- Three bags of microwave popcorn
- Wall clock

Directions

Ask the students what normal distribution looks like. Draw a normal distribution as shown on the following page on the board. Ask the students what a normal distribution might sound like. Select five volunteers and have them pick a dot on the curve. Start popping a bag of popcorn and tell the students to listen to the sound of the popping of the popcorn while tracing the rate of popping along the normal curve. Ask them to estimate when the distribution of the popping reaches the designated points on the curve and to record the time that has passed. Repeat the activity two more times with different volunteers. Have the students discuss the results and then let the students “taste the normal distribution”. Compare the times estimated for each point. Show examples of other processes that produce a normal distribution.

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Prompt the students to generate and answer data analysis questions.

What variable are we listening to? (Number of pops per time interval)

How does the value of the variable change over time?

What other processes can you think of that have a normal distribution?