

Normal Distribution & Empirical Rule

You have just introduced your class to a normal distribution and the 68-95-99.7 rule. Use the following activity with your class to allow them to demonstrate their understanding of the concept. This activity works best if your class has 20 students or more.

1. Have students measure their height in cm.
2. Place a strip of masking tape down the center of your room or a hallway and ask the students to line up on the line so that their heights form a normal distribution as you look at them. (If your chalkboard is big enough you can have the students do this in front of the chalkboard and mark their heights on the board and outline the distribution.)
3. Instruct students to write their heights on the piece of masking tape where they are standing. Read off the heights to the class and see if they agree they have the best possible line up. It may take a few tries so be sure to write heights in pencil. (The best line up is to have the tallest in the middle, next two tallest on each side of the tallest, etc.)
4. Next have the students stand on the tape where their height would be in terms of the normal distribution. Instruct students to write their height on the masking tape, you may wish to have two strips of masking tape on the floor or use one wide strip of tape. If you use tape on the floor be sure to identify which end of the tape is positive and which is negative. (The line up is now shortest to tallest.)
5. Enter the student's heights in your calculator and find the mean and standard deviation. Draw the normal distribution on the board marking the mean and ± 1 , ± 2 , and ± 3 standard deviations.
6. Find the number of students that would comprise 68%, 95% and 99.7% of the total class.
7. Students can now look and see if 68% of the students in the class have a height within 1 standard deviation of the mean, 95% within 2 standard deviations and 99.7% within 3 standard deviations.

This activity usually takes 45 to 50 minutes.