READY

Topic: Thinking about the Law of Large Numbers

1. You and your friend are rolling one die over and over again. After 6 rolls, your friend has rolled four fives. Are you surprised by these results?   Explain

2. After rolling the die 50 times, you know notice that you rolled a total of 20 fives. Are you surprised now?   Explain.

3. You survey 100 people in your school and ask them if they feel your school has adequate parking. Only 30% of the sample feels the school has enough parking. If you have 728 students total in your school, how many would you expect out of all the student body that felt there was enough parking?

SET

Topic: Applying properties of normal distribution

4. The population of NBA players is *Normally distributed* with a mean of 6'7" and a standard deviation of 3.9 inches. (Wikepedia) Greg is considered unusually tall for his high school at 6' 3".

   a.   What percent of NBA players are taller than Greg?

   b.   What percent are shorter?

   c.   How tall would Greg have to be in order to be in the top 2.5% of NBA player heights?

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5. The average height of boys at Greg's school is 5'9" with a standard deviation of 2 ".
   If we assume the population is normally distributed,

   d. What percent of students in the school are shorter than Greg?

   e. What percent of students are between 5'5" and 5' 11"?

6. Jordan is drinking a cup of hot chocolate. From previous research, he knows that it takes an average time of 10 minutes for the hot chocolate to reach a temperature where his tongue will not burn. The time it takes the chocolate to cool varies Normally with a standard deviation of 2 minutes.

   a. How long should he wait to drink his hot chocolate if he wants to be 84% sure that he won't burn himself?

   b. If he waits 8 minutes, what percent of the time will he burn his tongue?

GO
Topic: Applying the properties of logarithms

Use the properties of logarithms to expand the expression as a sum or difference and/or constant multiple of logarithms. (Assume all variables are positive.)

7. $\log_2 3x$

8. $\log_x \frac{5}{7}$

9. $\ln \sqrt[3]{x}$

10. $\log \frac{2x^2 y^4}{3z^2}$

11. $\log_3 \frac{16x^2 - 36}{x^2}$

12. $\log \frac{x^2 + 12x + 20}{5}$

13. $\log_3 27x^7$

14. $\log 10^5 \sqrt{y}$

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