1. You make widgets. You want to sell your widgets at the nearby widget store, since this would potentially increase your sales. However, you would have to pay a transportation cost every day to send you widgets over to the store. You decide to run some calculations to see if you would be at risk of losing money due to the transportation costs.
You know that 5 other widget companies sell widgets at that store, so you would be the 6th. Assuming a customer is equally likely to select any of the widgets, what is the probability they will select and purchase your widget? Write your answer as a probability (not a percent) rounded to 4 decimals.

`1 / 1 point`

0.1667

⊘ Correct
1/6 = 0.1667

2. The widget store owner tells you that 200 customers arrive and purchase a widget from the store each day. Assuming you must sell 30 of your widgets to cover the transportation costs, and given the probability you calculated in question 1, use a binomial distribution to estimate the probability of <u>at least</u> covering the transportation costs (that is, the probability of selling <u>at least</u> 30 widgets). Write your answer as a probability (not a percent) rounded to 4 decimals.

`1 / 1 point`

0.7638

⊘ Correct

3. How many minimum number of people would have to visit the store to give you at least a 0.95 probability of covering the transportation costs?
HINT: Use the BINOM.DIST function trying out various values for "n", the number of trials.

`1 / 1 point`

232

⊘ Correct

4. The widget store manager points out that not all widget brands get equal purchase rates. A brand on premium shelf space has a 0.28 probability of being selected by each customer. He is willing to give you premium shelf space at the front of the store for a small fee. The additional fee, plus the original transportation costs, would raise the minimum number of widgets you would have to sell to 40 (to cover transportation costs and additional fee).
Assuming 200 customers come into the store, use a binomial distribution to estimate the probability of at least covering the transportation costs and additional fee. Write your answer as a probability (not a percent) rounded to 4 decimals.

`1 / 1 point`

0.9963

⊘ Correct

5. The widget store manager reminds you that while the average number of people that show up each day is 200, the actual number varies. He tells you that the customers that show up each day can be modeled with a Poisson distribution where lambda = 200.
What is the probability that at least 200 customers arrive (that is, either 200 or more than 200 customers arrive)? Write your answer as a probability (not a percent) rounded to 4 decimals.

`1 / 1 point`

0.5094

⊘ Correct

6. How many minimum number of people would have to visit the store to give you at least a 0.95 probability of covering the transportation costs and the additional fee? Use as 0.28 the probability of a widget being selected by a person.
HINT: You need to sell at least 40 widgets to cover transportation cost and the additional fee. So the number of "successes" need to be greater than equal to 40. The probability of "success" in each trial is 0.28. Now use the BINOM.DIST function trying out various values for "n", the number of trials.

`1 / 1 point`

176

⊘ Correct

7. You are curious about the accuracy of the estimates that the widget store owner gave you. If you wanted to take a random sample of daily customer arrivals, from which of the following is the population you should sample?

`0 / 1 point`

○ The number of arrivals each day for this widget store and the competing widget store down the street.

○ The number of arrivals each day for all days this specific widget store has been open.

○ The number of arrivals each day for this specific widget over the past month.

◉ A random, representative sample of the number of arrivals each day to this specific widget store.

⊗ Incorrect
See Lesson 2 - Population and Sample data

8. The store owner gives you data on customer arrivals over the last 3 years. You randomly select a sample of daily customer arrivals, and then take the mean of that sample. If you were to repeat this process multiple times, you would expect the distribution of the sample means to be:

`1 / 1 point`

◉ A Normal Distribution

○ A Binomial Distribution

○ A Poisson Distribution

○ The same distribution as the population of interest

⊘ Correct

9. Assuming the widget store owner's original estimates (given in Question 5) are accurate, what would you expect the mean of the distribution above to be?

0 / 1 point

Poisson

⊗ Incorrect
The answer you gave is not a number.