Flipped Classroom Worksheet on Continuous Distributions

1. Explain what each of the terms mean. Then give an example of each.
   1. Continuous Random Variable

* 1. Uniform Distribution

2. If X follows a Uniform distribution on (a,b): X~U(a,b), then write down the formulas for the following:

* 1. The mean of the X distribution

* 1. The Standard Deviation of the X distribution.

1. Explain in words and charts how you would find the following for X~U(a,b).
   1. The height of the rectangle that defines the X distribution.

* 1. The third quartile.

1. Suppose that the time that students spend in the math center is uniformly distributed between 10 and 120 minutes. Be sure to show your uniform distribution charts.
   1. If a randomly selected math lab user is observed find the probability that the student will spend between 30 and 70 minutes in the math lab.
   2. Find the first quartile for the time that students spend in the math lab.
   3. An algebra instructor will be giving extra credit to the students in the top 8% based on how long they spend in the math lab. At least how long must a student spend in the math lab to get the extra credit?
   4. If you know that a student spent at least 45 minutes in the math lab, what is the probability that that student spent less than an hour in the math lab?
   5. If two students are randomly selected, what is the probability that the first one spent longer than 50 minutes in the math lab and the second one spent less than 40 minutes in the math lab?
   6. What is the probability that a student spends exactly 25 minutes in the math lab?
   7. What is the probability that at least twenty of thirty randomly selected students will spend less than 40 minutes in the math lab each?
2. Suppose that the number of ounces of water that people drink from the drinking fountain is uniformly distributed between one and eight ounces and that the number of ounces of water that students use to fill their bottles in the drinking fountain is uniformly distributed between four and sixteen ounces. You watch Thorn take a 2.5 ounce drink out of the drinking fountain and Preston fill his water bottle with five ounces of water before he runs off to class. Whose water usage is more unusually small compared to the rest of the people who use the fountain for the corresponding water usage?