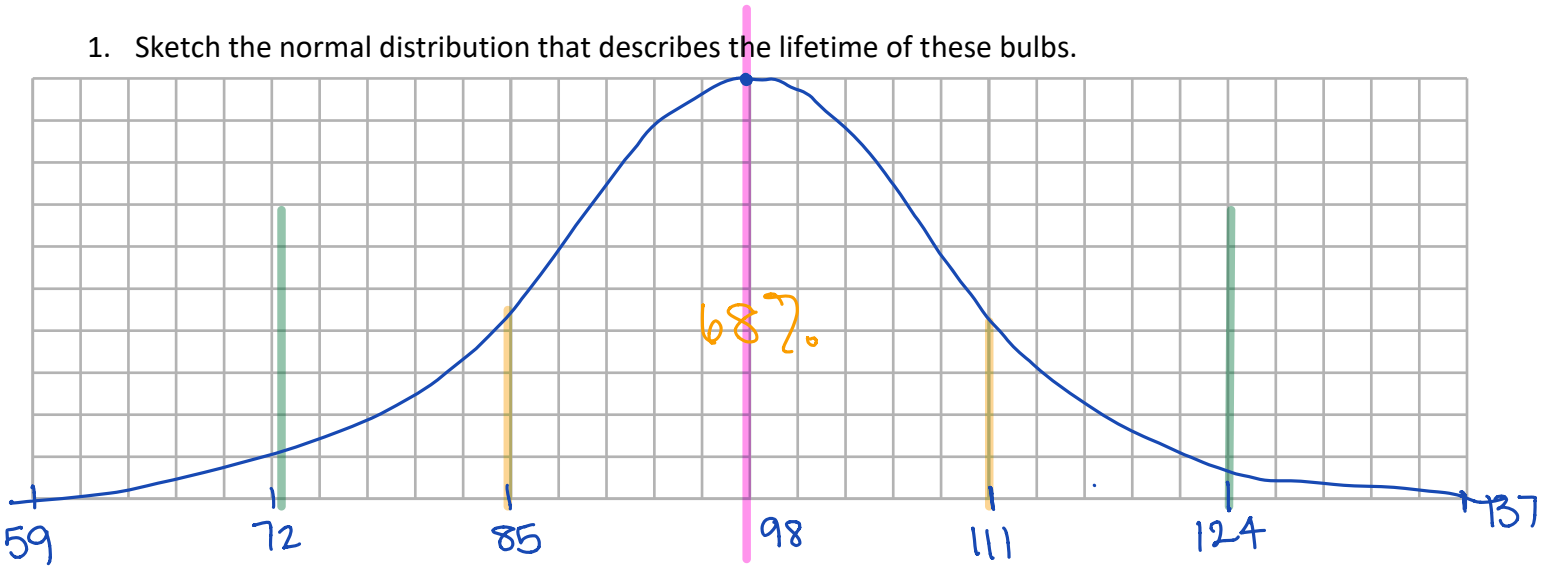
Name: _____ Date: _____

Warmup The Bright Light Company tested a new line of light bulbs and found that their lifetimes were normally distributed with a mean lifetime of 98 hours and a standard deviation of 13 hours.

1. Sketch the normal distribution that describes the lifetime of these bulbs.



2. What percentage of these bulbs last between

a. 85 and 111 hours? 68%

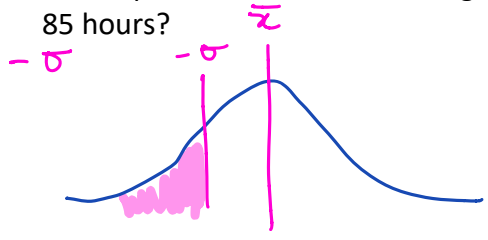
b. 72 and 124 hours? 95%

c. 72 and 98 hours? 47.5%

d. More than 124 hours? $\frac{100-95}{2} = 2.5\%$

59 -3σ
72 -2σ
85 $-\sigma$
98 $\bar{x}$
111 $+\sigma$
124 $+2\sigma$
137 $+3\sigma$

3. In a shipment of 1200 of these light bulbs, how many would you expect to have a lifetime of less than 85 hours?

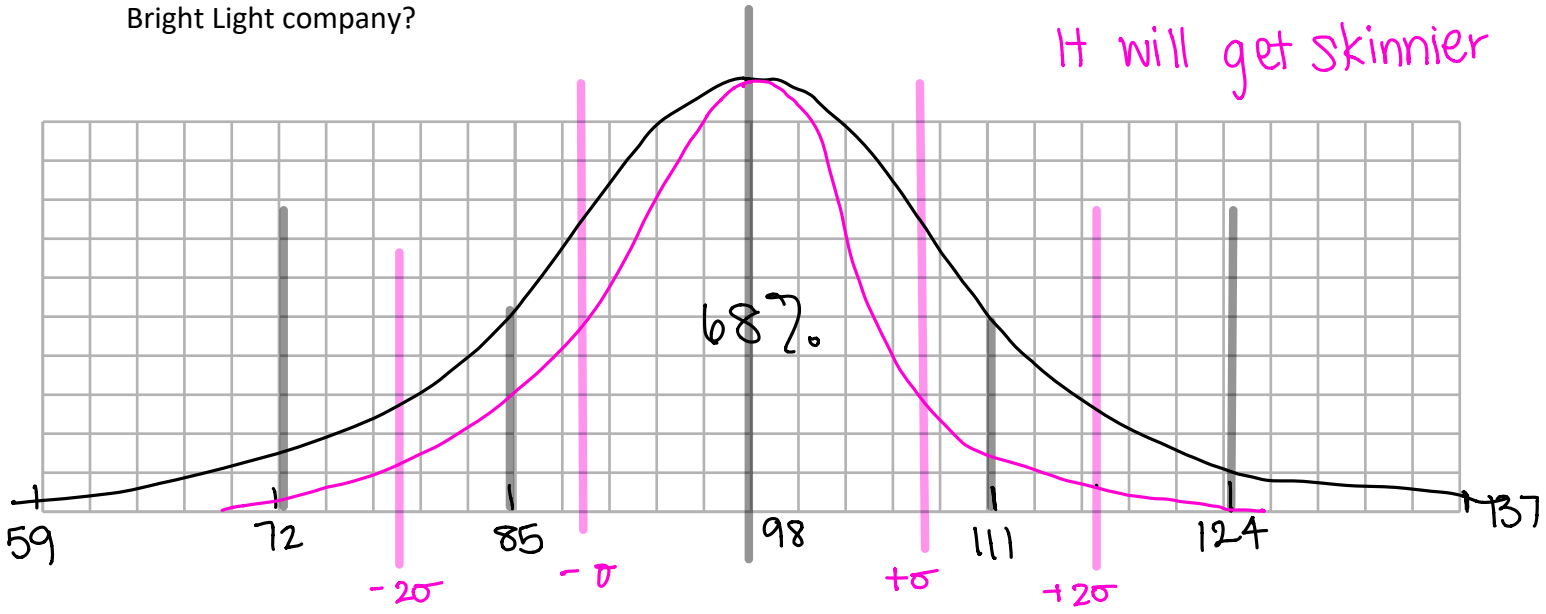


$\frac{100-68}{2} = 16\%$

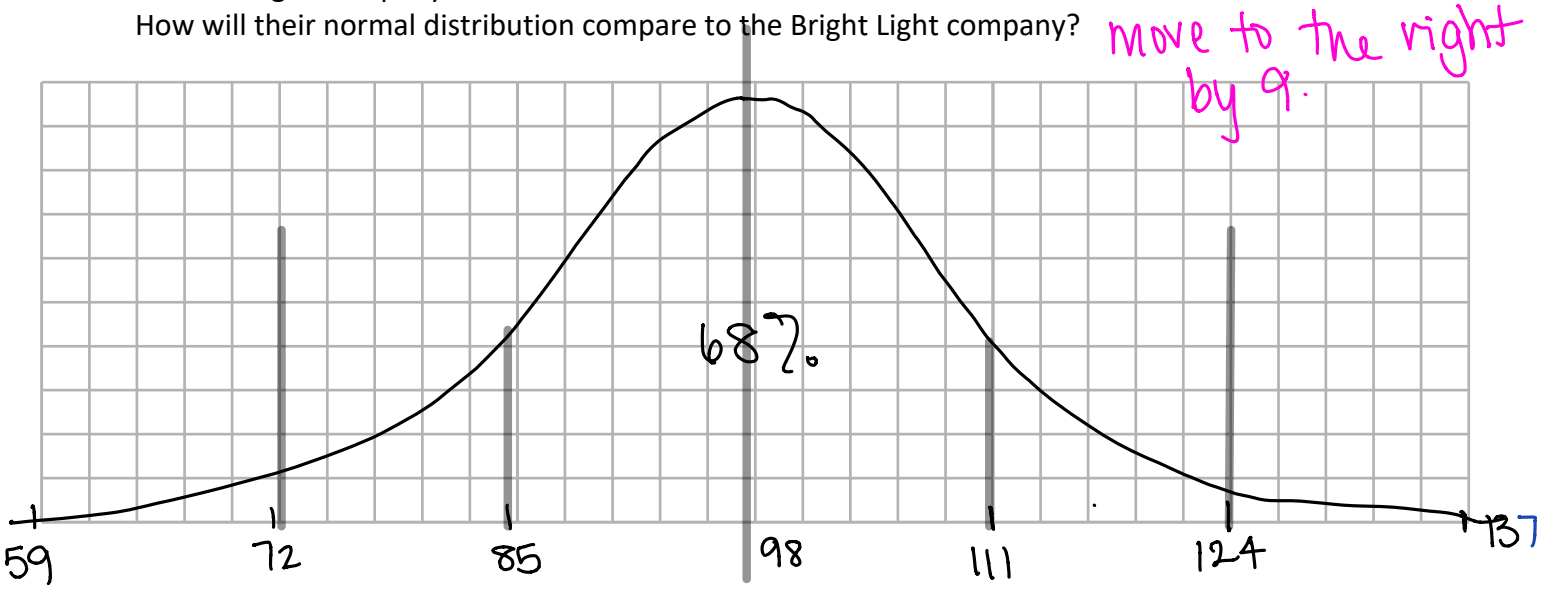
4. Will more light bulbs last more than 98 hours or less than 98 hours? Why?

less ||||
same |||

5. The Brilliant Light Company makes a similar line of light bulbs that also have a mean life of 98 hours. The standard deviation of their bulbs is 9 hours. How will their normal distribution compare to the Bright Light company?



6. The Dim Light Company claims to have bulbs that last 107 hours with a standard deviation of 13 hours. How will their normal distribution compare to the Bright Light company?



Knowing that data is normally distributed is useful. How can we establish this?

- big data sets
- bigger the better
- check the σ against your data.

Name: _____ Date: _____

Assignment

MMM Cereal is packaged in boxes that are labeled 200 gr. 50 boxes of cereal were randomly selected from the assembly line and the actual amount of cereal in the boxes was measured. The results were as follows (all weights in grams):

193	193	207	190	186	224	207	177	205	210
195	186	195	195	199	194	198	219	199	220
181	221	209	220	186	172	190	172	226	179
187	197	176	191	202	227	191	165	171	188
228	229	208	211	199	211	210	209	209	207

a. Are these data approximately normally distributed?

Class	163 - 167	168 - 172	173 - 177	178 - 182	183 - 187	188 - 192	193 - 197	198 - 202	203 - 207	208 - 212	213 - 217	218 - 222	223 - 227	228 - 232
Tally														
Frequency														

b. The mean of this data was calculated as 199.28 gr with a standard deviation of 16.2 gr. Does this help us make any conclusions about whether the data is normally distributed?