Two Sample Power

Question 1

You are conducting a study on employee performance in terms of a continuous productivity measure and type of office. Employees are randomly assigned cubicles vs. open office café seating. In the company, the current employee productivity rating is 100.5 with a sd = 10.

1. If the critical effect is 10, how many employees are needed to participate for a power of 0.2, 0.5, 0.7 and 0.8?
2. Redo this analysis with a Type I error of $\alpha = 0.01$
3. Plot a graph for both 1 and 2.
4. The company can only place 20 individuals in each setting. Is there enough power to determine a difference?

Question 2

You are interested in looking at conversions for a website (for a small technical firm), and wish to compare the current design to a new design. After one week you have the following data:

	No Conversion	Conversion
Old Website	8	1
New Website	3	5

Assuming the proportions from above

1. Using test=fisher, what is the current power?
2. Using test=pchi, what is the power?
3. Using test=lri, what is the power?
4. Why is there a discrepancy between the methods.

What are your thoughts with the stamen most people make: for small sample sizes Fisher’s exact test is preferable?