



Can Joy Detect Parkinson's Disease?



Joy Milne participated in a study where she was given 12 t-shirts, half of which were worn by Parkinson's patients, and half of which were worn by a control group. Joy correctly identified 11 out of the 12 shirts. Does this provide *convincing* evidence that Joy can smell Parkinson's?

1. Why would it be important to know that someone can smell Parkinson's disease?
2. How many correct decisions would you expect Joy to get out of 12 if she really couldn't smell Parkinson's (she was just guessing)? Explain.
3. Do we have some evidence that Joy can smell Parkinson's? Why?
4. How many correct decisions out of 12 would it take to *convince* you that Joy really could smell Parkinson's?



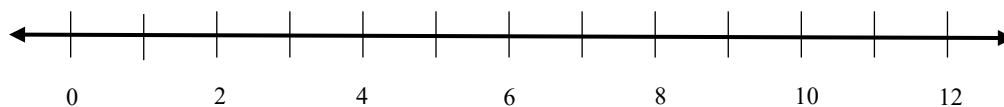
Let's investigate whether Joy's result could have happened purely by chance, just by guessing. Working in pairs, you will simulate this study. One person will be the experimenter and one person will be Joy and then you will switch.

Important: the experimenter should not reveal the truth for each shirt. They should simply record whether the guess was correct or incorrect.

4. As the experimenter, keep track of the results:

Guess	Tally	Frequency
Correct		
Incorrect		

5. Count up the number of correct decisions. Write the number on a sticker dot and bring it to the poster at the front of the room. Copy the dotplot here.



6. What does each dot represent?

7. Based on the class data, what percent of the simulations resulted in 11 or more correct identifications?

8. Based on these results, do we have convincing evidence that Joy can smell Parkinson's? Explain.