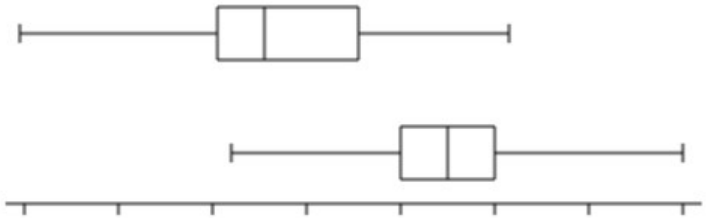
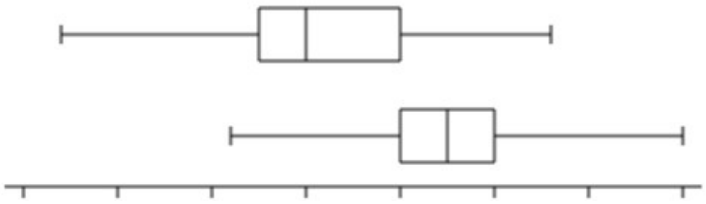
Making a Call

The first thing you should check is "do the boxes overlap?" The boxes are the square bits in the middle of the graph that go from the lower quartile to the upper quartile.

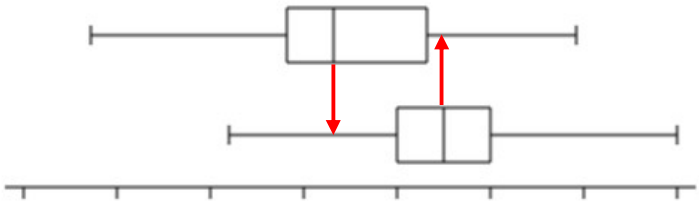
If they **don't overlap**, like this, then you can say in the population there is a difference.



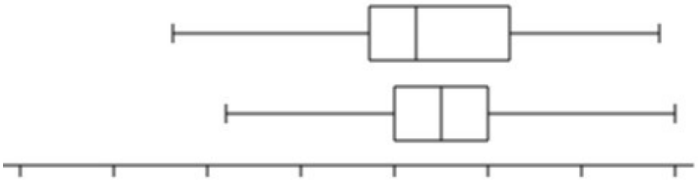
If they are just touching, like this, then you can also say in the population there is a difference, as they still **don't overlap**.



If they **do overlap** the next thing we are looking for is **medians outside the other box**, like this, the median for the top box is below the left of the bottom box, and the median of the bottom box is higher than the right of the top box. If this is the case we can still say there is a difference in the population.
(Teachers Note: this should be used only if there is between 20 and 40 in each group)



Otherwise, we cannot say there is a difference in the population. This doesn't mean they are the same, it just means we don't have enough information to make a call.



PPDAC Cycle 3 – Boys' and Girls' Heights

Teachers note: you could do this with students aged 12/13/14 instead of boys / girls if that works better in your teaching environment.

Problem

I wonder if Year 9 boys or Year 9 girls tend to be taller? I am going to use the students in our class to try and work this out.

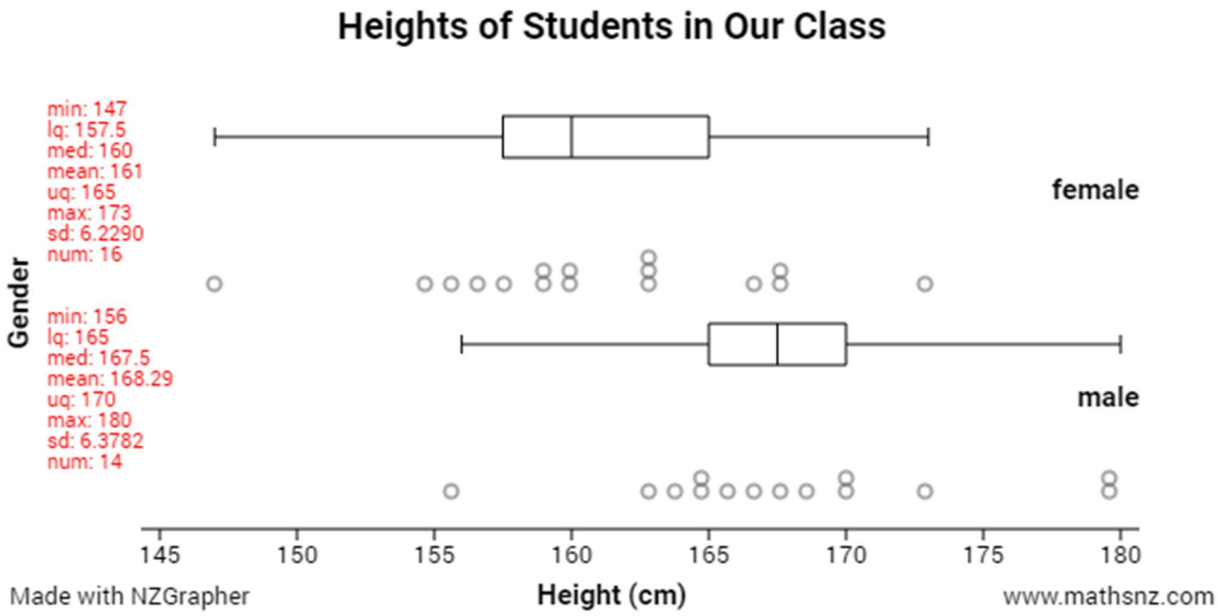
Plan

We are going to record the height of students in my class by getting them to take their shoes off, get them to stand against a wall with a tape measure on it and have someone else put a book on their head and record their height in centimetres.

Data

Boys Heights (cm): 165, 170, 156, 169, 166, 163, 170, 167, 165, 180, 168, 173, 164, 180
Girls Heights (cm): 159, 163, 163, 173, 155, 167, 168, 156, 160, 163, 160, 157, 158, 159, 147, 168

Analysis



I notice the males median height is 167.5cm whereas the females median height is only 160cm. This means the males median height is 7.5cm bigger than the females median height.

I notice the females heights are more spread out than the males heights. I know this because box is much wider for the females than for the males. This means the middle 50% is more spread out for the females than for the males.

I notice there is one female that is much shorter than the other females. I can see this as there is one point further to the left than the others. Looking at the data, she is only 12 years old, so it may be because she hasn't grown as much yet.

Conclusion

Overall I can say Year 9 males tend to be taller than Year 9 females as the boxes do not overlap.