STATISTICAL INVESTIGATIONS PRE-TEST   **Name: _____**
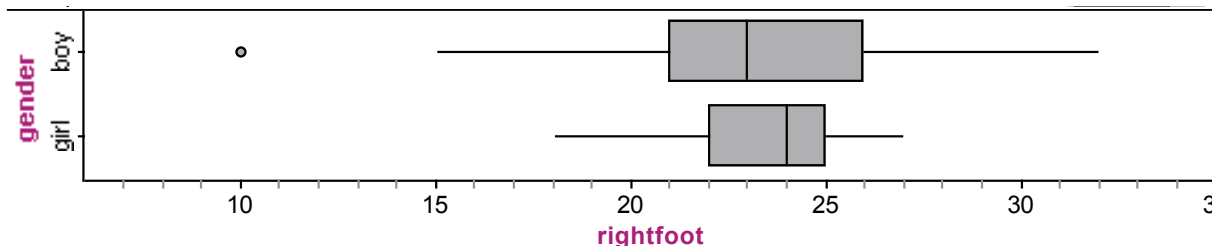
TASK A

Emma is interested in comparing the right foot lengths (in cm) of Year 8 NZ boys and girls. She takes a *random sample* of 30 Year 8 NZ boys and a *random sample* of 30 Year 8 NZ girls. She can find out their right foot lengths without shoes on in cm.

She plots the right foot lengths from her samples correctly.

Emma's graph

Emma looks at her graph and claims that the right foot lengths of Year 8 NZ girls tend to be bigger than the right foot lengths of Year 8 NZ boys.

1. Would you make the same claim as Emma? Why?

Emma is interested in comparing the heights (in cm) of Year 11 NZ boys and girls. She takes a *random sample* of 30 Year 11 NZ boys and a *random sample* of 30 Year 11 NZ girls. She can find out their height without shoes on in cm.

She plots the heights from her samples correctly.

Emma's graph
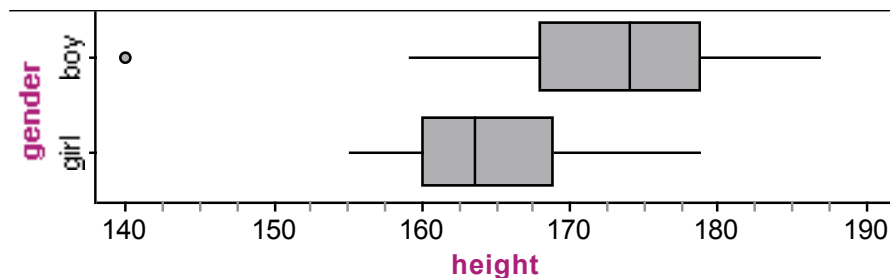
Emma looks at her graph and claims that the heights of Year 11 NZ boys tend to be greater than the heights of Year 11 NZ girls.
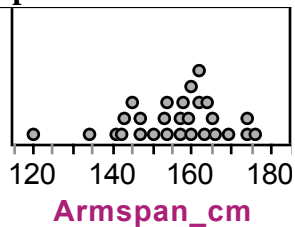
2. Would you make the same claim as Emma? Why?

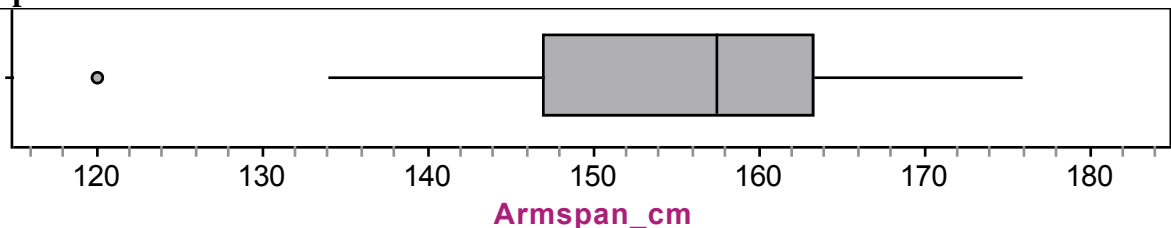**STATISTICAL INVESTIGATIONS PRE-TEST**   **Name: _____**

TASK B

Emma takes a *random sample* of 30 Year 8 NZ students. She can find out their arm spans in cm.

She plots the arm spans from her sample correctly.

Graph 1

Armspan_cm

Graph 2

Armspan_cm

1. Use Emma's dot plot above (Graph 1) to:

   i.   sketch the shape of the arm span distribution on the axes below.
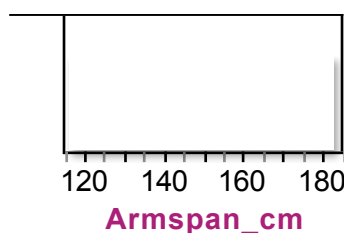
   Armspan_cm

   ii   describe the shape of the arm span distribution.

2. Using Emma's graphs above, which **one** of the following best describes the spread of the arm span distribution:

   i

          A. The arm spans are roughly spread between 120 cm and 176 cm.

          B. The spread of the arm spans is highest around 160 cm.

          C. The middle 50% of arm spans are roughly spread between 147 cm and 164 cm.

   ii   Explain your choice.

STATISTICAL INVESTIGATIONS PRE-TEST   Name: _____

TASK C

Background: It was reported in the newspaper that NZ school students were not getting enough sleep because they were sending text messages all night. We will check this claim in this investigation.

Problem: Do the hours of sleep per night for NZ Year 5 to Year 10 students who own cell phones tend to be less than the hours of sleep per night for NZ Year 5 to Year 10 students who do not own cell phones?
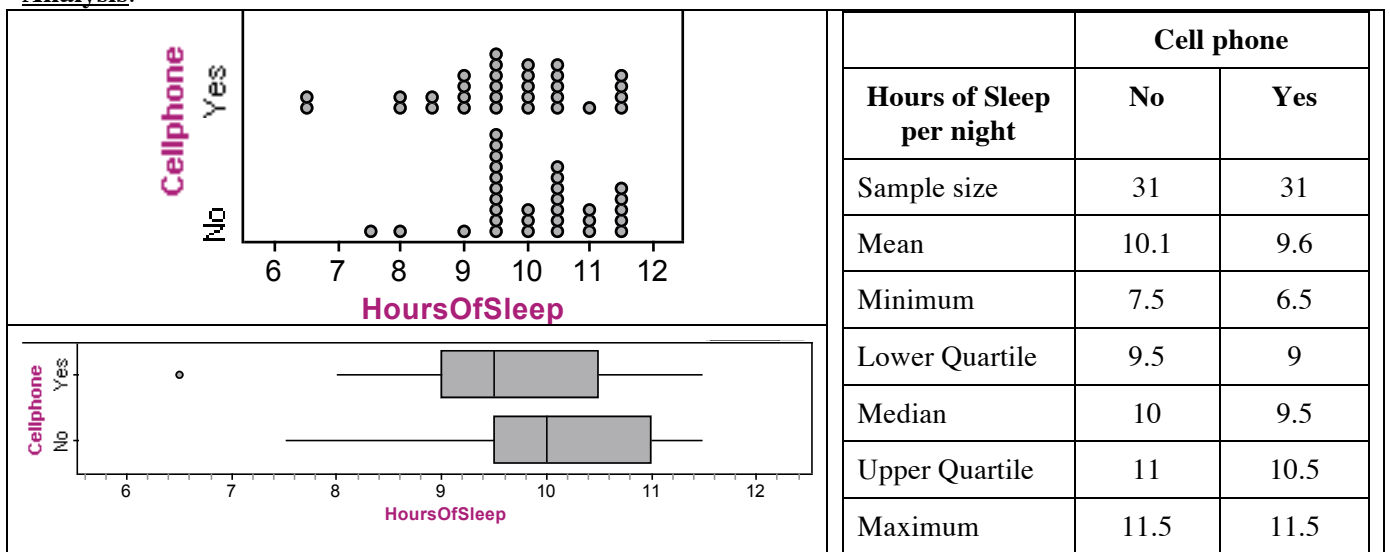
Plan: Assume that the 2005 NZ Census At School database is representative of the NZ Year 5 to Year 10 population. A random sample of 31 cell phone owners and a random sample of 31 non-cell phone owners are taken from the database.
The survey questions asked to get these data were:
   • Do you own a cell phone: yes/no
   • How many hours did you sleep last night? Answer to the nearest half hour.

Data: Data from the 31 cell phone owners and the 31 non-cell phone owners are used in this analysis.

Analysis:

	Cell phone	
Hours of Sleep per night	**No**	**Yes**
Sample size	31	31
Mean	10.1	9.6
Minimum	7.5	6.5
Lower Quartile	9.5	9
Median	10	9.5
Upper Quartile	11	10.5
Maximum	11.5	11.5

Make statements about what you notice and think about as you look at the graphs/statistics. You should make statements under the headings given.

1. **Middle 50%:**
   a. **Shift:** From the samples I notice…

   b. **Overlap:** From the samples I notice …

2. **Anything unusual or interesting:**
   a. From the samples I notice…

   b. I worry or think that …

3. Shape (Describe the shape of each sample distribution, compare the shapes of the two sample distributions):
   a.   From the samples I notice…

   b.   Back in the two populations I wonder if …

4. Spread (Describe the spread of each sample distribution, compare the spreads of the two sample distributions)**:**
   a.   From the samples I notice…

   b.   Back in the two populations I wonder if …

5. Conclusion: Write a conclusion using the headings below.
   a.   Answer the problem:
        "Do the hours of sleep per night for NZ Year 5 to Year 10 students who own cell phones tend to be less than the hours of sleep per night for NZ Year 5 to Year 10 students who do not own cell phones?"

   I am able/unable to make a claim that …

   b.   Explain why you have made this conclusion.

   c.   Does this conclusion make sense with what you personally know about the hours of sleep per night for Year 5 to 10 students? Why?

   d.   Is there anything else you could investigate that is related to this problem? Why?

Thank you for completing these tasks.