STATISTICAL INVESTIGATIONS POST-TEST   Name: _____
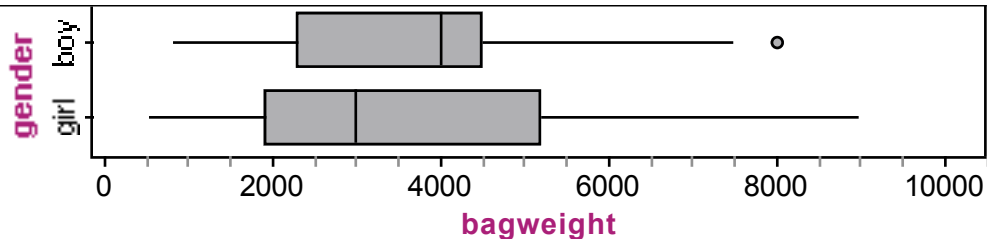
TASK A

Matt is interested in comparing the schoolbag weights (in g) of Year 11 NZ boys and girls. He takes a *random sample* of 30 Year 11 NZ boys and a *random sample* of 30 Year 11 NZ girls. He can find out their school bag weights to the nearest 100g.

He plots the weights from his samples correctly.

Matt's graph

Matt looks at his graph and claims that the schoolbag weights of Year 11 NZ boys tend to be heavier than the schoolbag weights of Year 11 NZ girls.

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

Matt is interested in comparing how Year 9 NZ boys and girls rate themselves at dancing. He takes a *random sample* of 30 Year 9 NZ boys and a *random sample* of 30 Year 9 NZ girls. He can find out how good they rate themselves at dancing on a scale of –100 (no good) to +100 (very good).

He plots the results from his samples correctly.

Matt's graph
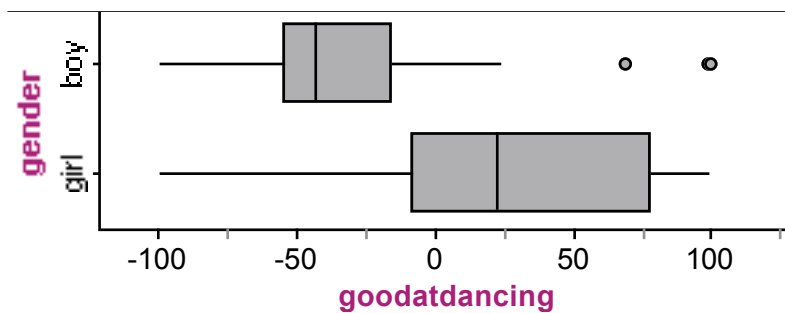
Matt looks at his graph and claims that Year 9 NZ girls tend to rate themselves better at dancing than Year 9 NZ boys.
  2. Would you make the same claim as Matt? Why?

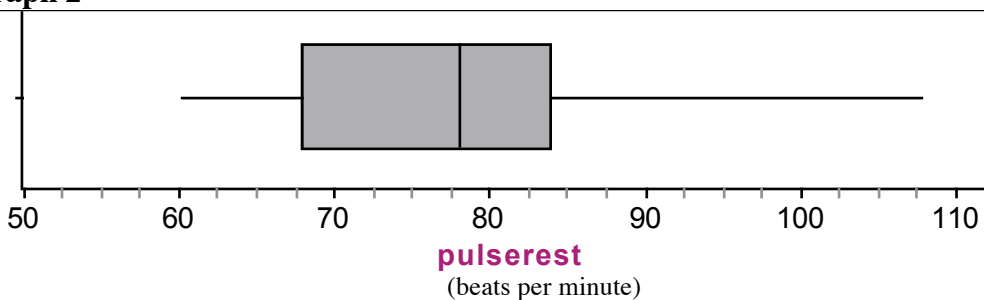**STATISTICAL INVESTIGATIONS POST-TEST**   **Name:** _____

TASK B

Matt takes a *random sample* of 40 Year 13 NZ students. He can find out their resting pulse rates in beats per minute. He plots the resting pulse rates from his sample correctly.
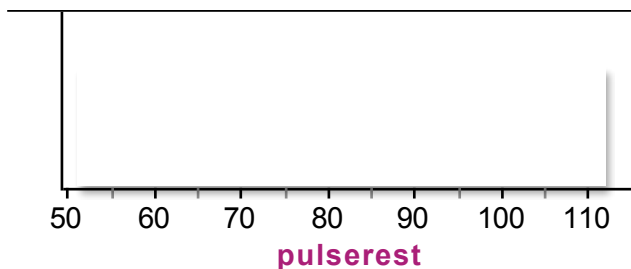
Graph 1

pulserest
(beats per minute)

Graph 2

pulserest
(beats per minute)
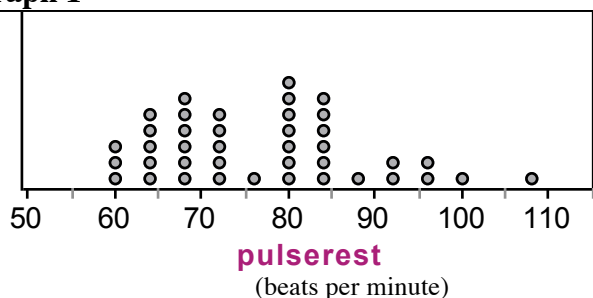
1. Use Matt's dot plot above (Graph 1) to:

   i.   sketch the shape of the resting pulse rate distribution on the axes below.

pulserest

   ii   describe the shape of the resting pulse rate distribution.

2. Using Matt's graphs above, which **one** of the following best describes the spread of the resting pulse rate distribution:

   i

      A. The resting pulse rates are roughly spread between 60 beats/min and 108 beats/min.

      B. The spread of the resting pulse rates is highest around 80 beats/min.

      C. The middle 50% of the resting pulse rates are roughly spread between 68 beats/min and 84 beats/min.

   ii   Explain your choice.

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

TASK C

Background: Many secondary school students experience back pain. Health professionals suspect that heavy schoolbags may contribute to these back pain problems. In New Zealand in 1999, researchers from Massey University conducted a survey by obtaining a sample of Year 9 and Year 12 students in Auckland. A key finding was that schoolbag weights of Year 9 Auckland students tended to be heavier than schoolbag weights of Year 12 Auckland students. We will check this claim in this investigation.

Problem: In 2009, do schoolbag weights of Year 9 Auckland students tend to be heavier than schoolbag weights of Year 12 Auckland students?
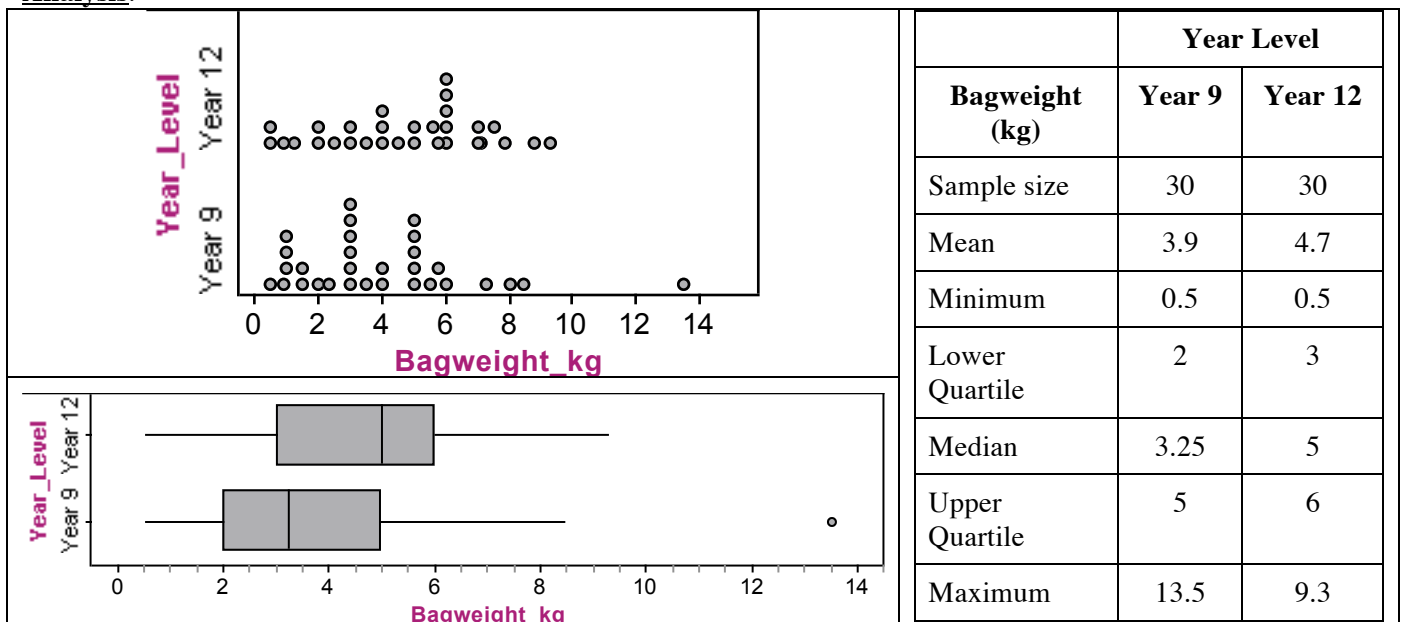
Plan: Assume that the 2009 NZ Census At School database is representative of Auckland Year 9 and Year 12 populations. A random sample of 30 Year 9 Auckland students and a random sample of 30 Year 12 Auckland students are taken from the database.
Survey questions included:
   •   What is the weight of your schoolbag today? Answer to the nearest 100g. (Weigh your bag with all your books and other materials you brought to school today.)

Data: Data from the 30 Year 9 Auckland students and the 30 Year 12 Auckland students are used in this analysis.

Analysis:

Bagweight (kg)	Year Level	
	Year 9	Year 12
Sample size	30	30
Mean	3.9	4.7
Minimum	0.5	0.5
Lower Quartile	2	3
Median	3.25	5
Upper Quartile	5	6
Maximum	13.5	9.3

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:
      "In 2009, do schoolbag weights of Year 9 Auckland students tend to be heavier than schoolbag weights of Year 12 Auckland students?"

      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 schoolbag weights of Year 9 and Year 12 students? Why?

d. Thinking about the Massey University findings about schoolbag weights in 1999 (see **Background** at the start of this task), is there anything else you could investigate? Why?

TASK D (only complete this task if you have finished the other tasks)

1. Describe three main ideas that you have learnt in the statistics unit.

2. Describe the part in the statistics unit that you found interesting. Explain why you found this part interesting.

Thank you for completing these tasks.