NCEA Level 2 Mathematics (Homework)
21. Statistical Inference

Reading

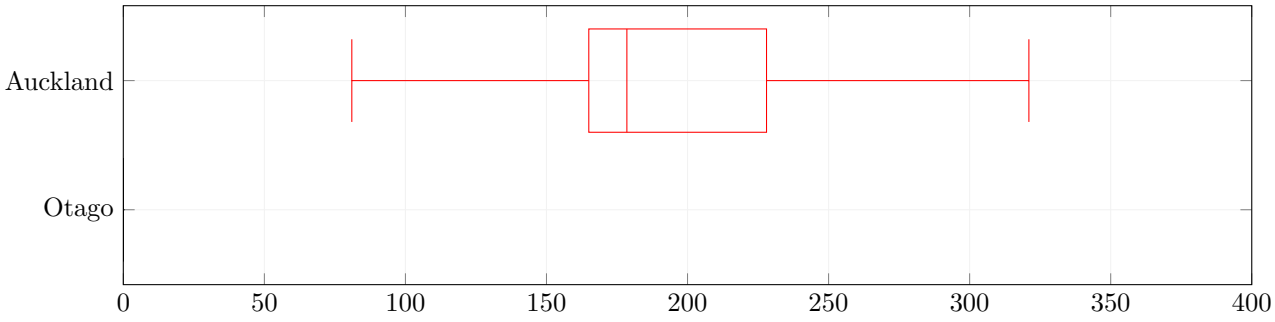
Every year, thousands of New Zealand high school students try to decide which of the eight universities in New Zealand they should attend. One of the tools which they can use to help inform their decision is the idea of a 'university ranking', a list of universities ordered by how 'good' they are according to some set of criteria.

The following table shows the global rankings given by eight different websites for both the University of Auckland and the University of Otago.

	The University of Auckland	**The University of Otago**
topuniversities.com	81	169
CWUR	252	354
Times	165	225
ARWU	175	350
CWTS Leiden	204	267
university-list.net	182	270
4icu	165	*No rank*
RankPro	321	351

Here are some calculated values and a box-and-whisker graph for the University of Auckland data:

	Auckland	**Otago**
Mean ($\bar{x}$)	193.125	
Minimum	81	
Lower quartile	165	
Median	178.5	
Upper quartile	228	
Maximum	321	



Questions

1. Fill in the University of Otago column in the table using the data given, and draw a box-and-whisker graph for it in the space underneath the University of Auckland graph.

2. Write a couple of paragraphs comparing the two graphs (half a page at most) and discussing the pros and cons of university ranking surveys. You might want to discuss the questions below:
   (a) How do you think the ranking websites might have conducted their surveys (who did they talk to and/or what data might they have gathered)? What might the pros and cons of your predicted surveying method be?
   (b) Is one university generally ranked higher than the other?
   (c) Looking at the graphs, can you see any visible skew in the data?
   (d) Do you think that the higher ranked university is necessarily better, or could there be some other reason for its high ranking — in other words, does the ranking of the university actually reflect how 'good' it is, or could there be some other force(s) at play here?