Measures of Position and Outliers

1. According to a paper by Jensen, A. R. and Reynolds, C. R. (1983), the mean IQ of females is 101.41 with a standard deviation of 13.55 and males had a mean IQ of 103.08 with a standard deviation of 14.54. Given:

Bill has an IQ of 104	Sally has an IQ of 104

Which person has a higher IQ relative to their respective sex?

2. The mean of adult male heights is 70 inches with a standard deviation of 3 inches and adult female heights have a mean of 64 inches with a standard deviation of 3 inches. Given:

Goldie Hawn 5'6"	Rob Schneider 5'7"

Who is taller relative to their respective sex?

3. In 2005, the mathematics scores on the ACT test for males was 21.3 with a standard deviation of 5.3 and for females the mean was 20.2 with a standard deviation of 4.8. If Jill scored 21 on the ACT mathematics portion and David scored 21.8 then who scored higher relative to their gender. Are David and Jill's score usual or unusual? Why?

4. If the z score is equal to 1.23, mean is 73 and standard deviation is 10 then what was the original data point?

5. If the z score is equal to 2.01, standard deviation is 5.1, and original data point was 25 then what was the mean?

6. If the z score is equal to -1.5, mean is 82.1, and original data point was 80 then what was the standard deviation?

7. Given the following population data:

2	5	7	13	14	22	28	29	35	41
53	71	82	105	111	123	135	140	140	151
172	183	201	305						

Find the z-score of 135

8. Find the quartiles of the following data:

5	12	31	4	8	91	231	405	72	121
13	51	73	7	2	1	105	203	45	93
100	99	85	3	15	17	25	31	81	23

9. An electronics manufacturer has a production control policy that states that all parts that are not within 2 standard deviations of the mean must be scrapped. The mean of the pin pitch of a circuit chip is 2.54 with a standard deviation of 0.05 (pin pitch is the distance between the conductors to the PCB). Find the range of values that are not scrapped.

10. Given the following numbers:

2	13	14	21	33	45	73	82	91	103
115	116	121	130	147	201	305	311	321	323

Find the percentile of 91

11. Given the following numbers:

5	8	9	11	31	41	57	101	103	201
231	245	251	260	287	288	305	405	512	

Find the percentile of 9

12. Given the following numbers:

    1   8   11   31   32   45   71   81   93   105

    111   157   175   182   185   188   193   194   201

Find the 20th percentile

13. Given the following numbers:

    1   8   11   31   32   45   71   81   93   105

    111   157   175   182   185   188   193   194   201

Find the 31th percentile

14. Given the following numbers:

    5   12   13   17   21   45   47   48   53   105

    110   201   217   301   357   361   392   395   401   405

    417   431   455   501   515

    a) Find the quartiles

    b) Find the interquartile range

    c) Find the semi-interquartile range

    d) Find the midquartile

    e) Find the 10-90 percentile range

15. Given the following population data:

    5   7   13   18   18   19   20   25   32   42

    51   85   87   91   103   104   110   112   153   512

Determine the lower and upper fences. Then determine if there are any outliers