6.4 Comparing Distributions

ALGEBRA

Parallel (Double) Boxplots: plotting two boxplots on the same number line to compare them.

Double (Back to Back) Stemplots: uses one stem with one data set on the left and a different data set on the right.

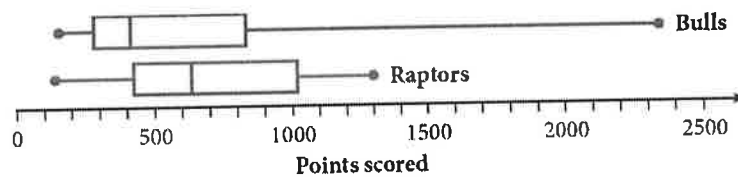To compare distributions, we can use SOCS to help us:

S : _____

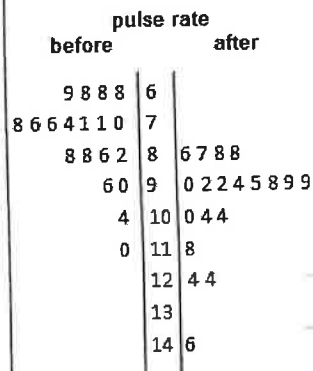O: _____

C: _____

S : _____

Consider the following parallel boxplots comparing the Chicago Bulls and Toronto Raptors from the 1997-1998 season. Compare the two distributions.

S
O
C
S

SMP #3

_____

_____

_____

_____

Compare the pulse rates in bpm of Algebra 1 student before and after taking the 2.5 Mastery Chec[k]

```
        pulse rate
  before        after
    9 8 8 8 | 6 |
8 6 6 4 1 1 0 | 7 |
    8 8 6 2 | 8 | 6 7 8 8
        6 0 | 9 | 0 2 2 4 5 8 9 9
          4 | 10 | 0 4 4
          0 | 11 | 8
            | 12 | 4 4
            | 13 |
            | 14 | 6
```

Key: where 2 | 8 | 6 means
82 bpm before and
86 bpm after

Everyone knows that Bean loves his scooter. Brust wants to know if Bean drives his scooter faster on the way TO WORK, or on the way home FROM work. He decided to record his speed several times over the next month. His results are:

Bean driving TO WORK (km/h)

43	42	44	39	43
45	43	45	42	45
46	44	48	44	47
63	46	48	45	

Bean driving home FROM WORK (km/h)

51	45	44	41	41
48	47	35	40	42
48	47	36	38	43
48	48	37	37	48

Create a double stemplot and parallel boxplots. Use your calculator to help you. Decide which plot display is the best for this data. Then, compare the distributions.

SUMMARY:

Now, summarize your notes here!

PRACTICE

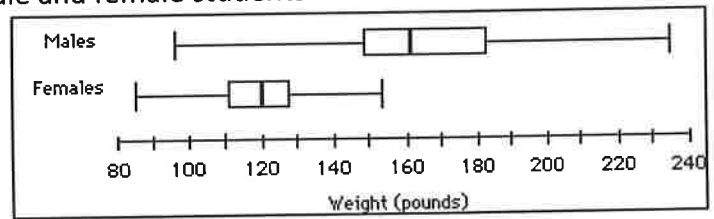1. Create a double stemplot using the two stemplots given:

Chapter 6 Test Scores

Class A

Stem	Leaves
4	9
5	5, 7
6	6, 6, 8
7	2, 8, 8, 8
8	4, 5, 7, 8, 8
9	1, 5, 5
10	0, 0

Class B

Stem	Leaves
4	
5	2, 7
6	2, 5, 8, 8
7	2, 5
8	1, 4, 5, 7, 7
9	0, 1, 1, 5, 5, 5
10	0

Key: 4 | 9 means 49%

2. The following boxplots summarizes weights of the male and female students in a class:
   Circle all of the following which are NOT correct.

Weight (pounds)

   (a) About 50% of the male students have weights between 150 and 185 pounds.
   (b) About 25% of female students have weights more than 130 pounds.
   (c) The median weight of male students is about 162 pounds.
   (d) The mean weight of female students is about 120 pounds because of symmetry.
   (e) The male students have less variability than the female students.

3. Barry Bonds and Babe Ruth are two of the most successful hitters in baseball history. The following data represents the number of HRs each hitter hit in their career:

   Barry Bonds (1986 – 2007): 16, 25, 24, 19, 33, 25, 34, 46, 37, 33, 42, 40, 37, 34, 49, 73, 46, 45, 45, 5, 26, 28
   Babe Ruth (1915 – 1935):   4, 3, 2, 11, 29, 54, 59, 35, 41, 46, 25, 47, 60, 54, 46, 49, 46, 41, 34, 22, 6

Complete parallel boxplots of the distribution of HRs hit over the hitters' careers. Then, use sentences to compare the distributions.

4. Vertical boxplots are similar to horizontal boxplots. Use the boxplots to determine if the statements are true or false.

Home Sale Prices in Three Cities in 2012

Statement	Circle One!	
a. The cheapest homes are in City 1.	True	False
b. City 3 has the greatest standard deviation.	True	False
c. City 2 has the greatest interquartile range.	True	False
d. The median sale price in City 3 is smaller than the minimum home price in City 1.	True	False
e. The top 50% of homes in City 2 cost more than all of the houses in City 2 and City 3.	True	False
f. City 3 has the smallest variation in home sale prices.	True	False
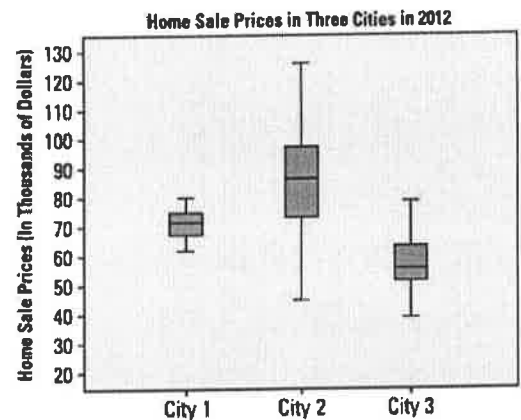
4. Multiply: $(3 - 2x)^2$
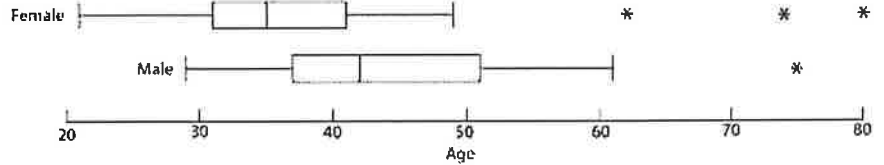
5. Solve the following equation for y: $1.2x - y = 12$

6. Solve the following system: $\begin{cases} 2x - y = -100 \\ 2x + 2y = 200 \end{cases}$

4.4 Comparing Distributions

1. Compare the ages of male and female winning Oscar actors using the boxplots at the right.

Ages of Oscar Winning Actors from 1975 to 2004

_____

_____

_____

_____

2. The table to the right shows the average monthly temperatures for Albuquerque, New Mexico and Green Bay, Wisconsin. Construct a double stemplot and compare the average temperatures of the two cities.

Month	Albuquerque	Green Bay
Jan	34	14
Feb	40	18
March	46	30
April	55	44
May	64	55
June	74	64
Jul	78	69
Aug	75	67
Sept	68	59
Oct	57	48
Nov	44	34
Dec	35	20

A1 4.4 EXIT TICKET –

Which is easier, A or B?   A. Creating a boxplot from a stemplot.

B. Creating a stemplot from a boxplot.

SMP #3

Justify your answer using complete sentences below:

_____

_____

_____

_____