p.40 #31

$n = 33$

$\bar{x} = 126.64$

$s = 7.60$

$s^2 = 57.74$

$R = 136 - 109 = 27$

#33

$n = 22$

$\bar{x} = 66.95$

$s = 17.93$

$s^2 = 321.38$

$R = 98 - 38 = 60$

---

(2)

Sec 1.7

Z-score

Example: Your score on a standardized test is 600.
In a sample of other scores from the same year, $\bar{x} = 500$, $s = 50$.

Your friend took the test in the previous year, & scored 620.
In a sample of other scores from that year, $\bar{x} = 550$, $s = 40$

$$z = \frac{x - \bar{x}}{s}$$

Your z-score was $\frac{600 - 530}{50} = 2$

Your friend's z-score was $\frac{620 - 550}{40} = 1.75$

The z-score tells you how many standard deviations above or below the mean that your score was.

Chebyshev's Theorem

① At least 75% of the observations in any data set will have z-scores between ±2.

② At least 89% of the observations in any data set will have z-scores between ±3.

Empirical Rule : for mound-shaped data sets

① Approximately 68% of the obs. will have z-scores between ±1

② 95% ... ±2

③ 99.7% ... ±3

Sec 1-4 Box plots

See p.56 #57a

3	2 4 5 7
4	1 2 3 5 5 6 8 9
5	1 2 3
6	0
7	3 6
8	5

$n = 19$

① Compute Q_2

$i = (n+1)(.5)$

$= (20)(.5) = 10$

$Q_2 = 46$

② Compute Q_1 & Q_3

$i = (n+1)(.25)$

$= 20(.25) = 5$

$Q_1 = 41$

$i = (20)(.75) = 15$

$Q_3 = 53$

---

③ IQR = interquartile range

$= Q_3 - Q_1 = 53 - 41 = 12$

④ Fences

LF = lower fence

$= Q_1 - 1.5\,IQR$

$= 41 - 1.5(12) = 23$

UF = upper fence

$= Q_3 + 1.5\,IQR$

$= 53 + 1.5(12) = 71$

(5) Detect outliers: any observations lying outside of the fences.

73, 76, & 85 are outliers

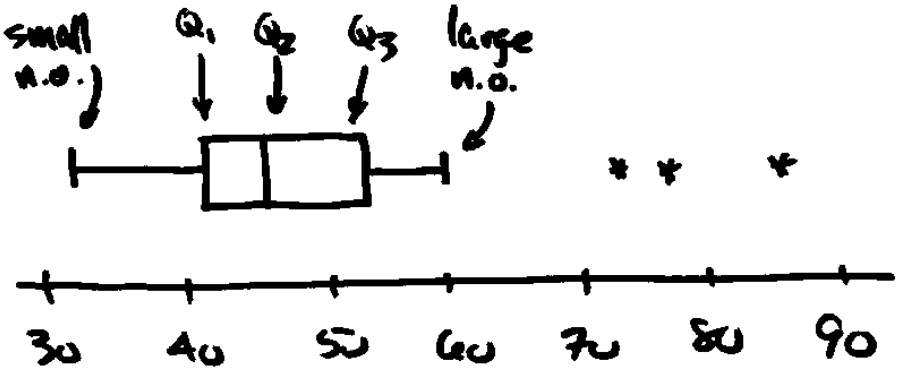
(6) Find the smallest & largest remaining values

Smallest = 32
largest = 60

---

smallest non-outlier, Q_1, Q_2, Q_3, largest non-outlier

32, 41, 46, 53, 60



[$\bar{x} = 49.84$, $Q_2 = 46$]

Note that $\bar{x}$ is larger than Q_2, due to the influence of the 3 large outliers.

HW p.52 #53, 51

Quiz #1 Thursday 10/5

1 data set: Stem-and-leaf plot
Comment on shape
$\bar{x}$, Q_2, mode, Q_1, Q_3,
Percentiles, R, s, s^2,
CV, IQR

{1 page of notes
Calculator}