Homework 2 MATH 1550 Fall 2019

Section 2.3

#44 in May:
- \$759 for 15 days
- \$1985 for 5 days
- \$1410 for 5 days
- \$348 for 6 days

$$\text{mean daily balance in May} = \frac{(759)(15)+(1985)(5)+(1410)(5)+(348)(6)}{31}$$

$$= \$982.19$$

Section 2.4

#14 $\text{range} = \max - \min = 230 - 160 = 70$

$$\mu = \text{mean} = \frac{173+175+200+173+160+185+195+230+190+180}{10}$$

$$= 186.1$$

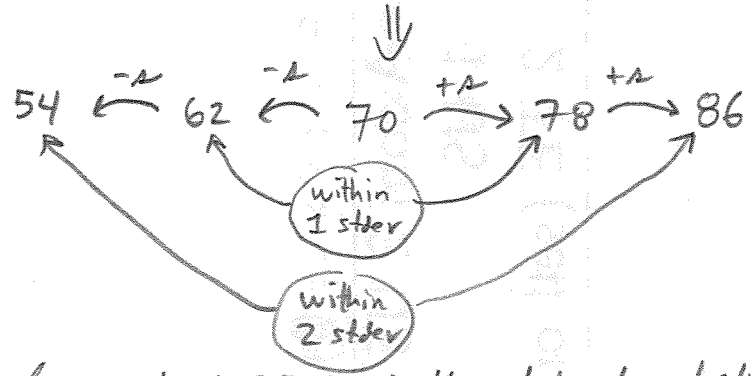
$$\sigma^2 = \text{variance} = \frac{(173-186.1)^2+(175-186.1)^2+(200-186.1)^2+\cdots+(180-186.1)^2}{10}$$

$$= 340.09$$

$$\sigma = \text{standard deviation} = \sqrt{\sigma^2} = \sqrt{340.09} = 18.4415$$

#30 Given (bell-shaped) $\bar{x} = 70$, $s = 8$

from empirical rule, 95% of data lies within 2 stdev of mean



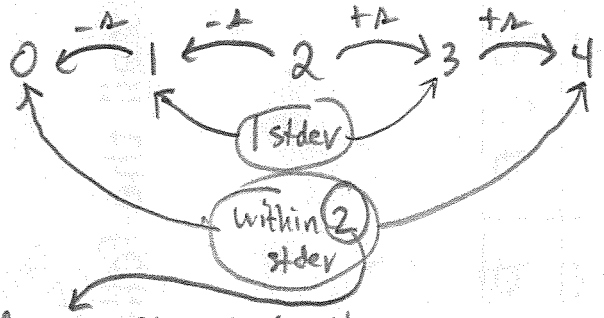
Therefore, about 95% of the data lies between \$54 and \$86

#35 Given

$n = 40$, $\bar{x} = 2$, $s = 1$

not bell-shaped

How many standard dev's from the mean 2 is 0 and 4?



Using $k = 2$, Chebyshev's theorem says

$$1 - \frac{1}{k^2} = 1 - \frac{1}{4} = \frac{3}{4}$$ ← 75%

of the data has between 0 and 4 pets.

Concretely, since our sample size was $n = 40$, it means at least $\frac{3}{4}$ of 40 houses had between 0 and 4 pets.

$\frac{3}{4}$ of 40 = 30

Section 2.5

#11 Order the data:

51 54 56 57 59 60 60 60 60 62 63 63 63 65 80

Q_1 = 57, median Q_2 = 60, Q_3 = 63

a) Quartiles are $Q_1 = 57$, $Q_2 = 60$, $Q_3 = 63$

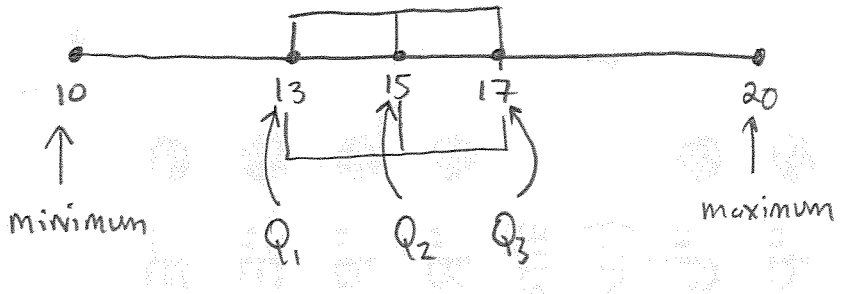
b) $IQR = Q_3 - Q_1 = 63 - 57 = 6$

c) $1.5IQR = (1.5)(6) = 9$

$Q_1 - 1.5IQR = 57 - 9 = 48$ → does not detect any outliers

$Q_3 + 1.5IQR = 63 + 9 = 72$ → since $80 > 72$, 80 is an outlier

#15



#17 Order the data:

24 26 27 28 30 32 35 35 36 39 39 41 50 51 60

24 ↑ min

28 ↑ Q_1

35 ↑ median = Q_2

41 ↑ Q_3

60 ↑ max

a) min = 24 Q_2 = 35 max = 60

Q_1 = 28 Q_3 = 41