

AP Stat CH 2-1A 1, 5, 9, 11, 13, 15

① Females in L_1 Males in L_2

a) Sort L_1

girl with 22 is #6 out of 20 5 have fewer $\frac{5}{20} = 25\%$
percentile: .25

b) Sort L_2

boy with 22 is #18 out of 20 17 have fewer $\frac{17}{20} = 85\%$
percentile: .85

c) Boy More unusual: only 15% of boys have more shoes than #18
75% of girls have more shoes than #6

⑤ percentile = .48 weight, .78 for height

48% of girls her age weigh less

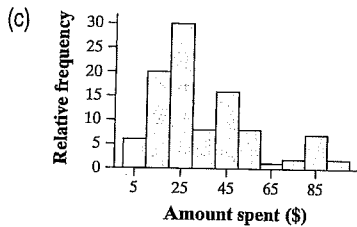
78% of girls her age were shorter than her
she is skinny.

⑨ a) .25 = \$19

.75 = \$50

IQR = \$31

b) \$19.50 is about the 26th percentile



⑪ SAT $\bar{x} = 500$ $S_x = 100$ $z = \frac{680 - 500}{100} = 1.8$

ACT $\bar{x} = 18$ $S_x = 6$ $z = \frac{27 - 18}{6} = 1.5$

← higher z-score better performance

⑬ $x = 948$ $\bar{x} = 956$

a) $z = -1.45$

→ about 1 1/2 times lower than average, well below average
st. dev.

b) $-1.45 = \frac{948 - 956}{s}$

$-1.45s = -8$
 $s = 5.517$

⑬ a) $n = 29$ 6 are above, he is ~~#23~~ #23 $\frac{22}{29} = 75.86\%$

b) $\bar{x} = 3,388,617$
 $S_x = 376,7484$
 $x = 6,350,000$

$z = \frac{6350000 - 3388617}{3767484} = .79$

.79 st. dev. above ~~avr.~~ avr.

AP Stat Ch2-1 B: 19, 21, 23, 31, 33-38

- 19) a) Mean: 87.188
 Median: 87.5
- b) unchanged
 $S_x = 3.2$ IQR = $71 - 67.75 = 3.25$

- 21) a) divide by 12 for Mean & Median
 5.77ft 5.79ft.

b) divide by $|12|$ for st-dev.

divide by 12 for IQR

$$\frac{3.2}{|12|} = .27 \text{ ft}$$

$$\frac{71}{12} - \frac{67.75}{12} = 5.92 - 5.65 = .27 \text{ ft.}$$

- 23) $\bar{x} = 25$ $S_x = 2$
 $\frac{9}{5}(25) + 32$ $\frac{9}{5}(2) + 32$ ← do not add
 77°F 3.6°F

- 31) a) Mean: C Median: B
 b) Mean & Median: B

33) C

34) B

- 35) C $0 - .7 = \frac{x-18}{6}$ $-4.2 = \frac{x-18}{6}$
 13.8

- 36) $\bar{x} = 150$ $S_x = 20$ $x = 180$ $z = 1.5$
 $\bar{y} = 100$ $S_y = 15$ $y = 190$ $z = 2$ ← B

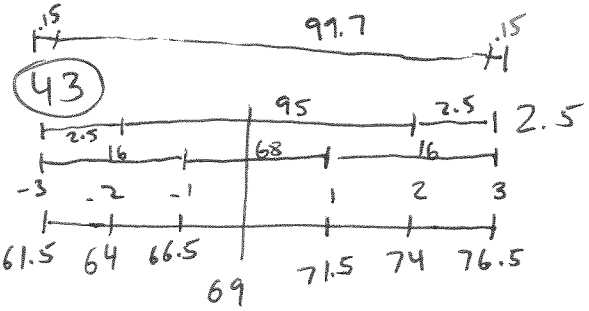
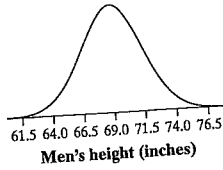
37) D

- 38) E Variance = (st dev)²

if st. dev is mult. by 10
 Variance is mult. by 100

AP Stat Ch 2-2 C 41, 43, 45, 47, 49, 51

41) $\bar{x} = 69$
 $s_x = 2.5$



a) 2.5%

b) 64-74 in.

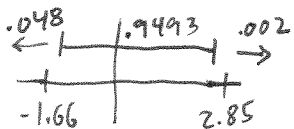
c) $16 - 2.5 = 13.5\%$

d) $68 + 16 = 84\%$

AP STAT PROGRAM
 WILL DO ALL
 THESE

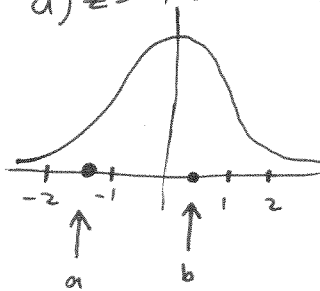
45) a) .2 to .3 discuss concavity
 b) .5

47) a) .997
 b) .002
 c) .9515
 d) .9493



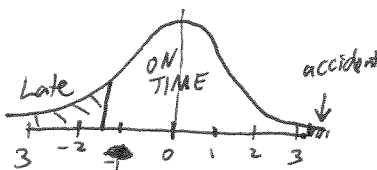
49) a) .8587
 b) ~~area~~ .2718

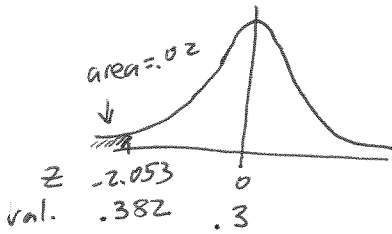
51) a) $z = -1.28$ $z = .412$



AP Stat Ch 2-2 D 53, 55, 57, 59

- 53) $\bar{x} = 266$ $s_x = 16$
- a) $x = 240$ $z = -1.625$ 5.29% less
- b) $x = 240$ $z = -1.625$ 5.29% left
 $x = 270$ $z = .25$ 59.87% left 54.66%
 $59.8 - 5.2 = 54.66$
- c) 20% Left $z = .842$ value: 279.46 279 days

- 55) $\mu_x = .37$ $\sigma_x = .04$
- 
- a) $x = .3$ $z = -1.75$ prob right: .96 96% OK
- b) $x = .5$ $z = 3.25$ prob right: .00057 0% OK
- c) We want the prob of arrival on time higher than the prob it arrives early to switch point (accident)

- 57) a) 2% to the ~~right~~ ^{Left} $z = -2.053$ $z = \frac{x - \mu}{\sigma}$
- 
- $-2.053 = \frac{.3 - \mu}{.04}$
- $-.08212 = .3 - \mu$
- $.382 = \mu$

- b) same graph $-2.053 = \frac{.3 - .37}{\sigma}$ $-2.053\sigma = -.07$
 $\sigma = .034$

- c) Chance of accident for each
- in part a, increase mean to .382, $\sigma = .04$, $x = .5$
 Prob = .15%
- in part b, decrease st. dev. to .034, $\mu = .37$, $x = .5$
 Prob = .000065 or .0065%

B is Better.

- 59) a) area = .1 $z = -1.28$ area = .9 $z = 1.28$

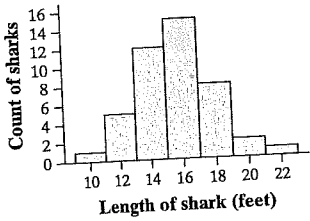
- b) $\mu = 64.5$ $\sigma = 2.5$
- $65 + 2.5(-1.28) = 61.8$
- $65 + 2.5(1.28) = 68.2$

AP Stat

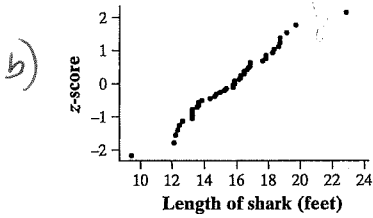
Ch 2-2 E 63, 65, 66, 68-74

63 a) $n = 44$
 $\bar{x} = 15.586$
 $S_x = 2.55$

Min = 9.4 $Q_1 = 13.55$ Median = 16.75
 Max = 22.8 $Q_3 = 17.2$
 Range = 13.4 IQR = 3.65



Center = 16
 Shape = unimodal, symmetric, peak at 16
 Spread = 9.4 to 22.8 range = 13.4 IQR = 3.65 $S_x = 2.55$
 Outliers below 8.075 above 22.675 22.8 is an outlier



1 st dev. between 13.036 & 18.136 68.27% Sort A(L,
 2 st dev. between 10.486 & 20.686 95.45%
 3 st dev. between 7.936 & 23.236 100%

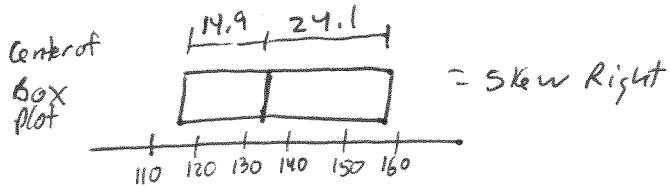
The Normal Prob. Plot is close to Linear. so it is Normal

65 Linear = Normal

1 small one is off 2 Large ones are bad

66 data are right skewed, seen from steep section to the left.

68 $\bar{x} = 141.7$ $Q_1 = 118.3$
 Med = 133.2 $Q_3 = 157.3$
 Mean > Med = Skew Right



69 D

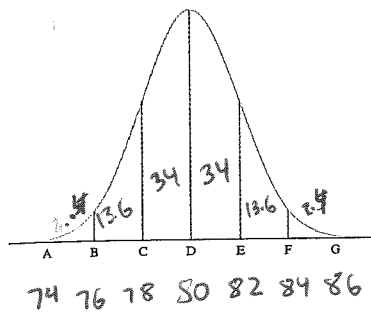
70 C

71 B

72 C

73 C

74 C



EXplanations

71 $13.6 + 34 + 34 + 13.6$ or 2 σ from $\mu = 95\%$
 OR APStats Program 2 z-values -2 to 2
 Mean = 80 SD = 2

72 $2.4 + 13.6 = 16\%$
 APStats Prog. 1-z-value -1

73 Table A or APStats $z = 1.15$

74 Table A or APStats $z = -.75$