

22S:25 ANSWERS TO TA REVIEW – EXAM #1 – FALL 2008 / SPRING / FALL 2009

1)

Class Interval	Frequency	Relative Frequency (x100%)	Height
0-1	2	2/27	.074
1-3	4	4/27	.074
3-4	10	10/27	.37
4-7	6	6/27	.074
7-12	5	5/27	.037

Plus graph

Median is in Class Interval (3-4)

2) Avg = 21

SD=

$$\sqrt{\frac{(2 - 21)^2 + (4 - 21)^2 + (8 - 21)^2 + (16 - 21)^2 + (32 - 21)^2 + (64 - 21)^2}{6}}$$

$$SD = 21.6564$$

3) (60-50)/10 = 1, (35-50)/10 = -1.5

(-1.5, 1.5) is about 86.64% and (-1,1) is about 68.27%

$$(86.64/2)\% + (68.27/2)\% = 43.32\% + 34.135\% = 77.455\%$$

For the percentile: (73-50)/10 = 2.3

(-2.3,2.3) is about 97.86%

$$97.86/2 + 50 = 98.93\%$$

4) New Avg = 26, New SD = 8, New Range = 56, New Median = 30

For the second part: Avg = 6, SD = 3.9

$$\text{New avg} = 2*6 + 4 = 16$$

$$\text{New SD} = 2*3.9 = 7.8$$

5) $(35-30)/6 = 5/6$

$(23-30)/6 = -7/6$

$(-5/6, 5/6)$ is about .5935 and $(-7/6, 7/6)$ is about .758

$(.758 - .5935)/2 = .08225$

$.758 - .08225 = .67575$

$1 - .67575 = .32425$

6) $y = 2 * x - 2$

7) Average of $x = 25$, SD of $x = 2$

Average of $y = 10$, SD of $y = 4$

Correlation coefficient = - (0.75)

SD line: $y = (-2) * x + 60$

Comment: note that we are trying to find the equation of the SD line so the sign of the correlation coefficient affects the sign of the slope of the SD line.

8) (a) You are not given enough information (do not know r)

(b) You are given enough information (use the average to find the unknown y)

(c) You are not given enough information (there are two unknown y 's)

9) (a) -0.8 (y values are all $1/4$ of the y values in set (1))

(b) 0.87 (y values are all 20 less than the y values in set (2))

(c) -0.8 (x and y values in set (1) are interchanged and then new x values halved)

(d) 0.87 (x values are all 12 larger than the x values in set (2))

10) (a) True (Interchanging x variable and y variable does not affect r)

(b) False ($r = +1$)

(c) False (you only divide SD of y by SD of x to find the slope of the SD line)

- 11) (i) & (ii) # SDs on X=2.33
 # SDs on Y=1.353
 $Y = 187.067 \text{ lb}$
 (iii) Y=160 lb (# SDs on X = 0)
- 12) (c) 52 (answer between 50th and 100 - x percentile for negative correlation)
 (b) 50
- 13) 584.84 i.e. approx. 585
 Soln: % on X =75
 # SDs on X = 0.67
 # SDs on Y = 0.4355
 % on Y = 67.005
 $Y = \text{Ave } Y + (0.4355)(SD_y)$
 $= 550 + (0.4355)(80) = 584.84$
 OR score on X = 586.95
 Use eqn of reg line $Y = 0.6118X + 225.76 = 584.835$
- 14) (a) \$660 $Y = \text{Ave } Y + (r)(\# \text{ SDs on } X)(SD_y)$; where Y: rent
 (b) 2.72 Y: Size
- 15) (i) $Y = 5.04X - 30.56$
 (ii) % on X = 23
 # SDs on X = -0.74
 # SDs on Y = -0.5328
 % on Y = 29.805