

(Final answers should have accuracy to 2 decimal places.)

1. (8pts) On his drive to work, Richard passes 10 stoplights. The table below shows the number of times Richard has come to a red stoplight during a drive to work (data over 55 days).

- What is the mode of the data?
- What is the median of the data?
- What is the mean of the data?
- Find the relative frequencies.
- Draw a pie chart representing the data.

Red	Freq.	Rel. Freq.	Angle
2	7	0.1273	46
3	2	0.0364	13
4	15	0.2727	98
5	16	0.2909	105
6	6	0.1091	39
7	9	0.1636	59
55			

a) 5 is the mode

b) need 28th number in list, it is 5

2, 2, 3, 3, 4, 4, 5, 5, 6, 6, 7, 7
 7 2 15 16 6 9
 24 28th here

$$c) \mu = \frac{7 \cdot 2 + 2 \cdot 3 + 15 \cdot 4 + 16 \cdot 5 + 6 \cdot 6 + 9 \cdot 7}{55} = \frac{259}{55} = 4.71$$



2. (10pts) On exam 2, this 117 class achieved scores summarized in the table below. Do the following.

- Draw a bar graph for the data.
- Enter a representative value for each interval.
- Estimate the mean of data. State the actual mean, found on the course webpage and compare it with your number.
- Estimate the standard deviation of data.

Range	Frequency	Rep. value
≥ 90	9	95
80-89	7	84.5
70-79	5	74.5
60-69	6	64.5
< 60	9	30



$$c) \mu \approx \frac{9 \cdot 95 + 7 \cdot 84.5 + 5 \cdot 74.5 + 6 \cdot 64.5 + 9 \cdot 30}{9 + 7 + 5 + 6 + 9} = \frac{2476}{36} \approx 68.78$$

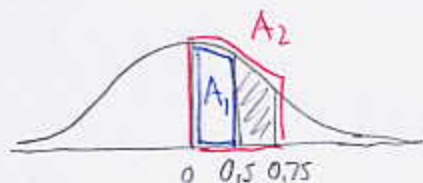
actual μ
 $= 73.5$
 (fairly different from estimate)

$$d) \sigma^2 \approx \frac{9(95-68.78)^2 + 7(84.5-68.78)^2 + 5(74.5-68.78)^2 + 6(64.5-68.78)^2 + 9(30-68.78)^2}{36} = \frac{21725.72}{36}$$

$\sigma^2 =$

3. (6pts) Compute the following probabilities for a standard normal distribution. Draw a picture showing which area you are computing.

a) $P(0.5 \leq Z \leq 0.75) = A_2 - A_1 = 0.2734 - 0.1915$



$= 0.0819$

b) $P(Z < -0.25) = 0.5 - A = 0.5 - 0.0987$



$= 0.4013$

4. (6pts) Suppose that exam scores in a math class are graded "on a curve", where it is decided ahead of time that a certain percentage of the class will earn A's, B's, and so on. Assume that the top 10% of the class is given an A. If the exam scores are normally distributed with a mean of 68 and a standard deviation of 14, what is the minimum score required to get an A?



go to
standard



Looking for 90th percentile.

Closest numbers to 0.4 in table are: 0.3997 ← closer
0.4015

0.3997 corresponds to $Z = 1.28$

$$\frac{x-68}{14} = 1.28 \quad | \cdot 14$$

$$x-68 = 17.92 \quad | +68$$

$$x = 85.92$$