

Final answers should have accuracy to 6 decimal places. Show some work how medians and means are computed. *Giving only the answer will bring you few points.*

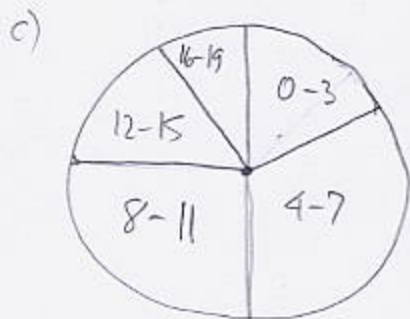
1. (29pts) A bar owner would like to get a feeling for how well his "Buy one, get one for sweetie free!" promotion is going. The list below shows the number of couples present at the bar at 4:30PM over the course of 30 days. Do the following:

- Construct a frequency distribution with first class 0-3.
- Find the relative frequencies.
- Draw a pie chart for the data (find angles first).
- Enter a representative value for each interval.
- Estimate the mean of the data based on the frequency distribution.
- Find the actual mean and compare your answer to e).

4, 0, 3, 11, 17, 3, 6, 7, 13, 10, 11, 2, 19, 8, 9, 5, 6, 9, 14, 15, 10, 16, 7, 2, 6, 4, 7, 11, 3, 15

Class	Frequency	Rel. Freq.	Angle	Rep. value
0-3	6	$6/30 = 0.2$	72°	$1.5 = \frac{0+3}{2}$
4-7	9	$9/30 = 0.3$	108°	5.5
8-11	8	$8/30 = 0.26667$	96°	9.5
12-15	4	$4/30 = 0.13333$	48°	13.5
16-19	3	$3/30 = 0.1$	36°	17.5
	30			

↑



e) estimated \bar{x} from freq. dist = $\frac{6 \cdot 1.5 + 9 \cdot 5.5 + 8 \cdot 9.5 + 4 \cdot 13.5 + 3 \cdot 17.5}{30}$

= $\frac{241}{30} = 8.033333$ ← not too far apart

f) $\frac{4+0+3+11+17+3+\dots+11+3+15}{30} = \frac{253}{30} = 8.433333$

2. (10pts) Marsha, a server at a restaurant, examines the amounts she received in tips on Fridays and Saturdays over the course of a month. They are listed below (in dollars).

- a) Find the midrange of the data.
 b) Find the median of the data.
 c) Find the mean of the data.

23, 37, 32, 25, 28, 32, 19, 24

in order: 19, 23, 24, 25, 28, 32, 32, 37
 ↑ ↑
 middle two

a) midrange = $\frac{19+37}{2} = 28$

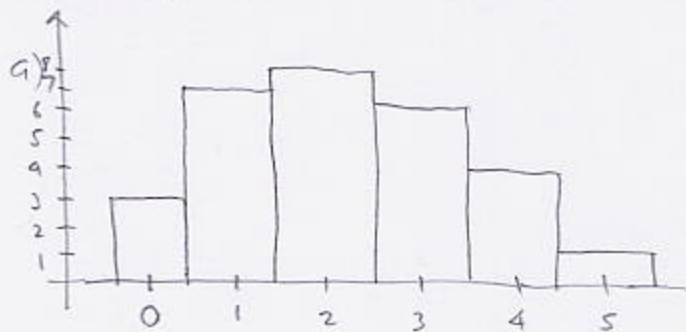
b) median = $\frac{25+28}{2} = 26.5$

c) $\bar{x} = \frac{23+37+32+\dots+19+24}{8} = \frac{220}{8} = 27.5$

3. (21pts) The track team at Calloway Lake University records the number of 1st-3rd places the team wins in a season. The data over many seasons is in the table below. Do the following:

- a) Draw a histogram for the data.
 b) Find the midrange of the data.
 c) Find the median of the data.
 d) Find the mean of the data.

1st-3rd places	Frequency (seasons)
0	3
1	7
2	8
3	6
4	4
5	1
	<u>29 total</u>



b) midrange = $\frac{0+5}{2} = 2.5$

c) median: $29/2 = 14.5$, so median will be the 15th number in this list:

0, ..., 0, 1, ..., 1, 2, ..., 2, 3, ..., 3, 4, ..., 4, 5
 ↑ ↑ ↑ ↑ ↑ ↑
 3rd 4th 10th 11th 17th

15th number is 2

d) $\bar{x} = \frac{3 \cdot 0 + 7 \cdot 1 + 8 \cdot 2 + 6 \cdot 3 + 4 \cdot 4 + 1 \cdot 5}{29} = \frac{62}{29} = 2.137931$

Bonus. (2pts) Use the grade computer on the website to determine your grade in the course so far. Assume you are getting 3 points for participation, and no bonus for attendance. Write down your course average so far, and what you would need on the next exam to increase it by a letter grade.