STAT 110: Quiz   Name: SOLUTION

Points: 20

The Fools Five is a major regional fundraising event for cancer. This year, Fool's Five raised over $75,000 for cancer research.

Race results are provided online

The results from the 2016 Fools Five race are provided on our course website. Download this file. The Mile Pace will be the primary variable of interest for this quiz.


1. Compute the average Mile Pace for each age group. Fill in the following table. (5 pts)

Getting appropriate summaries

Age Group	Average of Mile Pace		Faster / Slower
1-14	13:11:21		
15-19	11:34:17		1:37:04
20-24	11:55:25		0:21:08
25-29	11:25:53		0:29:32
30-34	10:25:53		0:59:59
35-39	11:02:28		0:36:35
40-44	11:55:41		0:53:13
45-49	12:36:37		0:40:57
50-54	12:38:37		0:02:00
55-59	13:15:47		0:37:11
60-64	14:17:32		1:01:45
65-69	13:35:52		0:41:40
70-99	13:06:24		0:29:29
Grand Total	12:11:10		

1) Specify Average under Value Field Settings
2) Change Number Format to reflect Time
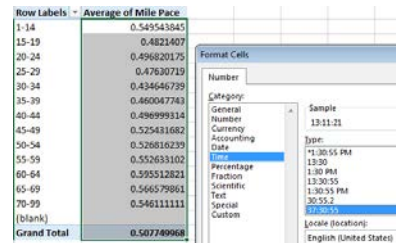
2. Between what two consecutive age groups did Mile Pace times decrease the most? (2 pts)

```
I used Excel to create a Faster/Slower column.  Green
indicates faster times, i.e. decrease in times, and red
indicates an increase in mile pace time.  Largest decrease
in average pace times occurs between Age Group 1-14 and 15-
19.
```
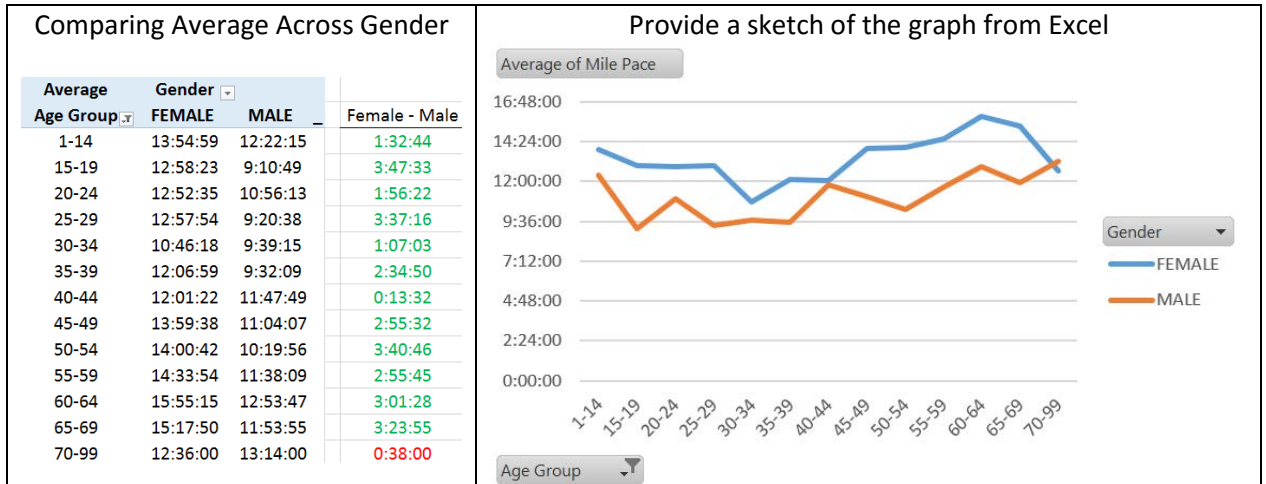
3. Between what two consecutive age groups did Mile Pace times increase the most? (1 pt)

```
The largest increase in average mile pace times occurs
between Age Group 55-59 and 60-64.
```

4. Use PivotTables and Charts in Excel to create a plot that allow us to compare the average Mile Pace times across the Age Groups for Females and Males separately. (4 pts)

Comparing Average Across Gender				Provide a sketch of the graph from Excel

Average Age Group	Gender FEMALE	MALE	Female - Male
1-14	13:54:59	12:22:15	1:32:44
15-19	12:58:23	9:10:49	3:47:33
20-24	12:52:35	10:56:13	1:56:22
25-29	12:57:54	9:20:38	3:37:16
30-34	10:46:18	9:39:15	1:07:03
35-39	12:06:59	9:32:09	2:34:50
40-44	12:01:22	11:47:49	0:13:32
45-49	13:59:38	11:04:07	2:55:32
50-54	14:00:42	10:19:56	3:40:46
55-59	14:33:54	11:38:09	2:55:45
60-64	15:55:15	12:53:47	3:01:28
65-69	15:17:50	11:53:55	3:23:55
70-99	12:36:00	13:14:00	0:38:00

Average of Mile Pace — line chart with Age Group on x-axis (1-14 through 70-99), FEMALE and MALE series, Gender legend.

5. Physiology differences imply that Mile Pace times are expected to be different across gender. (2 pts)

   a. For what age group is the difference in average mile pace times the smallest?
      The Age Group 40-44 had the most similar times – only about 13 seconds difference between Females and Males.

   b. For what age group is the difference in average mile pace times the largest?
      The Age Group 15-19 had the biggest gap between Females and Males. Age Groups 25-29 and 50-54 also had fairly wide gaps in times.

6. Use PivotTable to determine which Age Group has the most consistent mile pace times. Which Age Group is this? (1 pt)

Standard deviation is how consistency is measured. You should change Average to Standard Deviation in the VALUES box.

Σ VALUES

Standard Deviation ▼

The Age Group 30-34 had the smallest standard deviation in mile pace times. Thus, this group would have the most consistent times.

Age Group	Standard Deviation
1-14	3:29:36
15-19	3:32:57
20-24	3:50:53
25-29	3:44:24
30-34	2:52:38
35-39	3:28:18
40-44	3:19:52
45-49	3:43:33
50-54	3:32:26
55-59	3:54:31
60-64	3:46:20
65-69	3:03:49
70-99	3:06:45

7. Is the Age Group with the most consistent mile pace times the same for both genders? Briefly discuss. (2 pts)

No, for Females the 30-34 Age Group has the lowest standard deviation in mile pace time; however, for males the 65-69 Age Group is most consistent.

Standard Deviation	Gender	
Age Group	FEMALE	MALE
1-14	3:05:00	3:46:11
15-19	3:12:07	2:48:08
20-24	3:27:32	4:02:23
25-29	3:31:59	2:56:45
30-34	2:34:04	3:24:31
35-39	3:23:11	3:02:01
40-44	3:24:22	3:16:15
45-49	3:27:29	3:26:06
50-54	3:11:25	2:51:59
55-59	3:26:56	3:53:12
60-64	3:11:10	3:43:18
65-69	2:48:12	2:20:17
70-99	3:33:33	3:14:56

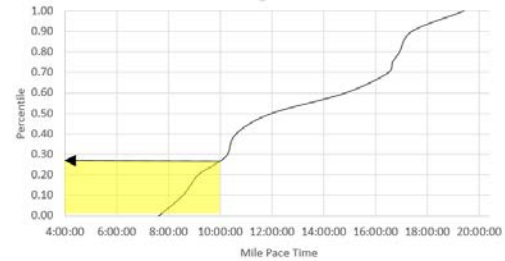8. Consider the following CDF plot for Gender = Males, Age Group = 60-64. Answer the following (1 pt each)

a. The median mile pace time is about 12 minutes

The 50% percentile appears to be about 12 minutes
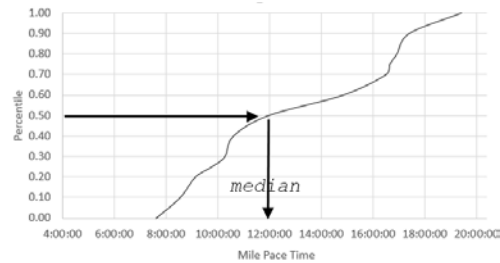
b. About 25-30 % of the people in this group had a mile pace time under 10 minutes.

10 minutes appears to be about the 25-30% percentile in these times

c. About 17-20 % of the people in this group had a mile pace time between 12 and 16 minutes.

16 mins is about the 70% percentile or maybe a little less and 12 mins is close to the 50% percentile. Between these two times leaves about 17-20% of the data