FORMAT
▪   Write neatly and clearly on white paper (lined or unlined)
▪   Attach a POW cover sheet to the front of your work for turn in

Before starting your problem solving process:
✓ Refer to your POW directions (linked to your Math 212 home page)
✓ Read **all** of the directions given here

SPECIAL DIRECTIONS
▪   This POW features statistical computations. You do not have to use a formal problem solving strategy or formal Polya's four step strategy to do these problems.
▪   You should neatly and carefully show your work throughout this POW and, ask asked, explain your process.
▪   Label everything neatly. If you are drawing the graphs by hand, use graph paper. Graphs drawn on non-graph paper will be returned to be recopied (and will incur late penalties). If you are using technology to create the graphs, be sure to label everything clearly.

Refer to the PEANUT BUTTER COMPARISONS table (next page) for all data. This table is also linked, in an Excel file, to your class homework page for your convenience.

1. The box plots below show the quality ratings for natural versus regular brands of peanut butter.

    a. Based on these box plots, explain what the 5-number summary *(mean, upper quartile, lower quartile, lower extreme, upper extreme)* tell about the data for each peanut butter type (natural vs. regular).

Quality Comparisons
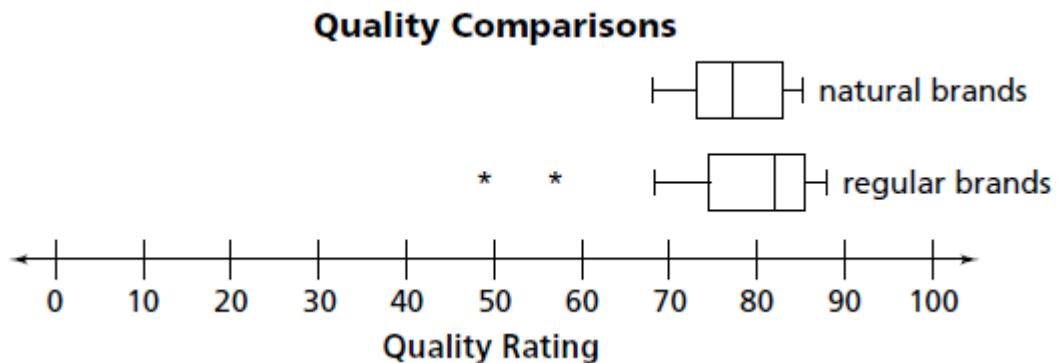
    b. Make box plots for each paired comparison (natural/regular, creamy/chunky, *namebrand*/storebrand) on the same rating scale to compare the peanut butters based on **price**. Mark any outliers with an asterisk (*). Which characteristic(s) help identify low priced peanut butters? Explain your reasoning.

    c. Assume that one additional peanut butter was left off the list. It is called Wiebe's Deluxe All Natural Peanut Butter. If this brand were added to the list, it would alter the standard deviation of the prices of natural peanut butters by at least one cent. What price could this new peanut butter have per serving? Explain your reasoning.

PEANUT BUTTER COMPARISONS[*]						
Brand	Rating	Sodium per Serving (mg)	Price per Serving	Regular/ Natural	Creamy/ Chunky	Name Brand/ Store Brand
Arrowhead Mills	85	0	36	natural	creamy	name
Laura Scudder's (Southeast)	79	165	25	natural	creamy	name
Adams (West)	73	173	23	natural	creamy	name
Smucker's	73	180	26	natural	creamy	name
Nature's Cupboard (Safeway)	68	240	26	natural	creamy	store
Laura Scudder's Nutty (Southeast)	84	165	26	natural	chunky	name
Arrowhead Mills	83	0	37	natural	chunky	name
Smucker's	79	180	26	natural	chunky	name
Adams (West)	75	135	23	natural	chunky	name
Nature's Cupboard (Safeway)	72	195	26	natural	chunky	store
Jif	85	225	19	regular	creamy	name
Simply Jif	85	98	19	regular	creamy	name
Peter Pan	82	225	17	regular	creamy	name
Skippy	82	225	18	regular	creamy	name
Kroger	79	195	15	regular	creamy	store
Skippy Roasted Honey Nut	79	180	19	regular	creamy	name
America's Choice	77	225	17	regular	creamy	store
Reese's	68	173	19	regular	creamy	name
Townhouse (Safeway)	68	240	18	regular	creamy	store
Peter Pan Very Low Sodium	57	15	18	regular	creamy	name
Peter Pan Whipped	49	173	17	regular	creamy	name
Jif Extra Crunchy	88	195	19	regular	chunky	name
Skippy Super Chunk	87	210	19	regular	chunky	name
Peter Pan Extra Crunchy	86	180	17	regular	chunky	name
Reese's	86	120	19	regular	chunky	name
Skippy Roasted Honey Nut	86	180	19	regular	chunky	name
Kroger	84	195	15	regular	chunky	store
Simply Jif Extra Crunchy	83	75	19	regular	chunky	name
America's Choice Krunchy	80	188	17	regular	chunky	store
Townhouse (Safeway)	72	195	18	regular	chunky	store

[*] Source: "Peanut Butter: It's Not Just for Kids Anymore." *Consumer Reports* (September 1995): pp. 576–579.