AP Statistics Assignment Summer, 2009

Background: AP Statistics is unlike any math class you have ever taken – look forward to it! In this class you will learn to collect, describe and analyze sets of data, then use that analysis to draw conclusions about the situations that gave that data. This assignment is meant to refresh your memory on basic statistics, algebra, and your graphing calculator. All answers must be legibly written on graph paper. Statistics requires clear communication of your answers, so be careful with spelling, sentence structure, and grammar.

You will use graph paper for every assignment all year long in the class, so go ahead and buy some. You are in an AP math class. You really should own your own calculator. Regardless of what college you attend, they will not loan you one! The recommended calculators are TI-83+, any TI-84, or either TI-NSpire. If you buy something other than one of the recommended ones, it must be capable of the following: statistical plots - box and whisker, modified box and whisker, histogram, and scatter plot; regression equations and correlation statistics; distribution and probability density functions - normal, binomial, geometric; statistical tests - t, z, χ^2, and confidence intervals. I will only be teaching steps for the TI calculators. Note: The TI-89 does **NOT** have the statistical package built-in, but it can be downloaded from the TI Web site. If you don't want to buy a new calculator, sometimes you can find good prices at pawn shops, at Cash Converters, or on eBay.

Resources: If you are confused about or have forgotten how to do something, you can use any, or more likely, all of the following resources:

1. Use http://www.cvgs.k12.va.us/digstats/. Useful information can be found under the Descriptive Statistics and Graphical Analysis tabs.
2. Use www.dictionary.com. Not only does this site have quick definitions of words, but the encyclopedia tab provides more in-depth explanations.
3. Use www.google.com for any term or concept you want more information about.
4. Use your calculator manual when you don't know how to do something using your calculator. If you have lost or misplaced your manual, you can download a free copy from the TI website at www.education.ti.com.
5. Get in touch with me. I will be in and out all summer, but I check email frequently and have my cell with me at almost all times.
   Email: karmi.fossen@vbschools.com
   Home: 757-301-2166
   Cell: 757-572-8178 (I accept and respond to text messages in addition to calls.)
6. If you put it off all summer, I will be holding stat-camp to get you jump-started during your last week of freedom on Monday, August 31 from 3:00 to 5:00 in Room 209 at school.

REMEMBER THIS ASSIGNMENT IS DUE THE FIRST CLASS MEETING IN SEPTEMBER. FAILURE TO MEET THIS RESPONSIBILITY MAY RESULT IN REMOVAL FROM THE CLASS. WE WILL USE THIS INFORMATION BEGINNING THE FIRST DAY TO EXPLORE THE MAJOR CONCEPTS COVERED ON THE FIRST QUIZ WHICH IS ON THE THIRD CLASS DAY!

Assignment: Do All 4 Parts Separately, i.e., Start each part on a new sheet. (Some parts may require more than one sheet of paper.) Put your name on each sheet.

Part I: In the year Robert Martin turned 54, the Westvaco Corporation, which makes paper products, decided to downsize. Westvaco laid off several members of the engineering department, including Robert Martin. Later that year, Martin sued Westvaco, claiming he had been laid off because of his age. A major piece of Martin's case was based on a statistical analysis of the ages of the Westvaco employees. Robert Martin was one of fifty people working in the engineering department of Westvaco's envelope division. One spring, Westvaco's management went through five rounds of planning for a reduction in their work force. In Round 1, they eliminated 11 positions, and they eliminated 9 more in Round 2. By the time the layoffs ended, after all five rounds, only 22 of the 50 workers had kept their jobs. The data sheet provides information for Westvaco employees who worked in the engineering department prior to layoffs. In the Pay column, H stands for hourly and S stands for salaried. The Round column indicates the round in which the employee was laid off.

1. Using your calculator find the mean, median, range, standard deviation, minimum value, maximum value and the first and third quartiles of the ages of the salaried employees of the Westvaco Engineering Department.
2. Draw a dotplot, boxplot, stem-and-leaf plot, and histogram (using five evenly spaced bars) of the ages of the salaried employees of the Westvaco Engineering Department.
3. Using your results from #1 and #2, to write two paragraphs summarizing what you found. Paragraph one must include a description of the center, shape, and spread of the data. Paragraph two must be a description of your position, for or against, in the age discrimination case of Martin versus Westvaco. Be sure to support your reasoning.

Part II: Given the equation: $y = a + bx$.

1. What is the slope?
2. What is the intercept?
3. If y represents hours watching TV and x represents hours reading, $a = 3.1$ and $b = 2$, what meaning can be attached to the slope value?

Part III: Answer the following questions (be sure to give complete answers):

1. Why would someone use a circle graph rather than a bar graph to display information?
2. What is the difference between a census and a survey?
3. What does it mean if you take the SAT, and you are in the 85^{th} percentile?
4. In football, the referee tosses a coin to determine which team will kick off and which will receive. What is the probability that a team will win the toss?
5. How many of the cards in a standard deck are hearts? How many are kings? (This is not a trick question. It has a simple answer.)

Part IV: Answer the following questions:

1. What is the last book you read for pleasure – not as part of an English assignment?
2. What is your first choice for college and your proposed major?
3. Is this your first AP class? If not, what others have you taken and how did you do on the exam?
4. Why are you taking this course?
5. How do you prepare for a math test? Be specific.
6. Describe your ideal math teacher.

Westvaco Engineering Department Data

Row	Job Title	Pay	Birth Mo	Birth Yr	Hire Mo	Hire Yr	Round	Age at Birthday in 1991
1	Engineering Clerk	H	9	66	7	89	0	25
2	Engineering Tech II	H	4	53	8	78	0	38
3	Engineering Tech II	H	10	35	7	65	0	56
4	Secretary to Engr Mgt	H	2	43	9	66	0	48
5	Engineering Tech II	H	8	38	9	74	1	53
6	Engineering Tech II	H	8	36	3	60	1	55
7	Engineering Tech II	H	1	32	2	63	1	59
8	Parts Crib Attendant	H	11	69	10	89	1	22
9	Engineering Tech II	H	5	36	4	77	2	55
10	Engineering Tech II	H	8	27	12	51	2	64
11	Technical Secretary	H	5	36	11	73	2	55
12	Engineering Tech II	H	2	36	4	62	3	55
13	Engineering Tech II	H	9	58	11	76	4	33
14	Engineering Tech II	H	7	56	5	77	4	35
15	Customer Service Engr	S	4	30	9	66	0	61
16	Customer Serv Engr Assc	S	2	62	5	88	0	29
17	Design Engineer	S	12	43	9	67	0	48
18	Design Engineer	S	3	37	6	74	0	54
19	Design Engineer	S	3	36	2	78	0	55
20	Design Engineer	S	1	31	3	67	0	60
21	Engineering Assistant	S	6	60	7	86	0	31
22	Engineering Associate	S	2	57	4	85	0	34
23	Engineering Manager	S	2	32	11	63	0	59
24	Machine Designer	S	9	59	3	90	0	32
25	Packaging Engineer	S	3	38	11	83	0	53
26	Prod Spec – Printing	S	12	44	11	74	0	47
27	Project Engineer – Elec.	S	9	43	4	71	0	48
28	Project Engineer	S	7	49	9	73	0	42
29	Project Engineer	S	8	43	4	64	0	48
30	Project Engineer	S	6	34	8	81	0	57
31	Supv Engineering Service	S	4	54	6	72	0	37
32	Supv Machine Shop	S	11	37	3	64	0	54
33	Chemist	S	8	22	4	54	1	69
34	Design Engineer	S	9	38	12	87	1	53
35	Engineering Associate	S	2	61	9	85	1	30
36	Machine Designer	S	2	39	4	85	1	52
37	Machine Parts Cont – Supv	S	10	28	8	53	1	63
38	Prod Specialist	S	9	27	10	43	1	64
39	Project Engineer	S	7	25	9	59	1	66
40	Chemist	S	12	30	10	52	2	61
41	Design Engineer	S	4	60	5	89	2	31
42	Electrical Engineer	S	11	49	3	86	2	42
43	Machine Designer	S	3	35	12	68	2	56
44	Machine Parts Cont Coor	S	9	37	10	67	2	54
45	VH Prod Specialist	S	5	35	9	55	2	56
46	Printing Coordinator	S	2	41	1	62	3	50
47	Prod Dev Engineer	S	6	59	11	85	3	32
48	Prod Specialist	S	7	32	1	55	4	59
49	VH Prod Specialist	S	3	42	4	62	4	49
50	Engineering Associate	S	8	68	5	89	5	23

The data in *Martin v. Westvaco.* [Source: *Martin v. Envelope Division of Westvaco Corp.*, CA No. 92-03121-MAP, 850 Fed. Supp. 83 (1994).] from Statistics in Action: Watkins, Shaefer, and Cobb, 2008. Key Curriculum Press: Emeryville, CA.