

DATA AT END
OF PACKAGE

REVIEW FINAL EXAM

1. (3, 2 marks)

Refer to appendix I - table 2: Salary by Number of Work Hours.

- a) Calculate the average number of hours worked per week by the 186 exempt coordinators who responded to the survey. (44.7 hrs)
- b) What is the standard deviation of the number of hours worked per week by these coordinators? (4.48 hrs)

2. (7, 7, 5, 7 marks)

Refer to appendix I - table 3: Salary by Number of Years in Current Position.

- a) Assume that the salaries of 'Managers' are normally distributed. If someone currently is a manager with less than 1 year in current position and earns \$50,000, what percent of managers earn more than this person? (0.6917)
- b) What salary would a 'Manager' who has 1 to 3 years in current position need to earn in order to have only 20% of managers earning more than this person? (\$70.800)
- c) Suppose a new company has hired one employee with each of the 12 job titles, i.e. they will have less than 1 year in current position, and has decided to pay them the minimum salary for their job title. What would be the mean, median and standard deviation of the salaries of these 12 employees? Based on these results (only), is the data symmetric, skewed left or skewed right? Explain.
($\bar{X} = \$25,933$ $\tilde{X} = \$25,000$ $s = \$10,059$ symmetric)

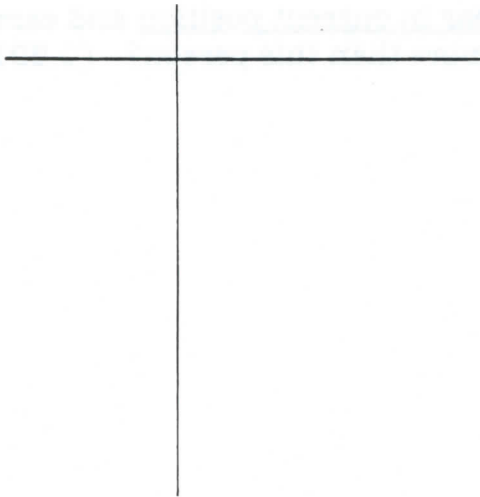
2. (cont'd)

- d) A particular company has four (4) managers who have been in their current position from 1 to 3 years. What is the probability that their average salary is between \$60,000 and \$70,000 ? (0.2898)

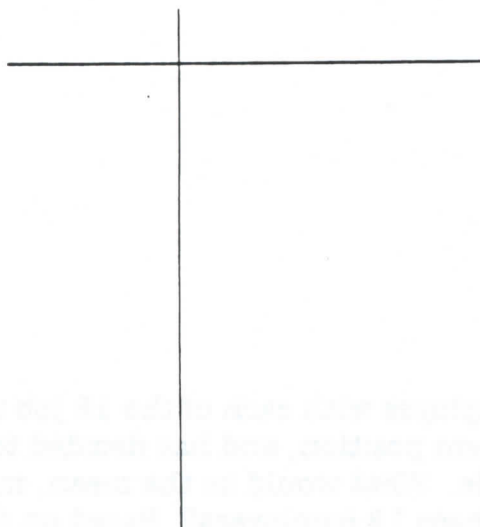
3. (3, 3 marks)

Refer to appendix I - table 5: Salary by Number of Employees Overseen.

- a) Make a stem-and-leaf display of the minimum salaries of the job titles for people who oversee 3 to 5 employees.



- b) Make a stem-and-leaf display of the maximum salaries of the job titles for people who oversee 3 to 5 employees.



4. (3 marks)

Refer to appendix I - table 8: Salary by Education.

What is the average salary of all respondents to the survey? ($\bar{X} = \$54,832$)

5. (6 marks)

Refer to appendix I - table 9: Salary by Age and Gender.

Are the average salaries of females in the 12 job titles relatively more variable than the corresponding average male salaries? (same)

6. (7 marks)

Refer to appendix II - table 11.12: New Housing Price Index

Make a relative frequency distribution of the data for 1996 using an appropriate set of classes.

	f
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	20

7. (6, 6, 6 marks)

Refer to appendix II - table 7.13: Full-time, Full-year Workers

If a sample of 40 people from this group was taken, what is the probability that less than 17 would earn more than \$33,326? (Hint: Look at table 7.13 to determine the significance of the value \$33,326.)

8. (6, 6, 6 marks)

As each case of twenty-four 355 ml. cans of Newsoft, a soft drink, comes off a production line, it passes over a weighing device that determines its filled weight by volume minus the weight of the 24 cans in the case. Any case that does not have a filled weight of 8520 ml. ($24 \text{ cans} \times 355 \text{ ml.}$) is recorded as a nonconforming case of Newsoft. The company has just purchased new filling equipment which they hope will improve quality. The old equipment averaged 4.0 percent nonconforming cases. Even though the company follows its quality control procedures very carefully, they are randomly inspected by government consumer protection inspectors. These inspectors visit Precision an average of once every 2 months.

a) What is the probability that the inspectors will visit Precision Plastics less than three times in the next year? (0.0620)

b) With the old machine what is the probability that there would be more than 5 nonconforming cases in a sample of 60 cases? (0.0325)

9. (5 marks)

The producer of a nationally distributed brand of potato chips would like to determine the feasibility of changing the design of the product package from a cellophane bag to either (1) a foil bag or (2) a box. It will cost \$200,000 more per year for the new foil bag equipment (as compared to the current cellophane bagging machinery) and \$600,000 more per year for the new box packaging equipment. The product manager believes that there would be three possible categories of national response to a change in packaging: (a) poor acceptance, (b) moderate acceptance and (c) strong acceptance. The potential annual revenue increase (or decrease) for each response category are shown below:

	Foil Bag	Box
Poor acceptance	-\$4,000,000	-\$2,000,000
Moderate acceptance	2,000,000	1,000,000
Strong acceptance	5,000,000	6,000,000

A test market survey has just been conducted for each of the proposed packaging types and the survey indicates the following probabilities of acceptance:

	Foil Bag	Box
Poor acceptance	0.3	0.4
Moderate acceptance	0.6	0.4
Strong acceptance	0.1	0.2

a) Based on appropriate expected values, which package change would you recommend? Show the calculated results.

$$\begin{aligned} (\text{FOIL BAG} - E(C)) &= 300000 \\ \text{Box} - E(C) &= 200000 \end{aligned}$$

b) What is the standard deviation of the profit change for the type of package you recommended?

$$(\sigma_{FR} = 3074085)$$

6. (14 marks)

A company employs people stuffing envelopes in their own homes. The time taken to stuff 1000 envelopes is normally distributed with an average of 95 minutes with a standard deviation of 17 minutes.

a) What is the probability that a person will take exactly 90 minutes to stuff 1000 envelopes? (0)

b) The company would like to drop the stuffers whose times to stuff 1000 envelopes are ~~below~~ ^{above} the ~~30th~~ ^{70th} percentile. What is the cut-off time for those dropped? (104 minutes)

c) What is the probability that the average time taken for a group of 15 stuffers to stuff 1000 envelopes will exceed 93 minutes? (.6757)

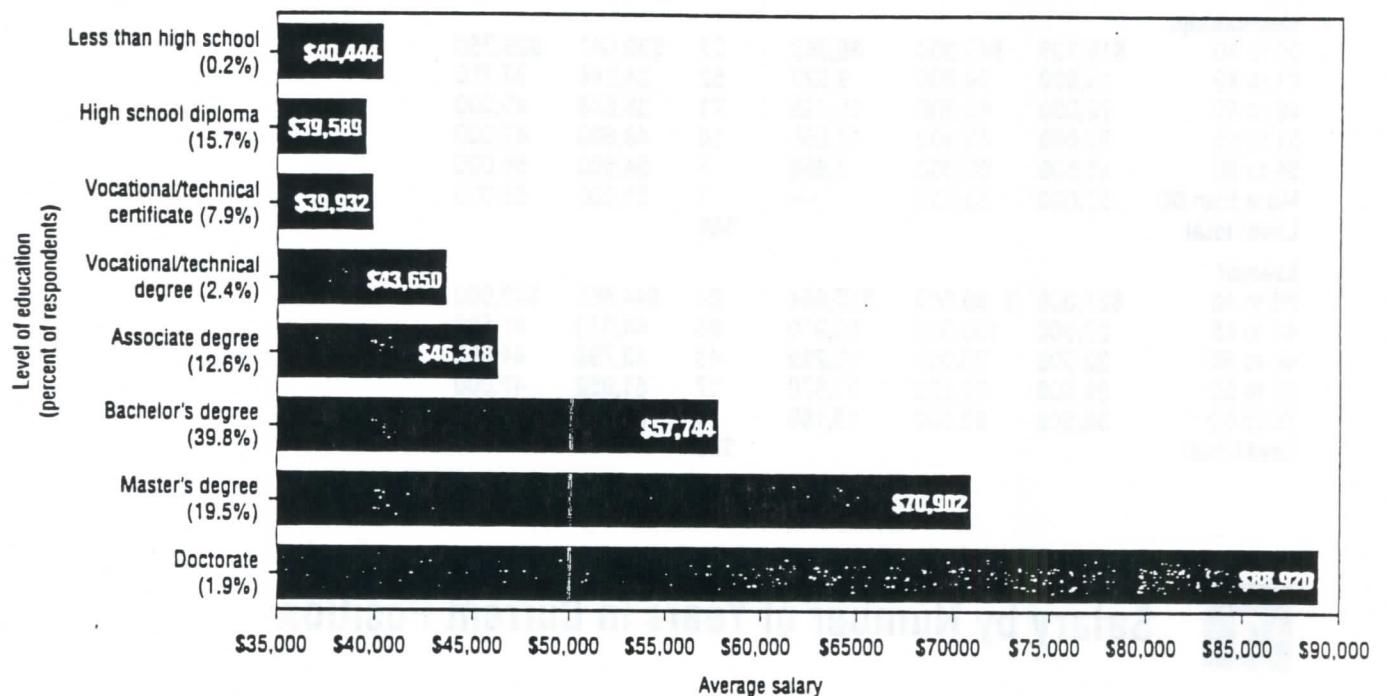
Salary by Number of Employees Overseen

	Minimum	Maximum	Standard deviation	Count	Mean	Median
Oversee 3 to 5 employees						
Analyst	\$42,000	\$ 78,000	\$19,975	3	\$55,000	\$45,000
Auditor	24,000	65,000	11,797	10	42,380	38,500
Consultant	48,000	48,000	—	1	48,000	48,000
Coordinator	28,000	65,000	12,093	14	40,536	37,000
Director	31,200	31,200	—	1	31,200	31,200
Engineer	28,500	90,000	17,330	13	53,608	50,000
Inspector	12,000	53,000	12,899	10	34,441	35,860
Manager	25,500	89,000	17,824	10	50,050	47,500
Specialist	35,000	110,000	26,403	7	51,857	42,000
Supervisor	23,200	77,000	10,770	34	39,210	37,250
Technician	22,000	60,000	9,056	23	36,283	38,000

SECTION

8

Salary by Education



SECTION

9

Salary by Age and Gender

	25 or under	26 to 35	36 to 45	46 to 55	56 to 65	Over 65	Men	Women
Analyst	4.6% \$ 33,979	33.2% \$ 42,163	33.2% \$ 47,317	22.3% \$ 48,487	6.7% \$ 53,974	—	60.8% \$ 48,056	39.2% \$ 42,271
Auditor	1.2 23,000	21.9 34,862	36.2 46,395	33.5 48,445	6.4 54,225	0.8 43,500	55.7 48,581	44.3 40,180
Consultant	0.5 55,000	17.1 63,229	35.8 66,813	31.0 79,610	14.5 66,415	1.1 100,000	71.7 74,636	28.3 59,483
Coordinator	3.0 31,798	26.5 37,662	37.4 42,426	27.8 46,653	5.0 44,161	0.3 24,000	50.7 46,392	49.3 37,561
Director	—	8.4 58,671	40.2 75,223	37.4 80,605	13.3 82,188	0.7 64,333	77.5 79,868	22.5 66,208
Engineer	3.0 44,252	27.4 48,132	39.2 52,294	22.6 55,867	7.5 59,252	0.3 74,700	83.1 52,852	16.9 49,533
Inspector	2.2 36,000	20.7 28,998	39.2 32,087	30.8 33,982	7.1 34,341	—	64.3 34,697	35.7 27,919
Manager	0.5 36,706	23.1 51,403	39.0 59,805	28.7 66,886	8.2 66,873	0.5 73,500	76.3 61,762	23.7 56,272
Specialist	1.6 30,600	18.5 41,922	37.4 49,435	29.7 53,927	12.5 57,545	0.3 52,875	65.6 53,595	34.4 43,746
Supervisor	1.4 28,424	29.1 42,474	36.0 49,369	26.3 48,063	6.9 55,543	0.3 61,000	68.1 49,323	31.9 42,478
Technician	2.6 29,667	24.4 31,439	41.8 35,087	25.3 35,822	5.9 34,631	—	66.0 36,536	34.0 29,667
Vice president	0.5 60,000	3.3 68,000	29.2 91,910	45.9 103,344	20.6 105,198	0.5 200,000	89.5 100,633	10.5 87,167

Appendix I

The following tables were taken from the November 1998 issue of Quality progress. All tables present results of a survey of quality professionals.

SECTION

2

Salary by Number of Work Hours and Exempt vs. Non-Exempt

This section breaks down the respondents' average salaries by job title, how many hours they work, and whether they receive overtime pay (non-exempt) or not (exempt).

Coordinator

No. of hours	Minimum	Maximum	Standard deviation	Count	Mean	Median
Non-exempt						
36 to 40	\$19,136	\$45,000	\$6,362	22	\$30,047	\$29,750
41 to 45	13,000	64,000	9,023	52	34,248	32,750
46 to 50	20,000	65,000	11,495	21	38,848	40,000
51 to 55	30,000	85,000	17,665	10	48,600	43,000
56 to 60	45,500	60,000	7,858	3	54,500	58,000
More than 60	53,000	53,000	—	1	53,000	53,000
Level total				109		
Exempt						
36 to 40	\$21,000	\$ 85,000	\$16,664	24	\$44,461	\$43,000
41 to 45	20,000	100,000	13,910	98	44,359	41,500
46 to 50	20,000	70,000	12,299	43	43,798	44,000
51 to 55	36,500	73,500	11,570	17	51,052	47,000
56 to 60	38,000	82,000	18,166	4	61,000	62,000
Level total				186		

SECTION

3

Salary by Number of Years in Current Position

	Minimum	Maximum	Standard deviation	Count	Mean	Median
Less than 1 year in current position						
Analyst	\$25,000	\$ 90,000	\$14,427	31	\$44,919	\$40,500
Auditor	25,000	65,000	12,495	20	46,747	48,750
Consultant	36,000	132,000	20,399	35	68,001	65,154
Coordinator	13,000	85,000	13,331	42	45,561	45,000
Director	31,200	180,000	29,193	59	75,044	70,000
Engineer	21,000	95,000	13,573	139	51,845	50,000
Inspector	13,000	50,000	9,913	23	30,805	30,000
Manager	24,000	150,000	17,278	169	58,653	58,000
Specialist	28,000	100,000	15,846	28	50,091	46,300
Supervisor	25,000	85,000	13,375	43	44,609	43,300
Technician	20,000	68,000	10,664	39	34,978	34,000
Vice president	50,000	180,000	37,909	15	96,933	95,000
1 to 3 years in current position						
Analyst	\$21,000	\$ 81,000	\$13,756	53	\$ 46,257	\$44,100
Auditor	14,000	90,000	15,805	80	43,918	41,875
Consultant	32,000	140,000	19,882	56	64,855	62,920
Coordinator	19,136	85,000	13,414	86	39,370	35,750
Director	26,520	175,000	23,345	119	76,508	75,000
Engineer	26,000	124,000	11,674	223	49,804	48,000
Inspector	18,000	60,000	9,630	56	31,820	30,000
Manager	18,000	125,000	16,783	231	56,676	55,000
Specialist	25,000	110,000	17,989	63	48,263	42,000
Supervisor	23,000	77,000	12,294	83	45,730	44,000
Technician	18,000	56,000	6,873	80	30,467	30,000
Vice president	40,000	192,000	36,720	40	104,594	98,000

Appendix II

The following tables were taken from the 1999 edition of Canada Year Book. All tables present results of a survey of Canadians.

7.13 Full-time, Full-year Workers, by Earnings Class, 1996

Earnings class	Canada	Nfld.	P. E. I.	N. S.	N. B.	Que.	Ont.	Man.	Sask.	Alta.	B. C.
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under \$5,000	2.0	1.3	3.7	2.6	2.2	1.4	2.2	2.8	4.7	2.3	1.4
\$5,000-\$9,999	3.2	7.1	4.8	3.9	3.9	2.7	2.9	5.6	5.3	3.8	2.8
\$10,000-\$14,999	6.6	9.5	9.0	7.6	9.3	7.2	5.6	8.1	8.4	7.4	5.8
\$15,000-\$19,999	8.7	9.7	9.4	11.1	10.4	11.1	7.3	10.9	9.6	7.2	8.0
\$20,000-\$24,999	10.2	13.0	14.9	12.5	14.2	10.7	8.9	13.2	11.4	12.2	8.9
\$25,000-\$29,999	11.5	8.1	18.2	14.1	10.7	13.4	10.6	12.7	13.2	11.0	10.2
\$30,000-\$34,999	11.8	11.4	9.4	12.4	9.9	12.1	11.7	12.1	10.9	11.6	12.3
\$35,000-\$39,999	9.5	12.4	9.3	7.8	10.0	8.6	9.9	8.3	8.7	9.4	10.6
\$40,000-\$44,999	8.4	5.7	5.5	8.9	8.6	8.6	8.8	7.5	7.2	8.0	8.1
\$45,000-\$49,999	5.9	4.3	5.9	5.1	6.3	4.6	6.5	4.0	6.0	5.4	7.8
\$50,000-\$59,999	9.9	8.8	4.9	7.5	7.4	9.8	11.0	7.5	6.2	9.6	9.9
\$60,000 and over	12.3	8.7	5.1	6.5	7.1	9.7	14.9	7.5	8.3	12.2	14.1
Average earnings (\$)	37,465	32,800	29,635	31,974	32,705	35,606	39,856	31,992	32,380	36,026	40,262
Median earnings (\$)	33,326	30,591	27,275	29,342	29,643	31,422	35,553	28,745	29,044	32,623	35,245
Estimated numbers (thousands)	9,522	116	36	241	201	2,264	3,792	377	320	978	1,197

Source: Statistics Canada, Catalogue no. 13-217-XPB.

11.12 New Housing Price Index

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
St. John's	84.7	89.3	92.5	99.2	100.0	100.1	100.4	100.6	99.5	97.4
Halifax	97.0	98.8	99.1	98.9	100.0	103.0	105.8	108.9	109.8	107.2
Saint John - Moncton - Fredericton	93.5	96.8	98.1	99.0	100.0	99.9	100.1	99.9	98.9	95.7
Québec	87.4	93.4	96.5	99.2	100.0	99.7	99.2	99.9	98.5	98.1
Montréal	93.5	96.7	99.3	99.9	100.0	100.8	101.4	102.1	102.0	101.9
Ottawa - Hull	91.4	96.5	100.3	99.9	100.0	99.4	99.7	97.9	96.4	97.0
Toronto	104.7	128.1	123.1	104.6	100.0	97.6	97.3	98.0	96.8	98.9
Hamilton	99.5	107.9	110.3	103.8	100.0	97.4	97.1	96.0	95.2	96.8
St. Catharines - Niagara Falls	91.6	99.3	106.2	102.5	100.0	96.8	93.0	92.3	93.2	96.8
London	85.6	93.9	99.3	99.8	100.0	99.9	100.2	97.5	96.5	97.4
Kitchener - Waterloo	99.4	109.7	111.8	103.1	100.0	100.8	98.2	97.5	97.3	98.1
Windsor	88.1	95.8	100.0	100.0	100.0	99.5	99.6	100.7	101.1	104.8
Sudbury - Thunder Bay	88.9	94.8	100.1	100.5	100.0	102.0	103.4	103.6	103.4	102.8
Winnipeg	98.8	98.4	100.2	100.1	100.0	103.6	107.1	108.7	109.7	111.3
Regina	90.3	91.7	93.3	95.6	100.0	105.5	109.7	113.1	115.0	119.1
Saskatoon	99.0	99.7	100.4	99.6	100.0	103.4	104.9	105.9	107.8	109.9
Calgary	84.8	90.9	102.2	99.4	100.0	103.1	105.5	106.4	107.4	114.5
Edmonton	77.2	83.6	96.9	99.1	100.0	103.5	104.5	103.1	102.3	104.1
Vancouver	81.0	93.7	99.0	91.9	100.0	107.7	107.1	101.5	95.4	92.3
Victoria	82.2	90.4	96.7	95.3	100.0	103.0	102.0	93.3	86.6	84.0

Source: Statistic Canada, CANSIM, matrix 9921.

1. The following tables appeared in the November 1995 and 1996 issues of Quality Progress. Refer to data presented in these tables to answer the following questions.

1995 Salary Survey

TABLE 1 Salary by Job Title						
Forty-five percent of the respondents are in managerial positions: 23% are managers, who earn an average of \$57,069; 14% are directors, who earn an average of \$73,475; and 8% are supervisors, who earn an average of \$43,485.						
	Minimum	Maximum	Standard deviation	Count	Mean	Median
Director	\$25,000	\$190,000	\$23,863	654	\$73,475	\$70,000
Consultant (independent)	20,000	300,000	39,092	198	72,595	65,000
Consultant (in-house)	20,000	130,000	18,608	279	62,415	61,000
Manager	18,000	190,000	18,508	1,102	57,069	55,000
Engineer	13,600	113,000	12,467	743	47,137	45,000
Specialist	11,000	100,000	14,595	325	44,086	42,000
Supervisor	17,000	100,000	13,317	382	43,485	42,000
Auditor	16,000	100,000	14,693	298	42,267	42,000
Analyst	12,000	88,250	14,697	146	40,604	38,100
Technician	15,000	65,632	7,095	327	29,020	28,000
Inspector	12,000	75,000	7,916	306	27,345	26,000

1996 Salary Survey

FIGURE 1 Salary by Job Title

For the first time, the salary survey looks at all of the job titles held by at least 1% of ASQC members (for more information, see the sidebar "The Job Titles and Their Definitions"). As the chart above shows, vice presidents top the pay scale, while inspectors are at the bottom. The table below takes a more in-depth look at salaries by job title.

	Minimum	Maximum	Standard deviation	Count	Mean	Median
Analyst	\$18,000	\$82,000	\$12,727	244	\$40,850	\$39,108
Auditor	14,800	100,000	15,121	337	42,991	42,000
Consultant (independent)	10,000	450,000	44,416	186	76,848	70,000
Consultant (in-house)	23,500	155,000	19,649	265	60,995	58,500
Coordinator	15,000	87,000	13,111	305	37,560	35,000
Director	22,000	160,000	23,481	393	71,032	70,000
Engineer	20,000	115,000	11,776	661	46,827	46,000
Inspector	12,000	76,951	7,900	333	27,394	26,000
Manager	15,000	148,000	17,112	948	54,951	53,000
Specialist	18,000	110,000	14,270	370	44,338	43,000
Supervisor	17,160	95,280	12,789	410	42,143	40,000
Technician	14,500	52,000	6,582	377	28,911	28,000
Vice president	24,000	300,000	34,711	274	96,941	94,000

a) (5 marks)

In which year were the salaries of Managers relatively more variable?

(BOTH SAME)

b) (6 marks)

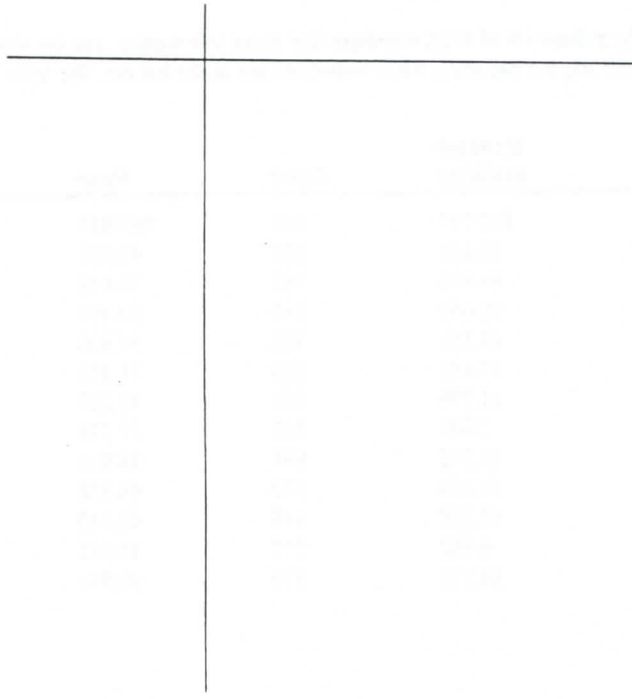
If the salaries of the Directors surveyed in 1996 were approximately normally distributed, how many of them earned more than \$100,000?

(43 DIRECTORS)

Director	Year	Age	Gender	Education	Experience	Salary
1	1996	45	M	BSc	10	120000
2	1996	52	F	MSc	15	110000
3	1996	48	M	BSc	12	105000
4	1996	55	M	PhD	18	130000
5	1996	42	F	BSc	8	95000
6	1996	50	M	MSc	14	115000
7	1996	47	F	BSc	11	100000
8	1996	53	M	PhD	19	135000
9	1996	44	F	BSc	9	98000
10	1996	51	M	MSc	16	125000
11	1996	49	F	BSc	13	108000
12	1996	54	M	PhD	17	132000
13	1996	46	F	BSc	10	102000
14	1996	56	M	MSc	20	140000
15	1996	43	F	BSc	7	92000
16	1996	50	M	MSc	15	118000
17	1996	48	F	BSc	12	105000
18	1996	52	M	PhD	18	130000
19	1996	45	F	BSc	9	97000
20	1996	51	M	MSc	16	125000
21	1996	49	F	BSc	13	108000
22	1996	54	M	PhD	17	132000
23	1996	46	F	BSc	10	102000
24	1996	56	M	MSc	20	140000
25	1996	43	F	BSc	7	92000
26	1996	50	M	MSc	15	118000
27	1996	48	F	BSc	12	105000
28	1996	52	M	PhD	18	130000
29	1996	45	F	BSc	9	97000
30	1996	51	M	MSc	16	125000
31	1996	49	F	BSc	13	108000
32	1996	54	M	PhD	17	132000
33	1996	46	F	BSc	10	102000
34	1996	56	M	MSc	20	140000
35	1996	43	F	BSc	7	92000
36	1996	50	M	MSc	15	118000
37	1996	48	F	BSc	12	105000
38	1996	52	M	PhD	18	130000
39	1996	45	F	BSc	9	97000
40	1996	51	M	MSc	16	125000
41	1996	49	F	BSc	13	108000
42	1996	54	M	PhD	17	132000
43	1996	46	F	BSc	10	102000
44	1996	56	M	MSc	20	140000
45	1996	43	F	BSc	7	92000
46	1996	50	M	MSc	15	118000
47	1996	48	F	BSc	12	105000
48	1996	52	M	PhD	18	130000
49	1996	45	F	BSc	9	97000
50	1996	51	M	MSc	16	125000
51	1996	49	F	BSc	13	108000
52	1996	54	M	PhD	17	132000
53	1996	46	F	BSc	10	102000
54	1996	56	M	MSc	20	140000
55	1996	43	F	BSc	7	92000
56	1996	50	M	MSc	15	118000
57	1996	48	F	BSc	12	105000
58	1996	52	M	PhD	18	130000
59	1996	45	F	BSc	9	97000
60	1996	51	M	MSc	16	125000
61	1996	49	F	BSc	13	108000
62	1996	54	M	PhD	17	132000
63	1996	46	F	BSc	10	102000
64	1996	56	M	MSc	20	140000
65	1996	43	F	BSc	7	92000
66	1996	50	M	MSc	15	118000
67	1996	48	F	BSc	12	105000
68	1996	52	M	PhD	18	130000
69	1996	45	F	BSc	9	97000
70	1996	51	M	MSc	16	125000
71	1996	49	F	BSc	13	108000
72	1996	54	M	PhD	17	132000
73	1996	46	F	BSc	10	102000
74	1996	56	M	MSc	20	140000
75	1996	43	F	BSc	7	92000
76	1996	50	M	MSc	15	118000
77	1996	48	F	BSc	12	105000
78	1996	52	M	PhD	18	130000
79	1996	45	F	BSc	9	97000
80	1996	51	M	MSc	16	125000
81	1996	49	F	BSc	13	108000
82	1996	54	M	PhD	17	132000
83	1996	46	F	BSc	10	102000
84	1996	56	M	MSc	20	140000
85	1996	43	F	BSc	7	92000
86	1996	50	M	MSc	15	118000
87	1996	48	F	BSc	12	105000
88	1996	52	M	PhD	18	130000
89	1996	45	F	BSc	9	97000
90	1996	51	M	MSc	16	125000
91	1996	49	F	BSc	13	108000
92	1996	54	M	PhD	17	132000
93	1996	46	F	BSc	10	102000
94	1996	56	M	MSc	20	140000
95	1996	43	F	BSc	7	92000
96	1996	50	M	MSc	15	118000
97	1996	48	F	BSc	12	105000
98	1996	52	M	PhD	18	130000
99	1996	45	F	BSc	9	97000
100	1996	51	M	MSc	16	125000

c) (4 marks)

Make a stem-and-leaf display for the minimum salaries in 1996.



d) (5 marks)

A company in 1995 hired several new people whose jobs are in the quality area. They are all being paid the minimum salary indicated for their position. These people are 12 auditors, 5 engineers, 13 specialists and 27 inspectors. What is the average and standard deviation of the salaries of all these newly hired employees?

$$\left\{ \begin{array}{l} \bar{x} = \$12754 \\ s = \$1819 \end{array} \right.$$

Question 5: (7 marks)

The following table of "Travel health plans" data was published in the Toronto Star on October 6, 2002.

Travel health plans

Healthy traveller rates for six months (about 180 days), rounded to the nearest dollar.

Coverage limits and medical requirements will vary. Some companies base rates on answers to medical questionnaires.

Read contracts carefully and look beyond price.

Prices in Canadian dollars except where indicated otherwise.

Travel plan Manager/Insurer	Age 63	Age 67	Age 73	Age 77	Age 83	Telephone
Can-Am Insurance Travel Plan Can Am Special Risk/Various Insurers	510	677	1,123	1,790	3,300	800-224-3660
Canadian Snowbird Association Medipac/Manulife Financial	568	716	998	1,504	2,542	800-563-5104
Credit Unions/ Co-operators Travel Ins. Coordinators/Co-op Life	900	1,350	2,250	4,500	4,500	800-465-4279
Destination: Travel Health Plans Destination/Industrial Alliance-Pacific Life Ins. Co./Travel Guard Canada	612	785	1,093	2,146	4,151	800-337-3532
Encourage Manulife Financial	609	753	1,266	2,469	5,378	800-565-2338
Excelsior Medicare Int'l Travel Insurance	597	799	1,044	1,773	N/A	800-461-2100
Finactive Travel Insurance Finactive/Desjardins Financial Security	615	689	1,171	2,022	3,578	888-777-0700
Golden Age Insurance Inc. Travel Protect/RBC Travel Insurance Co.	574	727	1,064	1,710	3,431	800-387-0339
Gray Power Travel Advantage ETFS/Royal & SunAlliance Insurance Co. of Canada	608	765	1,022	1,713	3,024	877-566-8851
Journeyman Travel Protection Journeyman/Trent Health	452	580	751	1,237	2,313	888-256-8763

Using the above table, would any of the prices for a person aged 77 be considered an "outlier" in comparison to the other costs in the category? If yes, name the company's or companies' prices, and present appropriate statistical evidence for your conclusion.

(None)

Question 6: (6 marks)

The following table appeared in the Globe and Mail on October 18, 2002:

Mississauga Price Index as of August 31, 2002 Index Price					
Average Home Size (square feet)	Townhouse	Semi-Detached	Link	Detached (40' lots and smaller)	Detached (larger than 40' lots)
1,200	\$ 139,075	\$ 214,631		\$ 220,225	
1,400	\$ 175,141	\$ 226,173	\$ 234,533	\$ 238,424	
1,600	\$ 211,207	\$ 249,943	\$ 245,750	\$ 256,623	\$269,066
1,800	\$ 247,273	\$ 261,713	\$ 256,968	\$ 274,822	\$ 299,300
2,000	\$ 283,339	\$ 273,483	\$ 268,185	\$ 293,021	\$ 329,534
2,200	\$ 319,405			\$ 311,220	\$ 359,768
2,400	\$ 355,471			\$ 329,419	\$ 390,002
2,600	\$ 391,537			\$ 347,618	\$ 420,236
2,800	\$ 427,603			\$ 365,817	\$ 450,470
3,000				\$ 364,016	\$ 480,704
3,200				\$ 402,215	\$ 510,938
3,400					\$ 541,172
3,600					\$ 571,406
3,800					\$601,640
4,000					\$ 631,874
4,200					\$ 622,108
4,400					\$ 692,342
4,600					\$ 722,576
4,800					\$ 752,810

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Based on this data, for which size of house, 1600 square feet or 2000 square feet, are the five indexes relatively more variable, or, is the relative variability about the same for both sizes of homes?

(ABOUT SAME)

Question 2: (35 marks = 5 x 7)

In the 1840's, Lambert Quetelet recorded data on an entire regiment of 5,732 soldiers. According to the records of Monsieur Quetelet:

- soldiers' chest measurements were normal with a mean of 39.8 inches and a standard deviation of 2.05 inches
- 12% of soldiers reported that they suffered from skin rash, and
- on average, 25 soldiers reported to Sick Bay each day.

a. What percentage of the soldiers in this regiment could be expected to have had chest measurements less than 38.5 inches?

(26.32)

b. Twenty-five percent of the soldiers had a chest measurement below what size?

(38.42")

c. In a group of fifty soldiers, what is the probability that more than four of them suffered from skin rash?

(.7320)

Question 2 continued:

- d. In a group of forty soldiers, what is the probability that no more than eight of them suffered from skin rash? (.9551)
- e. What is the probability that exactly 30 soldiers reported to Sick Bay on a particular day? (.0454)
- f. What is the probability that a maximum of 200 soldiers reported to Sick Bay in a week? (.9710)
- g. In a sample of 35 randomly selected soldiers, what is the probability that the average chest measurement of the soldiers in this sample was at least 40.5 inches? (.0217)