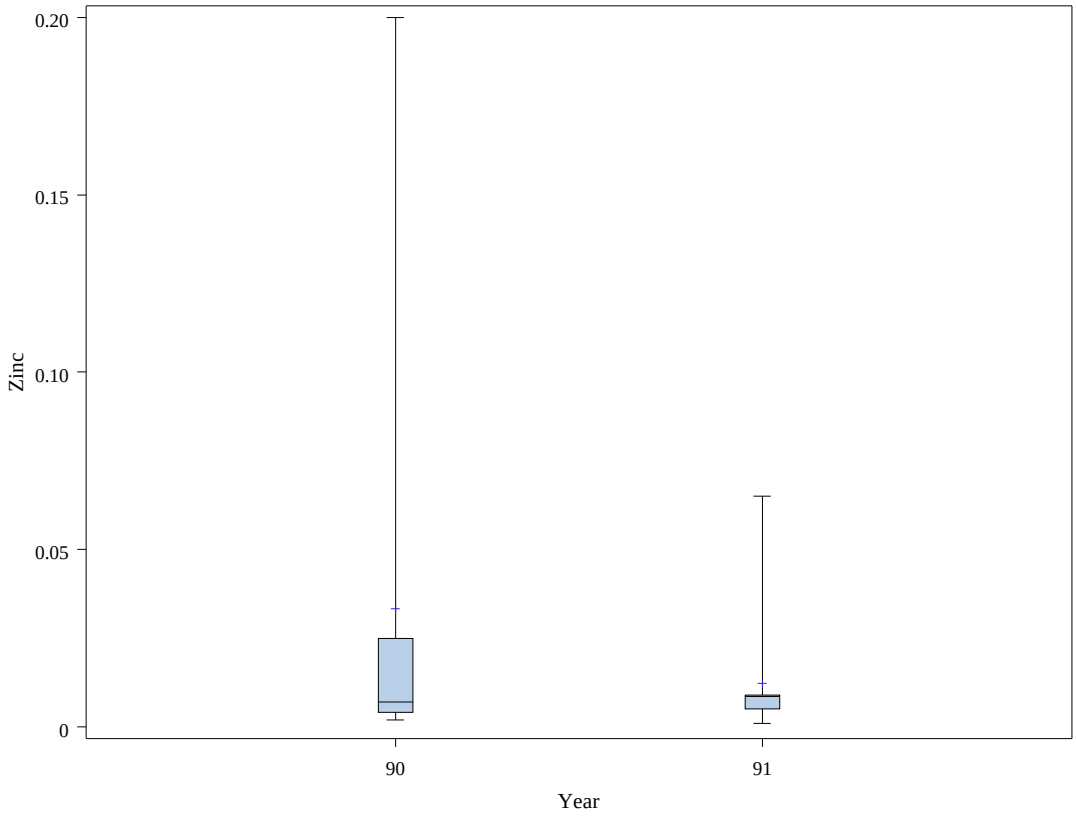
WST 211: 2016
Memorandum of Practical 1

Section A:

1.

Variable	N	Mean	Std Dev	Minimum	Maximum
Nitrate	32	0.112	0.194	0.001	1.050
Zinc	32	0.021	0.039	0.001	0.200
TDS	32	518.313	29.416	474.000	642.000

2.



3. **Five-point summary of zinc for 1990 and 1991**

Summary statistic	1990	1991
Minimum	0.002	0.001
First quartile	0.004	0.005
Median	0.007	0.009
Third quartile	0.025	0.009
Maximum	0.200	0.065

Section B:

1.

Variable	N	Mean
inda	10000	0.0335000
indb	10000	0.7685000

a) 0.0335
b) 0.7685

2.

throws	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1589	0.16	1589	0.16
5	5013	0.50	6602	0.66
6	10431	1.04	17033	1.70
7	16376	1.64	33409	3.34
8	22802	2.28	56211	5.62
9	29325	2.93	85536	8.55
10	34950	3.50	120486	12.05
11	40023	4.00	160509	16.05
12	44129	4.41	204638	20.46
13	47399	4.74	252037	25.20
14	49012	4.90	301049	30.10
15	50043	5.00	351092	35.11
16	49932	4.99	401024	40.10
17	49343	4.93	450367	45.04
18	47911	4.79	498278	49.83
19	46270	4.63	544548	54.45

Note: This is only a part of the output.

Analysis Variable : throws	
N	Mean
1000000	19.9977670

a) Empirical value for P (X = 10) is **0.0350**
b) Empirical value for P (X ≥ 10) is 1 – 0.0855 = **0.9145**
c) Empirical value for P (7 ≤ X < 18) = P (X ≤ 17) – P (X ≤ 6) = 0.4504 – 0.0170 = **0.4334**
d) Empirical value for E(X) is **19.9977**

SAS Program:

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******************Section A ********************
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************* Data Step *************;
data well;
infile 'H:\2016\WST 211\Practicals\Prac 1\well2.dat' dlm=' ';
input Date$ Year Nitrate Zinc TDS;
run;

************* Question 1 ************;
proc means data=well maxdec=3;
var nitrate zinc TDS;
run;

************* Question 2 & 3 - Solution 1 ************;
proc univariate data=well;
var zinc;
by year;
run;

proc means data=well min max median q1 q3 maxdec=3;
var zinc;
by year;
run;

************* Question 2 - Solution 2 ************;
proc boxplot data=well;
plot zinc*year;
run;
run;


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******************Section B ********************
************************************************;

************* Question 1 *****************;
data normal;
 do j=1 to 10000;
  inda=0; indb=0;
  z=rannor(50);
  if z>1.8 then inda=1; else inda=0;
  if -1.024<z<1.335 then indb=1; else indb=0;
  output;
 end;
proc means n mean;
var inda indb;
run;

************* Question 2 *****************;
data doll;
do i=1 to 1000000;
  wins=0;
  throws=0;
  do until (wins=4);
    throws=throws+1;
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    y=ranuni(1);
    if y<0.2 then wins=wins+1;
  end;
  output;
end;
proc freq;
tables throws;
proc means n mean;
var throws;
run;
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