DEPARTMENT OF DEMOGRAPHY AND SOCIAL STATISTICS
FACULTY OF SOCIAL SCIENCES
OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE

Name of Examination: 2010/2011 Rain Semester Examination
Subject: SSC 202: Statistical Methods and Sources II
Time Allowed: 2 hours

IN YOUR INTEREST, READ THE FOLLOWING INSTRUCTIONS VERY CAREFULLY:

a) You are required to answer all auestions.

b) Use **only** HB pencils to shade your answers

c) Shade the little dark boxes at the four corners of your OMR sheet

d) Shade vour registration number correctly. For example, if your number is DSS/1992/121, you must **correctly** shade all the 12 characters, i.e. shade the first three letters representing your department (DSS), shade the slash (/), then shade the four numbers representing your year of admission (1992), shade the second slash (/), and then shade the last three numbers (121).

e) Write and Shade vour names correctly. The computer only needs your correct registration number to be able to record your score, however, if another candidate mistakenly writes and shades your number on his/her answer sheet, the only way to identify you is by checking the names written and shaded. So be wise!

f) Make sure you sign the attendance list before the end of the examination and make sure you submit your answer script to an invigilator.

g) Statistical tables are provided at the end of the questions.

1. Which of the following statements is wrong with respect to index numbers?
   (a) The base period should not be too far from the current period
   (b) The base period is the period with which comparisons are made
   (c) The base period should be a period of normal economic activities
   (d) None of the above

2, Which of these statements about the Consumer Price Index (CPI) is correct?
   (a) CPI allows consumers to determine the effect of price increases on thei purchasing power
   (b) CPI is a yardstick for revising wages, pensions, alimony payments, etc
   (c) CPI is an economic indicator of the rate of inflation in a country
   (d) All of the above

3. A value index measures changes in
   (a) the price but not the quantities involved
   (b) the quantity but not the price involved
   (c) both the price and the quantity involved
   (d) none of the above

4. The index that has the tendency to overweight goods whose prices increase is
   (a) Laspeyres
   (b) Paasche
   (c) Marshall-Edgeworth
   (d) Dow Jones

5. The index that has the tendency to overweight goods whose prices decline is
   (a) Laspeyres
   (b) Paasche
   (c) Marshall-Edgeworth
   (d) Dow Jones

6. Using Paasche Index,
   (a) it is possible to attribute changes in the index to changes in price
   (b) it is impossible to attribute changes in the index to changes in price
   (c) the same quantities are used each year
   (d) all of the above

Use the data presented in the table below to answer questions 7 – 10, use 2007 as the reference period.

	2007		2010	
Commodities	Price	Quantity	Price	Quantity
A	43	47	51	61
B	64	55	62	52
C	48	62	45	56
D	39	54	25	47
E	36	43	55	65
F	58	65	85	22
G	68	56	70	45

7. Compute the simple aggregate price index and the value indexes
   (a) 110.39 & 94.31 (b) 110.17 & 86.83 **(c)** 109.39 & 109.45 (d) 108.61 & 85.60

8. Compute the Paasche price index and Paasche quantity index
   (a) 110.39 & 94.31 (b) 110.17 & 86.83 (c) 109.39 & 109.45 (d) 108.61 & 85.60

9. Compute the Fisher Price Index and Marshall-Edgeworth price index
   (a) 110.39 & 94.31 (b) 110.17 & 86.83 (c) 109.39 & 109.45 (d) 108.61 & 85.60

10. Compute the Laspeyres' price and quantity indexes
    (a) 110.39 & 94.31 (b) 110.17 & 86.83 (c) 109.39 & 109.45 (d) 108.61 & 85.60

11. The arithmetic and the geometric means of Laspeyre's and Paasche's indices are
    (a) Fisher's Ideal index and Bowley's index respectively
    (b) Bowley's index and Fishers's Ideal index respectively
    (c) Bowley and Marshal-Edgeworth indices respectively
    (d) Fisher's ideal index and Marshall-Edgeworth index respectively

12. In the estimation of value index, total value is
    (a) The quantity of the commodities consumed in the base year multiplied by the prices in the current year
    (b) The price of the commodity multiplied by the quantity consumed
    (c) The price in the base year multiplied by the quantities in the current year
    (d) Changes in the volume or quantity produced in all years

13. Which of the following is not a characteristic of index numbers?
    (a) Index numbers are always geometric means
    (b) Index numbers are expressed in percentage.

14. An index number can be defined as
(a) A statistical variable designed to show measures in related functions or group of related functions with respect to time, geographic location or other characteristic
(b) A statistical change in alpha-numeric variables over time, geographic location or other characteristic
(c) A statistical measure designed to show changes in variable or a group of related variables with respect to time, geographic location or other characteristic
(d) A statistical measure to show changes in consumables or a group of related consumables with respect to time, geographic location or other characteristic

15. Fisher's quantity index is given as:

(a) $\sqrt{\frac{\sum q_1 p_0}{\sum q_0 p_0} \times \frac{\sum q_1 p_1}{\sum q_0 p_1}} \times 100$ b) $\sqrt{\frac{L+P}{2}}$ c) $\frac{L+P}{2}$ d) none of the above

16. Bowley's price index is given as

(a) $\sqrt{\frac{\sum q_1 p_0}{\sum q_0 p_0} \times \frac{\sum q_1 p_1}{\sum q_0 p_1}} \times 100$ b) $\sqrt{\frac{L+P}{2}}$ c) $\frac{L+P}{2}$ d) none of the above

(for questions 17 – 23) **A** new poultry feed was tested on the chicken on a farm. The following table gives the results of the observations made:

Days of feed	1	3	5	7	9	11	13	15	17	19
Average weight of chicken (kg)	1.2	**1.5**	**1.4**	**1.8**	**1.6**	**2.0**	**2.1**	**1.7**	**2.3**	**2.4**

17. What is the dependent variable (Y)?
(a) Days of feed (b) Average weight of chickens (c) either of the two variables (d) no answer

18. From your regression of Y on X, what is the value of the intercept?
(a) 1.2180 (b) **1.2118** (c) 1.2133 (d) **1.2818**

19. From your regression of Y on X, what is the value of the slope?
(a) 0.0528 (b) 0.0572 (c) 0.0582 (d) **0.0532**

20. What would be the average weight of the chicken after **22** days of feeding?
(a) 2.4156 (b) **2.4384** (c) **2.5160** (d) **2.4984**

21. What would be the average weight of the chicken after **30** days of feeding?
(a) 2.9696 (b) **2.9640** (c) **2.5160** (d) **2.4984**

22. What is $\sum XY$? (a) **134.03** (b) **193.2** (c) **199.2** (d) 195.4

(For questions 24 - 34): The table below shows the scores (Y) of 12 students in SSC202 mid-semester test, the number of hours spent on studying per week (X_1) and the number of times the student attended the class (X_2).

Y	X_1	X_2
20	8	4
15	6	3
22	10	4
12	7	4
12	5	3
18	9	4
10	4	1
15	10	3
14	6	2
17	8	2
11	5	3
14	7	1

Obtain $\sum X_1^2$ (a) 110 (b) 253 (c) 533 (d) 645

What is $\sum X_1 X_2$ (a) 110 (b) 253 (c) 533 (d) 645

Compute $\sum X_2 Y$ (a) 110 (b) 253 (c) 533 (d) 645

Find $\sum X_2^2$ (a) 110 (b) 253 (c) 533 (d) 645

Obtain $\sum Y^2$ (a) 2532 (b) 2848 (c) 2884 (d) 2684

What is the value of b_1? (a) 1.3545 (b) 1.3575 (c) 1.3565 (d) 1.5355

What is the value of b_2? (a) 0.4753 (b) -6.6545 (c) 0.4321 (d) -6.2344

What is the value of the intercept? (a) 4.0391 (b) 4.0447 (c) 4.1666 (d) 4.3255

What is the value of Y if $X_1 = 11$ and $X_2 = 5$?

(a) 14.4132 (b) - 14.4132 (c) - 21.3427 (d) 21.3427

What is the value of Y if $X_1 = 13$ and $X_2 = 4$?

(a) 23 5804 (b) - 24.8815 (c) 34.3244 (d) 4.1919

What is R^2? (a) 0.1726 (b) 0.6604 (c) 0.6516 (d) 0.6060

Generally, _____ index usually overweight while _____ index usually underweight:

(a) Laspeyre, Paasche (b) Paasche, Laspeyre (c) SAPI, SAQI (c) no answer

Suppose we wish to test whether a population mean is significantly larger or smaller than 10. We take a sample and find $\bar{x}$ to be 8. What should our alternative hypothesis be?

erforming the test.
type I error
type II error
and b
and c

owing information to answer questions **45 – 48.**

y librarian suspects that the average number of books checked out to each r visit has changed recently. In the past, an average of 3.4 books was t. However, a recent sample of 23 students averaged 4.3 books per visit, dard deviation of 1.5 books.

h distribution is appropriate for this test (a) z value (B) t value (c) x^2 value
ulated value (a) 2.90 (b) 2.9878 (c) 2.8775 (d) 2.88 (e) cannot be determined
information given.
ulated value (a) 2.58 (b) 2.85 (c) 2.819 (d) 2.80 (d) 2.825
e .01 level of significance, has the average checkout changed?
a) The average has not changed at 0.01 level of significance
b) The average has changed by chance
c) The average has changed at 0.01 level of significance.
d) The calculated value is above tabulated value.
e) c and d

stions ***49*** – **57:** State inspectors, investigating charges that a soft-drink company underfills its product, have sampled 200 bottles and found the contents to be 31.7 fluid ounces. The bottles are advertised to contain 32 nces. The population standard deviation is known to be 1.5 fluid ounces. he inspectors conclude, at the 3 percent significance level, that the bottles g underfilled?

ulated value equal (a) -2.17 (b) -2.33 (c) -1.96 (d) -1.88 (e) None of these.
ulated value equal (a) 2.8 (b) 2.83 (c) 2.8284 (d) 2.828

For questions 52 – 54: Allen Distributing Company hypothesizes that a phone call is more effective than a letter in speeding up collection of bank accounts. Two groups of bank accounts were contacted, one by each method, and the length of time between mailing the letter and making the call and the receipt of payment was recorded:

Method Used	**Days to** Collection						
Letter	10	8	9	**11**	11	**14**	10
Phonecall	7	**4**	5	**4**	8	6	9

At a = 0.025, should Allen conclude that bank accounts are collected more quickly with calls than with letters?

52. Tabulated value is (a) 2.58 (b) 2.33 (c) 2.68 (d) 2.18
53. Calculated value is (a) 4.1738 (b) 4.5084 (c) 4.17 (d) 4.51 (e) 4.174
54. At a = 0.025, Allen can conclude that (a) calculated value is greater that tabulated value (b) calls more quicker than letters (c) letters more quickly than calls (d) reject the null hypothesis (e) a and b only.
55. A chi-square value can never be negative because:
    (a) Differences between expected and observed frequencies are squared.
    (b) A negative value would mean that the observed frequencies were negative.
    (c) The absolute value of the differences is computed.
    (d) None of these
    (e) a and b but not c.
56. Assume that a chi-square test is to be performed on a contingency table with 4 rows and 4 columns. How many degrees of freedom should be used? (a) 16 (b) 8 (c) 9 (d) 6
57. When performing a chi-square hypothesis test, what happens when expected frequencies in several cell are too small?
    (a) The value of x^2 = will be overestimated.
    (b) The null hypothesis will be more likely to be rejected than it should be.
    (c) The degrees of freedom are greatly reduced.
    (d) None of these.
    (e) a and b but not c.

For questions **52 – 54:** Allen Distributing Company hypothesizes that a phone call is more effective than a letter in speeding up collection of bank accounts. Two groups of bank accounts were contacted, one by each method, and the length of time between mailing the letter and making the call and the receipt of payment was recorded:

Method Used	**Days to** Collection						
Letter	**10**	8	9	**11**	11	14	10
Phone call	**7**	4	5	**4**	8	**6**	**9**

a = 0.025, should Allen conclude that bank accounts are collected more quickly with ls than with letters?

Tabulated value is (a) **2.58** (b) 2.33 (c) **2.68** (d) **2.18**

Calculated value is (a) 4.1738 (b) **4.5084** (c) **4.17** (d) **4.51** (e) 4.174

At a = **0.025,** Allen can conclude that (a) calculated value is greater that tabulated value (b) calls more quicker than letters (c) letters more quickly than calls (d) reject the null hypothesis (e) a and b only.

A chi-square value can never be negative because:

(a) Differences between expected and observed frequencies are squared.

(b) A negative value would mean that the observed frequencies were negative.

(c) The absolutevalue of the differences is computed.

(d) None of these

(e) a and b but not c

Assume that a chi-square test is to be performed on a contingency table with **4** rows and **4** columns. How many degrees of freedom should be used? (a) 16 (b) 8 (c) 9 (d) 6

When performing a chi-square hypothesis test, what happens wht xpected frequencies in several cell are too small?

(a) The value of x^2 = will be overestimated.

(b) The null hypothesis will be more likely to be rejected than it should be.

(c) The degrees of freedom are greatly reduced.

(d) None of these.

(e) a and b but not c.

Suppose you are comparing 5 groups exposed to different methods of treatment and have taken a sample of size 10 from each group. You have calculated $\bar{x}$ for each sample. How could you now calculate the grand mean?

(a) Multiply each sample mean by $\frac{1}{5}$ and add these values. Then divide this rum by 50.

(b) Add the 5 sample means and divide by 50.

(c) Add the 5 sample means and multiply by $\frac{1}{5}$.

(d) Add the 5 sample means.

(e) None of these.

To be considered a time series, a group of statistical information must have accumulated at regular intervals. (a) False (b) True (c) Unsure (d) none is correct.

Suppose you were considering a time series of data for the quarters of 2001 and 2002. The third quarter of 2002 would be coded as (a) 2 (b) 3 (c) 5 (d) 6 (e) none of these

A time series of annual data can contain which of the following components?
) Secular trend (b) Cyclical fluctuation (c) Seasonal variation (d) All of these (e) a and b but not c.

Suppose that the linear equation $\hat{Y} = 10 + 3x$ describes well an annual time series for 1988-1994. If the actual value of Y for 1991 is 8, what is the percent of trend for 1991?
) 125% (b) 112.5% (c) 90% (d) 80%

A time series for the years 1993-2004 had the following relative cyclical residuals, in chorological order: -1%, -2%, 1%, 2%, -1%, -2%, 1%, 2%, -1%, -2%, 1%, 2%. The relative cyclical residuals for 1995 should be:
) 3% (b) -1% (c) -2% (d) Cannot be determined from information given

Assume that you have been given quarterly sales data for a 5-year period. To use the ratio-to-moving-average method of computing a seasonal index, your first step would be:
(a) Compute the 4-quarter moving average.
(b) Discard highest and lowest values of each quarter.
(c) Calculate the 4-quarter moving total.
(d) None of these.

If a time series has an even number of years, and we use coding, then each

listed below are the simultaneous bills of two complementary items purchas Alfa Musa from "Man from Katsina" shop. Use the table to solve questions 66

X	55	38	69	75	28
Y	56	95	68	33	80

66. Calculate Correlation Coefficient (r) Using Spearman's rank corre coefficient method. (a.) 0. (b). 0.6 (c). − 0.8

67. Ranking the two bills in "ascending ranking order", what is the value c summation of differences (d) of the two ranking?

(a.) 1 (b). 2 (c). 0 (d) ~ 0

68. What is the value of the summation of the square of the differences (d^2)

(a). 136 (b) 63 (c) 36 (d) 316

69. What is total summation of the two bills x and y?

a. 759 b. 597 c. 957 d. 579

70 If a variable X in a relationship decreases as variable Y increases, the vari are (a) a scatter relationship (b) Positively correlated (c) Nega correlated

(d) a non-relationship

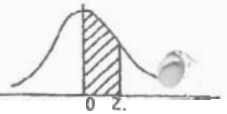
71. Correlation describes how well a linear or other equation describes or exp the relationship between variables

a. True b. False c. Neither true nor false d. All of the above

72. Correlation will be perfectly negative if an Increase in one variab accompanied by a decrease, in a perfectly definite ratio, in the other variabl

TABLE A2

Areas under the normal curve



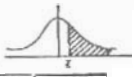
The value of the shaded area is tabulated. To obtain an area to the left of Z, add .5 to the tabulated value.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4715	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.49
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.49
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

TABLE A3

Percentage points of the normal distribution.

The value of Z corresponding to shaded area p in % is tabulated.



P	Z	P	Z	P	Z	P	Z	P	Z
50	0.0000	5.0	1.6449	3.0	1.8808	2.0	2.0537	1.0	2.3263
45	0.1257	4.8	1.6646	2.9	1.8957	1.9	2.0749	0.9	2.3656
40	0.2533	4.6	1.6849	2.8	1.9110	1.8	2.0969	0.8	2.4089
35	0.3853	4.4	1.7060	2.7	1.9268	1.7	1.1201	0.7	2.4573
30	0.5244	4.2	1.7279	2.6	1.9431	1.6	2.1444	0.6	2.5121
25	0.6745	4.0	1.7507	2.5	1.9600	1.5	2.1701	0.5	2.5758
20	0.8416	3.8	1.7744	2.4	1.9774	1.4	2.1973	0.4	2.6521
15	1.0364	3.6	1.7991	2.3	1.9954	1.3	2.2262	0.3	2.7478
10	1.2816	3.4	1.8250	2.2	2.0141	1.2	2.2771	0.2	2.8782
05	1.6449	3.2	1.8522	2.1	2.0335	1.1	2.2904	0.1	3.0902

TABLE A4

Percentage points of the t-distribution.

ν \ P	5	2.5	1.25	.5
1.	6.3138	12.706	25.452	63.657
2.	2.9200	4.3027	6.2053	9.9248
3.	2.3534	3.1825	4.1765	5.8409
4.	2.1318	2.7764	3.4954	4.6041
5.	2.0150	2.5706	3.1634	4.0321
6.	1.9432	2.4469	2.9687	3.7074
7.	1.8946	2.3646	2.8412	3.4995
8.	1.8595	2.3060	2.7515	3.3554
9.	1.8331	2.2622	2.6850	3.2498
10.	1.8125	2.2281	2.6338	3.1693
11.	1.7959	2.2010	2.5931	3.1058
12.	1.7823	2.1788	2.5600	3.0545
13.	1.7709	2.1604	2.5326	3.0123
14.	1.7613	2.1448	2.5096	2.9768
15.	1.7530	2.1315	2.4899	2.9467
16.	1.7459	2.1199	2.4729	2.9208
17.	1.7396	2.1098	2.4581	2.8982
18.	1.7341	2.1009	2.4450	2.8784
19.	1.7291	2.0930	2.4334	2.8609
20.	1.7247	2.0860	2.4231	2.8453
21.	1.7207	3.0796	2.4138	2.8314
22.	1.7171	2.0739	2.4055	2.8188
23.	1.7139	2.0687	2.3979	2.8073
24.	1.7109	2.0639	2.3910	2.7969
25.	1.7081	2.0595	2.3846	2.7874
26.	1.7056	2.0555	2.3788	2.7787
27.	1.7033	2.0518	2.3734	2.7707
28.	1.7011	2.0484	2.3685	2.7633
29.	1.6991	2.0452	2.3638	2.7564
30.	1.6973	2.0423	2.3596	2.7500
40.	1.6839	2.0211	2.3289	2.7045
60.	1.6707	2.0003	2.2991	2.6603
120.	1.6577	1.9799	2.2699	2.6174
∞	1.6449	1.9600	2.2414	2.5758

Table A4. Percentage points of the t-distribution.

The tabulated values are the t-values tp corresponding to the shaded percentage areas P. The P-column gives the appropriate degrees of freedom.

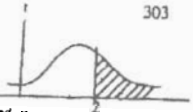


TABLE A5

Percentage points of the χ^2-distribution.

Values of $\chi^2_{\alpha,\nu}$ are tabulated for different χ^2 and ν

ν \ α	0.995	0.975	0.050	0.025	0.010	0.005
1	0.043927	0.039821	3.84146	5.02389	6.63490	7.87944
2	0.010025	0.050636	5.99147	7.37776	9.21034	10.5966
3	0.071721	0.215795	7.81473	9.34840	11.3449	12.8381
4	0.206990	0.484419	9.48773	11.1433	13.2767	14.8602
5	0.411740	0.831211	11.0705	12.8325	15.0863	16.7496
6	0.675727	1.237347	12.5916	14.4494	16.8119	18.5476
7	0.989265	1.68987	14.0671	16.0128	18.4753	20.2777
8	1.344419	2.17973	15.5073	17.5346	20.0902	21.9550
9	1.734926	2.70039	16.9190	19.0228	21.6660	23.5893
10	2.15585	3.24697	18.3070	20.4831	23.2093	25.1882
11	2.60321	3.81575	19.6751	21.9200	24.7250	26.7569
12	3.07382	4.40379	21.0261	23.3367	26.2170	29.2965
13	3.56503	5.00874	22.3621	24.7356	27.6883	29.8194
14	4.07468	5.62872	23.6848	26.1190	29.1413	31.3193
15	4.60094	6.26214	24.9958	27.4884	30.5779	32.8013
16	5.14224	6.90766	26.2962	28.8454	31.9999	34.2672
17	5.69724	7.56418	27.5871	30.1910	33.4087	35.7185
18	6.26481	8.23075	28.8693	31.5264	34.8053	37.1564
19	6.84398	8.90655	30.1435	32.8523	36.1908	38.5822
20	7.43386	9.59083	31.4104	34.1696	37.5662	39.9968
21	8.03366	10.28293	32.6705	35.4789	38.9321	41.4010
22	8.64272	10.9823	33.9244	36.7807	40.2894	42.7956
23	9.26042	11.6885	35.1725	38.0757	41.6384	44.1813
24	9.88623	12.4001	36.4151	39.3641	42.9798	45.5585
25	10.5197	13.1197	37.6525	40.6465	44.3141	46.9278
26	11.1603	13.8439	38.8852	41.9232	45.6417	48.2899
27	11.8076	14.5733	40.1133	43.1944	46.9630	49.6449
28	12.4613	15.3079	41.3372	44.4607	48.2782	50.9933
29	13.1211	16.0471	42.5569	45.7222	49.5879	52.3356
30	13.7867	16.7908	43.7729	46.9792	50.8922	53.6720
40	20.7065	24.4331	55.7585	59.3417	63.6907	66.7659
50	27.9907	32.3574	67.5048	71.4202	76.1539	79.4900
60	35.5346	40.4817	79.0819	83.2976	88.3794	91.9517
70	43.2752	48.7576	90.5312	95.0231	100.425	104.215
80	51.1720	57.1532	101.879	106.629	112.329	116.321
90	59.1963	65.6466	113.145	118.136	124.116	128.299
100	67.3276	74.2219	124.342	129.561	135.807	140.169