UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL

FINAL EXAMINATION
JULY 2025 SEMESTER

COURSE CODE	: EBP 00302
COURSE NAME	: INTRODUCTION TO BUSINESS STATISTICS
PROGRAMME NAME	: FOUNDATION IN BUSINESS
DATE	: 18 DECEMBER 2025
TIME	: 9.00 AM – 12.00 PM
DURATION	: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please CAREFULLY read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of TWO (2) Sections; Section A and Section B.
4. Answer ALL questions in Section A and Section B.
5. Please write your answers on the OMR answer sheet and answer booklet provided
6. All questions must be answered in English (any other language is not allowed).
7. Formulas and Z-tables have been appended for your reference.
8. This question paper must not be removed from the examination hall.

THERE ARE 12 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions.
Please use the objective answer sheet provided.

1. In the context of inferential statistics, the ***population*** is best described as:
   A. The finite or infinite set of all possible observations relevant to a particular study
   B. Only the data collected from the respondents of a survey
   C. A theoretical construct used solely for sampling purposes
   D. The subset of data used to make generalizations about the sample

2. Which of the following correctly distinguishes between ***quantitative*** and ***qualitative*** variables?
   A. Quantitative variables describe categories or labels, while qualitative variables are measured numerically
   B. Quantitative variables are always discrete, while qualitative variables are always continuous
   C. Quantitative variables are expressed numerically, while qualitative variables represent categories or attributes
   D. Both types of variables are measured on the same scale

3. A researcher wants to study employee satisfaction in a multinational company. She uses the company's HR database containing all active employees' names and IDs to select respondents. In this case, the HR database represents the:
   A. Population
   B. Sample
   C. Sampling frame
   D. Sampling error

4. Which of the following is an example of a ***non-probability sampling*** *technique*?
   A. Simple random sampling
   B. Systematic sampling
   C. Stratified sampling
   D. Snowball sampling

5. Define the meaning of *stratified random sampling*.
   A. The population is divided into clusters, and all individuals within selected clusters are studied.
   B. The population is divided into subgroups, and samples are randomly selected from each subgroup in proportion to their size
   C. Every individual in the population has an equal chance of being selected without any grouping.
   D. Samples are selected based on convenience or accessibility to the researcher.

6. A health department wants to assess the nutritional status of children in a large city. The city is divided into 20 districts. The researchers randomly select 5 districts and survey all children within those selected districts. Determine the sampling method has been used.
   A. Systematic sampling
   B. Stratified sampling
   C. Simple random sampling
   D. Cluster sampling

7. A researcher studying leadership qualities in corporate settings decides to interview only top-level managers who have more than 10 years of experience in leadership roles. This is an example of:
   A. Judgemental sampling
   B. Convenience Sampling
   C. Quota sampling.
   D. Snowball sampling.

8. A company's HR manager conducts one-on-one sessions with employees to understand their opinions about a new performance appraisal system. The manager asks both structured and follow-up questions. Determine the method of data collection is used.
   A. Survey through questionnaire
   B. Interview
   C. Observation
   D. Focus group discussion

9. When designing a questionnaire, why is it important to start with easy and non-threatening questions?
   A. To collect demographic data early
   B. To make respondents feel comfortable and encourage completion
   C. To test respondents' honesty before asking difficult questions
   D. To reduce the total number of questions needed

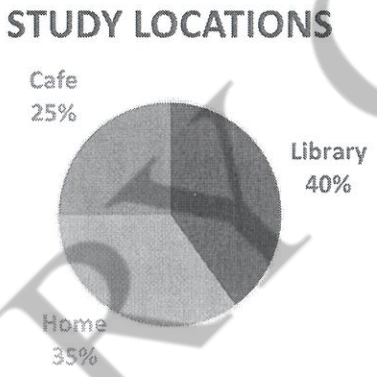
10. A lecturer wants to collect data on how students feel about group assignments. She provides options such as *"Strongly agree," "Agree," "Neutral," "Disagree,"* and *"Strongly disagree."* Find the type of question format used.

    A. Open-ended question
    B. Dichotomous question
    C. Likert-scale question
    D. Semantic differential scale

11. Name the graph that **most suitable** for displaying qualitative (categorical) data.

    A. Bar graph
    B. Histogram
    C. Ogive
    D. Frequency polygon

12. In a pie chart below showing students' preferred study locations.



    Determine the correct interpretation for the above pie chart.

    A. The data represents numerical variables
    B. Pie charts cannot show percentage data
    C. The majority of students prefer to study at the cafe
    D. Most students prefer the library, followed by home

13. A scatter diagram shows points clustered along a line that slopes upward from left to right. This indicates:

    A. A strong positive correlation
    B. A strong negative correlation
    C. A perfect negative correlation
    D. No correlation

14. In a stem-and-leaf plot of students' exam scores, the score **87** is represented as:

A. Stem = 8, Leaf = 7

B. Stem = 7, Leaf = 8

C. Stem = 80, Leaf = 7

D. Stem = 87, Leaf = 0

15. The following frequency table shows the number of air conditioner owned by each family in Taman Air.

Number of Air Conditioner	0	1	2	3	4
Frequency	15	30	20	12	2

Find the median value for the number of air conditioner owned.

A. 0

B. 1

C. 2

D. 4

16. A stem-and-leaf plot shows the following for student scores:

Stem	**Leaf**
7	2 5 8
8	0 3 7
9	1 4 4

Which of the following statements is correct?

A. The lowest score is 7

B. There are 9 data points

C. The median score is 87

D. The highest score is 94

17. For the dataset below, the **mode** is:

12, 15, 18, 22, 25, 28, 28, 13, 12, 10

A. 12

B. 28

C. 12, 28

D. 25, 28

18. Which of the following is the correct formula for the median in grouped data?

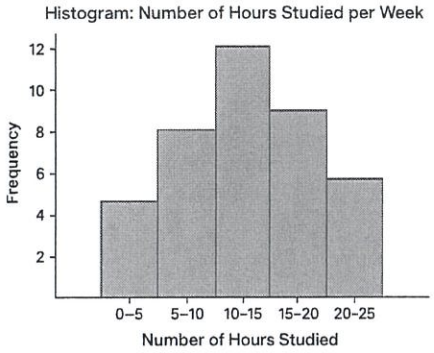
A. $\text{Median} = \frac{\text{Middle value of dataset}}{2}$

B. $\text{Median} = \frac{\sum f_i x_i}{\sum f_i}$

C. $\text{Median} = L + \frac{\frac{N}{2} - CF}{f_m} \times h$

D. $\text{Median} = L + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$

19. The histogram below shows the distribution of the number of hours students studied per week.



Using the histogram, estimate the **modal class** of the data.

A. 5 - 10
B. 10 - 15
C. 15 - 20
D. 20 – 25

20. A dataset has the following characteristics:.

- Mean = 28.4
- Mode = 32
- Standard Deviation = 10.2

Using the formula for Pearson's Coefficient of Skewness, find the skewness of the distribution.

A. – 0.35
B. 0.35
C. – 0.70
D. 0.70

21. If P(A) = 0.4, P(B) = 0.5, and A and B are **independent**, find P(A ∩B).

A. 0.90
B. 0.25
C. 0.10
D. 0.20

22. An event is certain to happen. Find the probability of the event.

A. 0
B. 1
C. Between 0 and 1
D. Cannot be determined

23. A box contains 5 red balls and 3 blue balls. Two balls are drawn **without replacement**. Calculated the probability that both are red.

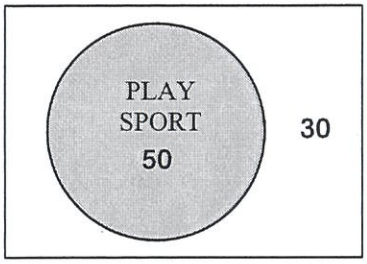
A. $\frac{10}{64}$

B. $\frac{5}{16}$

C. $\frac{5}{14}$

D. $\frac{10}{28}$

24. The Venn diagram shows 80 students in a class.



Determine the probability that a randomly chosen student **does not play sports**.

A. 0.30

B. 0.33

C. 0.35

D. 0.38

25. For two **dependent** events A and B, the correct relationship between them is:

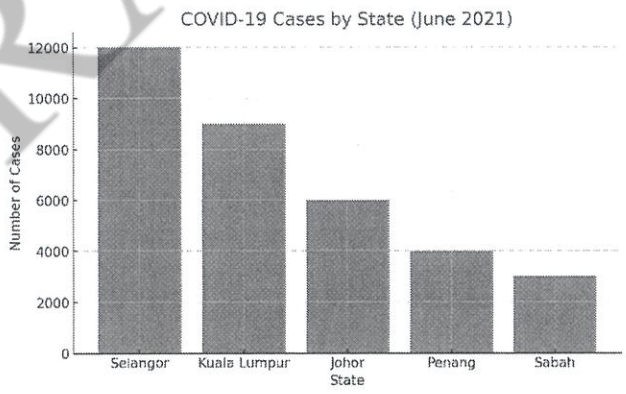
A. $P(A \cap B) = P(A) + P(B)$

B. $P(A \cap B) = P(A) \times P(B)$

C. $P(A \cap B) = P(A) \times P(B \mid A)$

D. $P(A \cap B) = P(A \mid B) + P(B \mid A)$

26. The bar graph shows a COVID-19 case selected at random from the five states.



Calculated is the probability that it came from **Johor**.

A. 0.17

B. 0.18

C. 0.26

D. 0.35

27. Determine which of the following represents a **valid probability distribution** for random variable X.

X	1	2	3	4
P(X)	0.1	0.2	0.3	0.4

A. Yes, because all probabilities add up to 1
B. No, because there are 4 values
C. No, because probabilities must be less than 0.5
D. No, because X should start from 0

28. Let X = number of defective items in a sample of 3 items. The probability distribution is:

X	0	1	2	3
P(X)	0.4	0.3	0.2	0.1

Find the probability of having **at least one defective item**.
A. 0.30
B. 0.40
C. 0.60
D. 0.50

29. Identify which of the following is the correct formula for the variance of a discrete random variable X.
A. $Var(X) = \sum[x \cdot P(x)]$
B. $Var(X) = \sum[x - E(X)] \cdot P(x)$
C. $Var(X) = [E(X)]^2 - \sum[x^2 \cdot P(x)]$
D. $Var(X) = \sum[x^2 \cdot P(x)] - [E(X)]^2$

30. Describe the condition which is **not necessary** for using the binomial probability formula.
A. Trials must be independent
B. Each trial must have two outcomes
C. Probability of success must remain constant
D. Probability of success must be greater than 0.5

31. In the binomial probability formula $P(X = k) = \binom{n}{k} p^k (1-p)^{n-k}$, what does $\binom{n}{k}$ represent?
A. The probability of success in $k$trials
B. The number of ways to choose k successes from n trials
C. The expected number of successes
D. The variance of the binomial distribution

32. A factory produces light bulbs, and 95% of them are non-defective. If 10 bulbs are selected at random, find the probability that all are non-defective.

A. 0.587
B. 0.598
C. 0.599
D. 0.597

33. In a binomial experiment, $n = 12$ and $p = 0.25$. Calculate the expected value (mean) of the number of successes.

A. 3
B. 4
C. 6
D. 9

34. In a binomial probability formula, if $p = 0.4$, $n = 10$, and $k = 3$, which formula should you use to calculate $P(X = 3)$?

A. $P(X = 3) = 10 \cdot 0.4^3 \cdot 0.6^7$
B. $P(X = 3) = \frac{3!}{10!7!} \cdot 0.4^3 \cdot 0.6^7$
C. $P(X = 3) = 0.4^3 \cdot 0.6^7$
D. $P(X = 3) = \frac{10!}{3!7!} \cdot 0.4^3 \cdot 0.6^7$

35. x = {0, 1, 2, 3} is a random variable with probability distribution function

x	0	1	2	3
P(x)	0.12	0.43	**Z**	0.20

Find the value of **Z**.

A. 0.15
B. 0.25
C. 0.30
D. 0.35

36. Describe which of the following statements about a **normal distribution** is FALSE?

A. It can only take integer values.
B. The total area under the curve is 1.
C. The curve is symmetric around the mean.
D. The mean, median, and mode are all equal.

37. The standard normal distribution has:

A. Mean = 1, Variance = 0
B. Mean = 0, Variance = 0
C. Mean = 0, Variance = 1
D. Mean = 1, Variance = 1

38. A student scores 75 in a test. The class mean is 70 and the standard deviation is 10. Find the **z-score** for the student's score.

A. - 0.5
B. 0.5
C. - 0.75
D. 0.75

39. If $X \sim N(80,9)$, what is the probability that $X < 77$?

A. $P(Z < -1) \approx 0.1587$
B. $P(Z < -0.33) \approx 0.3707$
C. $P(Z < 1) \approx 0.8413$
D. $P(Z < 0.33) \approx 0.6293$

40. Scores on a test are normally distributed with mean 60 and standard deviation 8. Find the probability that a student scores between 52 and 68.

A. 0.3413
B. 0.5000
C. 0.6826
D. 0.8413

SECTION B (Total: 60 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

The Department of Entrepreneurship is interested in studying the intention of technology students to start their own tech company after graduation. The study will be conducted at TechVille University, where 2,400 students are enrolled in technology-related programs. Among them, 35% are majoring in Computer Science, 25% in Information Systems, 15% in Artificial Intelligence, and 25% in Software Engineering. A sample of 1,200 students will be randomly selected.

(a) State the population and sample for the above study.

(2 marks)

(b) Identify the variable of interest.

(1 marks)

(c) Identify the most appropriate sampling technique for this study. Then, determine the number of students from each program that should be selected as part of the sample.

(5 marks)

(d) Determine the most appropriate method of data collection. State ONE advantage of the method.

(2 marks)

Question 2

The table below shows the monthly income (RM) of 100 households in a small town is shown below.

Monthly Income (RM)	Number of Households
1000 – 2000	15
2000 – 3000	30
3000 – 4000	25
4000 – 5000	20
5000 – 6000	10

(a) Calculate the value of mean for the above data.

(3 marks)

(b) Find the median for the monthly income above.

(4 marks)

(c) Determine the mode for the above data.

(3 marks)

(d) Using the value mean, median and mode, determine and draw the skewness for the monthly income.

(2 marks)

Question 3

A survey was conducted among office employees to evaluate the effectiveness of a new coffee brand called Café Boost in improving alertness at work. The probability that an employee chooses Café Boost is 0.45. Among those who drink Café Boost, the probability of feeling more alert at work is 0.7. Meanwhile, among those who drink other coffee brands, the probability of feeling more alert is 0.4.

(a) Construct a tree diagram to represent above information.

(6 marks)

(b) Calculated the probability that a randomly selected employee feels more alert at work.

(3 marks)

(c) If an employee feels NOT alert, find the probability that they NOT drank Café Boost.

(4 marks)

Question 4

A random variable X represents the number of cars passing through a toll booth per minute during a certain hour. The probability distribution is as follows:

X	0	1	2	3	4
P(X)	0.05	0.20	0.40	0.25	0.10

(a) Show that P(x) is a discrete probability distribution function.

(2 marks)

(b) Find the probability that X is more than 1.

(2 marks)

(c) Calculate E(x).

(2 marks)

(d) Calculate Var(x).

(4 marks)

Question 5

(a) A company survey shows that 75% of customers are satisfied with their service. If 12 customers are selected at random, find the probability that at least 11 are satisfied.

(5 marks)

(b) Use the standard normal probability table to find the following probabilities:

i. $P(Z < 1.253)$

ii. $P(Z > -0.85)$

(4 marks)

(c) A bakery sells an average of 250 loaves of bread per day, with a standard deviation of 40. Assuming the number of loaves sold per day follows a normal distribution, find how many days (out of 100 days) the bakery sold between 220 and 300 loaves.

(6 marks)

END OF EXAMINATION PAPER

FORMULA - BUSINESS STATISTICS FOR FOUNDATION PROGRAM

1. Number of classes (K) for a given number of observations (n) is $K = \frac{\log n}{\log 2} = \frac{\log n}{0.301}$

2. Class Width = $(\frac{\text{Largest Number} - \text{Smallest Number}}{k})$

3. Relative Frequency = $\frac{\text{Frequency}}{Total\ frequency}$

4. Mean for grouped data

$$\bar{x} = \frac{\sum fx}{\sum f}$$

5. Median or Q2 for grouped data =

$$\tilde{x} = L_m + \left[\frac{(\frac{n}{2}) - \Sigma f_{m-1}}{fm}\right] x\ C_m$$

6. Mode for grouped data =

$$\hat{x} = L_{mode} + \left[\frac{\triangle 1}{\triangle 1 + \triangle 2}\right] x\ C_{mode}$$

7. Positions for Quartiles, ungrouped data

$P.Q1 = \frac{n+1}{4}$. $Q1 = ?$

$P.Q2\ or\ Median = \frac{n+1}{2}$ $Q2 = ?$

$P.Q3 = \frac{3(n+1)}{4}$ $Q3 = ?$

8. Positions for Quartiles, grouped data

$P.Q1 = \frac{n}{4}$

$P.Q2\ or\ Median = \frac{n}{2}$

$P.Q3 = \frac{3(n)}{4}$

9. Q1 and Q3 for grouped data

$$Q_1 = L_{Q1} + \left[\frac{(\frac{n}{4}) - \Sigma f_{Q1-1}}{f1}\right] x\ C_{Q1}$$

$$Q_3 = L_{Q3} + \left[\frac{(\frac{3n}{4}) - \Sigma f_{Q3-1}}{f3}\right] x\ C_{Q3}$$

10. Range = Maximum Value – Minimum Value

11. Interquartile Range = Q3- Q1

12. Quartile Deviation = $\frac{Q3-Q1}{2}$

13. Variance:

a) Ungrouped data

$$\sigma^2 = \frac{(1\sum X^2)}{N} - (\mu)^2 \text{ where } \mu = \frac{\sum x}{N}$$

b) Ungrouped with frequency/Grouped data

$$\sigma^2 = \frac{(\sum fX^2)}{\sum f} - (\mu)^2 \text{ where } \mu = \frac{\sum fx}{\sum f}$$

14. Coefficient of Variation: CV

$$= \left(\frac{\text{Standard Deviation}}{\text{Mean}}\right) x100\%$$

15. Skewness: PCS = $\frac{\bar{x} - \hat{x}}{s}$ or PCS = $\frac{3(\bar{x} - \tilde{x})}{s}$

16. Probability of an Event:

a) $P(A) = \frac{\text{Number of Elements in } A}{\text{Number of Elements in } S}$

b) Let A and B be any two events defined. from a given sample space S, then:
$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

c) If A and B are mutually exclusive events, then $P(A \cup B) = P(A) + P(B)$

d) If A' is the complement of event A and they are defined from the same S, then:
$P(A') = 1 - P(A)$

e) If A and B are two defined events from the same sample space S, then the probability of conditional event B|A is given by:

$$P(B|\mathbf{A}) = \frac{P(B \cap A)}{P(\mathbf{A})}$$

Since $B \cap A = A \cap B$, we also have

$$P(A|\mathbf{B}) = \frac{P(B \cap A)}{P(\mathbf{B})}$$

f) The multiplication rule of two independent events becomes: $P(A \cap B) = P(A) \times P(B)$

17. The probablity of a continuous random variable X with its probability density function $f(x)$ is given by: $P(a < X < b) = \int_a^b f(x)\,dx$

18. The mean of a discrete random variable X with its probability distribution function is given by:

$$\mu = E(X)$$

$$E(X) = \sum(Xi \,.\, P(Xi))$$

19. The mean of a continuous random variable X with its probability density function $f(x)$ is given by:

$$\mu = E(X)$$

$$E(X) = \int_{-\infty}^{\infty} X \,.\, f(x)\,dx$$

20. The variance and standard deviation of the discrete random variable distribution is given by one the following formulas:

$$Var\,(X) = \sigma^2 = E(X^2) - E(X)^2$$

where $E(X^2) = \sum X_i^2 \times P(X_i)$

Standard Deviation is given by: $\sigma = \sqrt{\sigma^2}$

21. The variance and standard deviation of the continuous random variable distribution is given by one the following formulas:

$$Var\,(X) = \sigma^2 = E(X^2) - E(X)^2$$

where $E(X^2) = \int_{-\infty}^{\infty} x^2 . f(x)dx$

Standard Deviation is given by: $\sigma = \sqrt{\sigma^2}$

22. Let X be a discrete random variable representing the total number of successes in a binomial experiment with n repetitions of Bernoulli trials. Then the probability of x is given by:

$$P(X=x) = {}_x^nC\ p^x q^{n-x} = \frac{n!}{x!(n-x)!}\,p^x q^{n-x}$$

where $P(X)$ = the probabilities of x successes in a trial:

n = number of trials

p = probability of success of any trial

q = probability of failure (1-p)

23. The mean and variance of Binomial Distribution:

Mean: $\mu = n\,p$

Variance: $\sigma^2 = np\,(1-p) = n \times p \times q$

$$\sigma = \sqrt{np\,(1-p)}$$

24. Let X be a continuous random variable from a normal distribution ,then X can be transformed to Z score of standard normal distribution by following formula :

$$Z = \frac{x-\mu}{\sigma}\ .$$

UPPER TAIL PROBABILITIES OF THE NORMAL DISTRIBUTION N(0, 1)

z	0	1	2	3	4	5	6	7	8	9	1 2 3 4 5 6 7 8 9 SUBTRACT
0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641	4 8 12 16 20 24 28 32 36
0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4682	.4247	4 8 12 16 20 24 28 32 36
0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859	4 8 12 15 19 23 27 31 35
0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483	4 7 11 15 19 2 26 30 34
0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121	4 7 11 14 18 22 25 29 32
0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776	3 7 10 14 17 20 24 27 31
0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451	3 7 10 13 16 19 23 26 29
0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148	3 6 9 12 15 18 21 24 27
0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867	3 5 8 11 14 16 19 22 25
0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611	3 5 8 10 13 15 18 20 23
1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379	2 5 7 9 12 14 16 19 21
1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170	2 4 6 8 10 12 14 16 18
1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985	2 4 6 7 9 11 13 15 17
1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823	2 3 5 6 8 10 11 13 14
1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681	1 3 4 6 7 8 10 11 13
1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559	1 2 4 5 6 7 8 10 11
1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455	1 2 3 4 5 6 7 8 9
1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367	1 2 3 4 4 5 6 7 8
1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294	1 1 2 3 4 4 5 6 6
1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233	1 1 2 2 3 4 4 5 5
2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183	0 1 1 2 2 3 3 4 4
2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143	0 1 1 2 2 2 3 3 4
2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110	0 1 1 1 2 2 2 3 3
2.3	.0107	.0104	.0102								0 1 1 1 1 2 2 2 2
				.00990	.00964	.00939	.00914				3 5 8 10 13 15 18 20 23
								.00889	.00866	.00842	2 5 7 9 12 14 16 18 21
2.4	.00820	.00798	.00776	.00755	.00734						2 4 6 8 11 13 15 17 19
						.00714	.00695	.00676	.00657	.00639	2 4 6 7 9 11 13 15 17
2.5	.00621	.00604	.00587	.00570	.00554	.00539	.00523	.00508	.00494	.00480	2 3 5 6 8 9 11 12 14
2.6	.00466	.00453	.00440	.00427	.00415	.00402	.00391	.00379	.00368	.00357	1 2 3 5 6 7 8 9 10
2.7	.00347	.00336	.00326	.00317	.00307	.00298	.00289	.00280	.00272	.00264	1 2 3 4 5 6 7 8 9
2.8	.00256	.00248	.00240	.00233	.00226	.00219	.00212	.00205	.00199	.00193	1 1 2 3 4 4 5 6 6
2.9	.00187	.00181	.00175	.00169	.00164	.00159	.00154	.00149	.00144	.00139	0 1 1 2 2 3 3 4 4
3.0	.00135	.00131	.00126	.00122	.00118	.00114	.00111	.00107	.00104	.00100	0 1 1 2 2 2 3 3 4
3.1	.000968	.000935	.000904								3 6 9 13 16 19 22 25 28
				.000874	.000845	.000816	.000789				3 6 8 11 14 17 20 22 25
								.000762	.000736	.000711	2 5 7 10 12 15 17 20 22
3.2	.000687	.000664	.000641	.000619	.000598						2 4 7 9 11 13 15 18 20
						.000577	.000557	.000538	.000519	.000501	2 4 6 8 9 11 13 15 17
3.3	.000483	.000466	.000450	.000434	.000419						2 3 5 6 8 10 11 13 14
						.000404	.000390	.000376	.000362	.000349	1 3 4 5 7 8 9 10 12
3.4	.000337	.000325	.000313	.000302	.000291	.000280	.000270	.000260	.000251	.000242	1 2 3 4 5 6 7 8 9