

✓ Congratulations! You passed!

TO PASS 70% or higher

Keep Learning

GRADE
100%

Practice Full Assessment

TOTAL POINTS 26

1. Based on the following data, determine the median. This should be a whole number.

1 / 1 point

34, 44, 56, 58, 58, 60, 62, 63, 63, 63, 69, 72, 72

62

✓ Correct

topic to review: calculating a mean, median, and mode

2. What is the 95% (non-conservative) confidence interval for the population proportion of all teens who get 6 to 8 hours of sleep per night on average?

1 / 1 point

Hours of Sleep	Number of Responses
Less than 4	119
4 to 6	404
6 to 8	460
8 to 10	298
More than 10	87
Total	1368

- 26.83% to 32.23%
 31.07% to 36.19%
 28.30% to 30.76%
 30.93% to 36.33%

✓ Correct

Note that this is the non-conservative confidence interval. The formula sheet has equations to help calculate the value.

3. Construct the least squares regression line based in the following output:

2 / 2 points

Call:

lm(formula = egg_production ~ age, data = chickendata)

Coefficients:

```
Estimate Std. Error t value Pr(>|t|)  
(Intercept) 3.24521   .981048   3.42    0.831  
age       -0.34231   0.03453  -2.874   0.0020 **
```

Signif. codes: 0 '***'0.001 '**'0.01 '*' 0.05 '.' 0.1 '' 1

Correlation Matrix:

	egg_production	age
egg_production	1.0000000	0.6213532
age	0.6213532	1.0000000

Please, structure your response as $y = _ + _x$ so, for example, if the value of b_0 was 1.301 and the value of b_1 was 0.422, then your answer would be: $y = 1.301 + 0.422x$. Please round to the third decimal place.

y = 3.245 - 0.342x

✓ Correct

topics to review for this question: linear regression, least squares regression line

4. Select the correct p-values that match the statements. Some conclusions may be applicable to more than one p-value.

2 / 2 points

Evidence against the null hypothesis is significant at the 1% level.

0.0949

0.0037

Correct

This is below 0.01, so if alpha is set to 1%, then we would consider the evidence to be significant.

0.0209

0.0621

5. A tree farming company is testing how many items customers purchase during their visits. Based on many results, the (partial) probability distribution below was determined for the discrete random variable $X = \text{number of pieces of information remembered}$ (during a fixed time period).

2 / 2 points

What is the missing probability $P(X=6)$? Note that the missing probability should be reported to the second decimal place.

X = # items	1	2	3	4	5	6
Probability	0.58	0.18	0.10	0.07	0.05	---

0.02

Correct

Topic to review: PDF (Probability Distribution Function)

6. A survey was sent out to re-evaluate the proportion of people who play games on pc computers, as the last study on the topic had been gathered four years prior. The current study, with 861 participants, found that 53% of people who responded play on a pc computer.

1 / 1 point

This survey was done specifically to test the possibility that fewer people are playing games on pc computers. The previous study found that 81% of people were playing games on pc computers. Which of the following represents the hypotheses that we will be testing, assuming that p represents the most recent findings and that p_0 represents the older findings in the previous study.

H₀: $p_0 \geq 0.81$ versus H_a: $p < 0.81$

H₀: $p \geq 0.81$ versus H_a: $p < 0.81$

H₀: $p = 0.81$ versus H_a: $p \neq 0.81$

H₀: $p \leq 0.81$ versus H_a: $p > 0.81$

Correct

Consider what is being tested. Do we assume that the data is less than before, greater than before, or different, but not in what way it is different?

7. A research group is curious about features that can be attributed to music genres. A music streaming service provides a few different attributes for songs such as speechiness, danceability, and valence. They suspect that there is a difference between the average valence (positive or negative emotion) of metal songs compared to blues songs. However, they must conduct a study to determine if that is true. From a sample of 87 metal songs, the sample mean for valence is 0.451 and the sample standard deviation is 0.139. From a sample of 94 blues songs, the sample mean for valence is 0.581 and the sample standard deviation is 0.167.

1 / 1 point

Assume that sample1 comes from the sample metal songs and that sample2 comes from the sample blues songs.

Calculate the p-value and determine if we should accept or reject H₀ under alpha = 0.10.

reject

Correct

Topic to review: population mean, hypothesis testing, Type I and Type II errors, calculating the p-value, interpreting the p-value

8. Which of the following graphs match the following distribution description?

1 / 1 point

uniform, symmetrical, no apparent outliers

15





Image Description: A histogram describes the number of customers in store in different time periods of a day. The horizontal x-axis shows time slots of day ranging from 6 o'clock to 24 o'clock, each bin representing a 2-hour time period. The vertical y-axis shows the number of customers in store ranging from 0 to 15, in increments of 5. Data in the histogram can be summarized accurately as:

- 6-8 hours, 0 customers
- 8-10 hours, 11 customers
- 10-12 hours, 11 customers
- 12-14 hours, 11 customers
- 14-16 hours, 11 customers
- 16-18 hours, 11 customers
- 18-20 hours, 11 customers
- 20-22 hours, 11 customers
- 22-24 hours, 0 customers

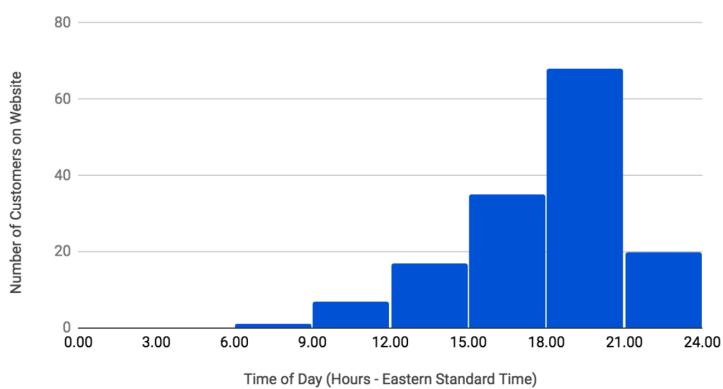


Image Description: A histogram describes the number of customers on website in different time periods of a day. The horizontal x-axis shows time of day in hours in eastern standard time, ranging from 0 o'clock to 24 o'clock, each bin representing a 3-hour time period. The vertical y-axis shows number of customers on website in different time periods, ranging from 0 to 80, in increments of 20. Data in the histogram can be summarized accurately as:

- 0-3 o'clock, 0 customer
- 3-6 o'clock, 0 customer
- 6-9 o'clock, 1 customer
- 9-12 o'clock, 7 customers
- 12-15 o'clock, 17 customers
- 15-18 o'clock, 35 customers
- 18-21 o'clock, 68 customers
- 21-24 o'clock, 20 customers

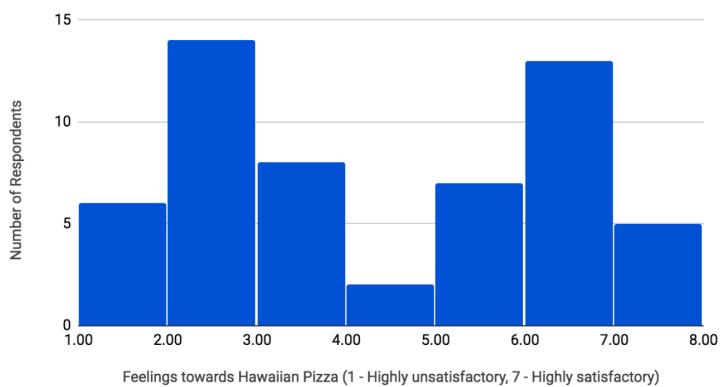
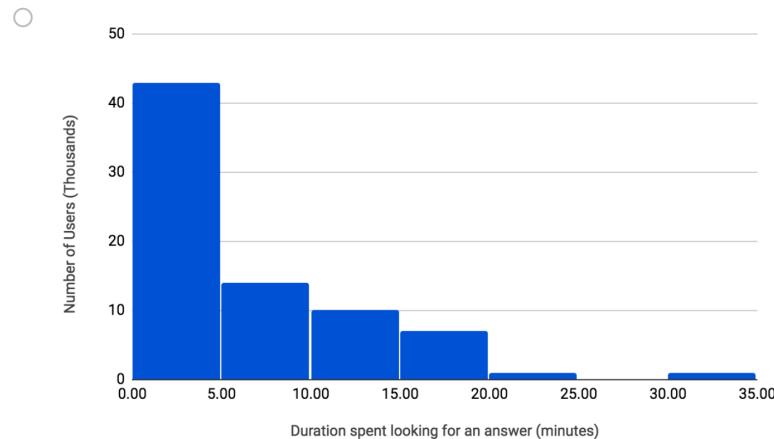


Image Description: A histogram describes the distribution of respondents' satisfaction level towards Hawaiian pizza. The horizontal x-axis shows respondents' feelings, ranging from 1 to 7, 1 means highly unsatisfactory, 7 means highly satisfactory, each bin representing a 1 satisfactory level. The vertical y-axis shows the number of respondents, ranging from 0 to 15, in increments of 5. Data in the histogram can be summarized accurately as:

- 6 respondents voted for level 1
- 14 respondents voted for level 2

- 8 respondents voted for level 3
- 2 respondents voted for level 4
- 7 respondents voted for level 5
- 13 respondents voted for level 6
- 5 respondents voted for level 7



A histogram describes the time users spent looking for answers. The horizontal x-axis shows duration spent looking for an answer in minutes, ranging from 0.00 to 35.00, each bin representing a 5-minute time period. The vertical y-axis shows the number of users (in thousands) ranging from 0 to 50, in increments of 10. Data in the histogram can be summarized accurately as:

- 0-5 minutes, 43 people
- 5-10 minutes, 14 people
- 10-15 minutes, 10 people
- 15-20 minutes, 7 people
- 20-25 minutes, 1 people
- 25-30 minutes, 0 people
- 30-35 minutes, 1 people

 **Correct**

Topics to review: distributions, histograms, interpreting graphs and diagrams

9. When testing whether the means of more than two populations are equal, which test would we use?

1 / 1 point

- ANOVA
 CHI-Square
 T-test
 F-test

 **Correct**

Topics to review: Situations for different types of tests - ANOVA, CHI-Square, Population Proportion, Population Mean, Two Population Proportions, Two Population Means, Regression

10. The length of a movie falls on a normal distribution. About 95% of movies fall between 75 minutes and 163 minutes.

1 / 1 point

What is the value of the standard deviation for average movie length in minutes? Please round to the second decimal place.

22.45

 **Correct**

Key topics to review for this question: distribution, standard deviation

11. Which of the following list comprehensions will extract all tuples in `words` that have origins that are Greek? Select as many as apply.

2 / 2 points

```

1 words= [("time", ("Noun"), ("Middle English")),
2     ("take", ("Verb"), ("Gothic")),
3     ("people", ("Noun"), ("Latin")),
4     ("think", ("Verb", "Adjective"), ("Gothic")),
5     ("work", ("Noun", "Verb", "Adjective"), ("Greek", "Gothic")),
6     ("company", ("Noun"), ("Late Latin")),
7     ("problem", ("Noun", "Adjective"), ("Greek")),
8     ("feel", ("Verb", "Noun"), ("Old Norse")),
9     ("public", ("Adjective", "Noun"), ("Latin")),
10    ("aberration", ("Noun"), ("Latin")),
11    ("annul", ("Verb"), ("Latin")),
12    ("cacophony", ("Noun"), ("Greek"))),

```

```

13     ("grovel", ("Verb"), ("Old Norse")),
14     ("muse", ("Noun", "Verb"), ("Greek", "Middle French")),
15     ("sublime", ("Adjective", "Noun", "Verb"), ("Latin")),
16     ("viliify", ("Verb"), ("Late Latin")),
17     ("diffuse", ("Verb", "Adjective"), ("Latin")),
18     ("elucidate", ("Verb"), ("Late Latin")),
19     ("flout", ("Verb", "Noun"), ("Middle English")),
20     ("grouse", ("Verb", "Noun"), ("?")),
21     ("limpid", ("Adjective"), ("Latin")),
22     ("nexus", ("Noun"), ("Latin")),
23     ("quibble", ("Verb", "Noun"), ("?")),
24     ("verbose", ("Adjective"), ("Latin")),
25     ("catalyst", ("Noun"), ("?")),
26     ("nocturnal", ("Adjective"), ("Late Latin")),
27     ("diurnal", ("Adjective", "Noun"), ("Latin")),
28     ("malapropism", ("Noun"), ("English")))

```

greek_origins = [data for data in words if "Greek" in data[-1]]

 **Correct**

topics to review: list comprehensions, extracting data from tuples, conditionals

greek_origins = [data for data in words if data[2] in "Greek"]

greek_origins = [data for data in words if "Greek" in data[2]]

 **Correct**

topics to review: list comprehensions, extracting data from tuples, conditionals

greek_origins = [data for data in words if data[-1] == "Greek"]

12. Which of the following lines of code will sort the list of tuples called 'circus' by the values stored in the fifth item in each tuple from highest to lowest? (Note that when we say fifth we mean what a human would consider fifth.)

1 / 1 point

sorted(circus, key = lambda c: circus[4], reverse = True)

sorted(circus, key = lambda d: d[4], reverse = True)

 **Correct**

Topics to review: sorting, key parameters, indexing with tuples

sorted(circus, key = lambda d: d[4], reverse = False)

sorted(circus, lambda z: z[4], True)

13. Assume that a json-structured string has been stored in a file named "retrieved_data.json". Which solution would read in the data and convert it to a python object? json has been imported in each case. Select all that apply

2 / 2 points

1 f = open("retrieved_data.json").read()
2 p_object = json.loads(f)
3 f.close()

 **Correct**

Topics to review: reading from files, json

1 f = open("retrieved_data.json")
2 f_string = f.read()
3 p_object = f_string.json()
4 f.close()

1 f = open("retrieved_data.json", "r")
2 f_string = f.read()
3 p_object = json.dumps(f_string)
4 f.close()

1 f = open("retrieved_data.json", "r")
2 p_object = json.loads(f.readlines())
3 f.close()

1 f = open("retrieved_data.json").readlines()
2 p_object = json.loads(f)
3 f.close()

14. Which of the following while loops has an infinite loop? Select as many as apply.

1 / 1 point



```
1 x = 13.0
2 while True:
3     print(x)
4     if x > 15.0:
5         break
6     x += 0.5
```



```
1 while True:
2     input = ("enter a number")
3     print(input)
```

✓ Correct

Topics to review: while loops, input, infinite loops



```
1 while False:
2     input = ("enter a number")
3     print(input)
```



```
1 z = "newspaper stand? It's across the way."
2 t = 0
3 while t <= len(z):
4     print(z[t])
5     if z[t] in [".", ",", "!", "?"]:
6         print(t)
7         break
8     t += 1
```

15. Assume that you are creating a function that is working on a list of dictionaries. Each dictionary stores data about different interest groups. In each dictionary is a key called "questions_req" which has the value of True or False, depending on whether the group requires people to answer questions before they can join. Which of the following functions would create a list of groups that require someone to answer questions before they can join?

1 / 1 point



```
1 def req_questions(data):
2     return [group for group in data if group["questions_req"] == False]
```



```
1 def req_questions(data):
2     requires = []
3     for group in data:
4         if group["questions_req"] == True:
5             requires += group
6     return requires
```



```
1 def req_questions(data):
2     requires = []
3     for group in data:
4         if group("questions_req") == True:
5             requires.append(group)
6     return requires
```



```
1 def req_questions(data):
2     requires = []
3     for group in data:
4         if group["questions_req"]:
5             requires.append(group)
6     return requires
```

✓ Correct

Topics to review: function definition, for loops, conditionals, booleans, nested data, dictionaries, lists, return statements

16. Provide the line that would serve as the function definition for the method add_department within the School Class:

1 / 1 point



```
1 class School():
2
3     def __init__(self, name, num_students, departments = []):
4         self.name = name
5         self.student_population = num_students
6         self.number_departments = len(departments)
7         self.departments = departments
8
9     # Below will be the method definition for a method called add_department.
10    # This method will take a string as input, called new_dept, which will be added to
11    # the instance variable self.departments.
12    # Your task for this prompt is to write the method definition.
```

```

13
14     """your code will be inserted here"""
15     |     self.number_departments += 1
16
17     def graduate(self, class_size):
18         self.student_population = self.student_population - class_size
19
20     def add_students(self, class_size):
21         self.student_population += class_size

```

```
def add_department(self,new_dept):
```



Topics to review: Classes, class methods, function definitions, parameters

Remember, when you create a class method you must always use self (or whatever keyword you use in the `__init__` method of the class definition) as the first parameter, regardless of how many parameters you set up for the method.

17. Please fill in the blank so that the following code successfully iterates through the data stored in "makeup_products" and extracts the total number of shades for items that are meant just for "Lips", storing the total in a variable called "total_count_lip_shades".

2 / 2 points

```

1  makeup_products = {"Products": [
2      {"Primer": {
3          "Shades": 15,
4          "Styles": 5,
5          "Location": "Face"
6      }},
7      {"Lipstick": {
8          "Shades": 48,
9          "Styles": 3,
10         "Location": "Lips"
11     }},
12     {"Lip liner": {
13         "Shades": 32,
14         "Styles": 4,
15         "Location": "Lips"
16     }},
17     {"Blush": {
18         "Shades": 13,
19         "Styles": 2,
20         "Location": "Face"
21     }},
22     {"Eye Liner": {
23         "Shades": 14,
24         "Styles": 7,
25         "Location": "Eye"
26     }},
27     {"Travel Makeup Kit": {
28         "Shades": "N/A",
29         "Styles": 3,
30         "Location": "Face, Lips, Eye"
31     }},
32     {"Chapstick": {
33         "Shades": 3,
34         "Styles": 7,
35         "Location": "Lips"
36     }}
37   ],
38   "total_count_lip_shades": 0
39 }
40

```

```
if item[product]["Location"] == "Lips":
```



Topics to review: conditionals, nested data extraction, dictionaries.

For this particular question, we needed to determine what key to use for each dictionary stored in item. Once we know what key to use, we need to dig deeper to see what key value pair mentions where the product should be worn. By looking at the dictionary, we can see that that information is stored in the key "Location".

18. Assume that a json-structured string has been stored in a file named "improv_data.json". Fill in the blank to convert the json string into a python object and store it in the variable improv_py.

1 / 1 point

```

1  import json
2  improv_f = open("improv_data.json", "r").read()
3  improv_py = # your code would finish this statement
4  improv_f.close()

```

```
json.loads(improv_f)
```



For this problem, it would take the string assigned to improv_f and use json.loads to load the string into a python object.

19. [Practice Jupyter Notebook] How many lines are in the file list_of_books.txt?

1 / 1 point

5

 **Correct**

This is correct. To determine this, you could count the number of \n that appear in the file, check the length of the list produced by readlines, or count the number of times that the for loop iterates through the file.

20. [Practice Jupyter Notebook] What is the output if you print the following code: hatcher.can_check_out(Book('How to Lie with Statistics', 'Darrell Huff'))

1 / 1 point

Please copy it here from the output.

True

 **Correct**

This is correct. Because there is 1 or more copies of "How to Lie with Statistics" available, the output should be True.