

Using external data sets to create random multiple versions of Canvas questions

Interface 2017:

Creative Assessment, Beyond Multiple Choice

Presenter: Dr. Patrick Thompson

A typical Canvas formula question

5 pts

AptSafety

In a random sample of [n] Gainesville apartment dwellers, [X] indicated that they thought their landlord was "not providing them with a safe place to live."

Use this information to make a 95 percent (two-sided) confidence interval estimate of the proportion of all Gainesville apartment dwellers that feel this way. For your answers, give the width of this interval to **four decimal places**.

move/copy question to another bank

- Variable definition and formula calculation

Variable Definitions

Once you have entered your variables above, you should see them listed here. You can specify the range of possible values for each variable below.

Variable	Min	Max	Decimal Places	Example Value
n	<input type="text" value="200.0"/>	<input type="text" value="300.0"/>	<input type="text" value="0"/>	244
X	<input type="text" value="90.0"/>	<input type="text" value="145.0"/>	<input type="text" value="0"/>	95

Formula Definition

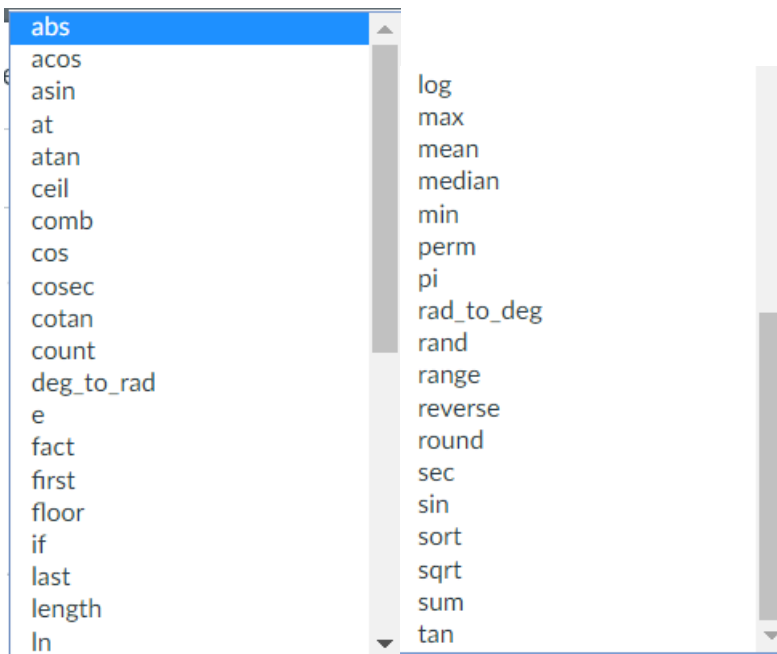
Next you'll need to write the formula or formulas used to compute the correct answer. Just use the same variable names listed above.

Formula	Result
$z = 1.960$	= 1.96
$p = X/n$	= 0.3893
$SE = \sqrt{p(1-p)/n}$	= 0.0312
$ME = z * SE$	= 0.0612
$2 * ME$	= 0.1224

the last formula row will be used to compute the final answer



- The limited list of Canvas helper functions



Using the “If” function to compute the right answer to a question

if

Evaluates the first argument, returns the second argument if it evaluates to a non-zero value, otherwise returns the third value

if(bool, success, fail)

- Example syntax
- Result of the program

Giving students a data set to use on the exam

Question

During the exam, you will be asked to analyze data from this Excel file (download whichever version you prefer):

[AssessedValue.csv](#)

[AssessedValue.xlsx](#)

- Question header



- The data in the Excel file

	A	B	C
1	Sorrento	Elm Valley	Montrose
2	213	261	224
3	346	252	236
4	251	348	230
5	247	168	308
6	355	264	262
7	330	211	220
8	217	318	232
9	321	257	241
10	203	267	263
11	253	303	199
12	249	268	242
13	250	255	168
14	251	345	202
15	218	131	293
16	242	250	198
17	260	144	199
18	345	311	316
19	181	378	211
20	238	321	233
21	185		234
22	251		216
23	248		148
24	244		218
25			150
26			311
27			201
28			225
29			214



Assigning a task to compute from the file's data

95 pts

T-Test

The data file *AssessedValue.xlsx* contains information on the assessed value of a random sample of homes in three neighborhoods. For example, there were 23 homes from Sorrento and the values ranged from 181 to 355. The values are in \$1000s, but **analyze everything in the units given**. Here is more information:

Neighborhood	Name	No. Homes	Data Range	Zillow
1	Sorrento	23	181 to 355	267
2	Elm Valley	19	131 to 378	287
3	Montrose	28	148 to 316	241

On this question you should analyze the data corresponding to **neighborhood number [ver]**.

The column titled "Zillow" shows the average value of homes in this area as listed on the website Zillow dot com. For your data, test the hypothesis (at a 5% significance level) that the average assessed value is the same as the Zillow price.

What is the p-value for this test? Your answer should be stated to **four decimal places**.

move/copy question to another bank

- Randomly assigning the task
- Computing the correct answer key

Variable Definitions

Once you have entered your variables above, you should see them listed here. You can specify the range of possible values for each variable below.

Variable	Min	Max	Decimal Places	Example Value
ver	<input type="text" value="1.0"/>	<input type="text" value="3.0"/>	<input type="text" value="0"/>	2

Formula Definition

Next you'll need to write the formula or formulas used to compute the correct answer. Just use the same variable names listed above.

Formula	Result	
a1 = .1605	= 0.1605	✘
a2 = .0936	= 0.0936	✘
a3 = .0640	= 0.064	✘
d1 = ver - 1	= 1	✘
d2 = ver - 2	= 0	✘
d3 = ver - 3	= -1	✘
Its1 = if(d1, 0, 1)	= 0	✘
Its2 = if(d2, 0, 1)	= 1	✘
Its3 = if(d3, 0, 1)	= 0	✘
Its1*a1 + Its2*a2 + Its3*a3	= 0.0936	✘

the last formula row will be used to compute the final answer

