

Qualtrics Math

Let's go over some basic operations for qualtrics math. Below is a useful link:

<https://www.qualtrics.com/support/survey-platform/survey-module/editing-questions/piped-text/math-operations/>

- Math operations performed in the survey flow should be saved as embedded data. The results of the equation are not displayed to the respondent by default. If you would like to display the results of the equation to respondents, you can do so through the use of piped text.
- Math operations performed in question or choice text are displayed to the respondent, but are not reported in the survey results.

All math operations are contained within the following syntax:

`$e{ }`

The math equation will be inserted between { and }. All items in the equation should be separated by a space.

`$e{ 4 + 4 }`

Example: To add 4 + 4:

`{ 4 + 4 }#`

The math equation will be inserted between { and }. All items in the equation should be separated by a space.

Piped Text

- Knowing how to add 4 + 4 is great, but performing math operations on survey answers could be more useful. This is where piped text comes in.

Piped text follows a specific format:

`#{q://QID1/SelectedChoicesRecode}`

To use piped text in a math operation, remove the \${ and }.

`q://QID1/SelectedChoicesRecode`

Once placed in a math operation, the operation would look like this:

`$e{ q://QID1/SelectedChoicesRecode * 4 }`

Operators:

ADDITION, SUBTRACTION, MULTIPLICATION, AND DIVISION

`$\$e\{ 1 + 2 - 3 / 4 * 8 \}$` resolves to -3.

PARENTHESES

Parentheses may be added to specify order of operations.

`$\$e\{ (1 + 2 - 3) / 4 * 8 \}$` resolves to 0.

EXPONENTS

`$\$e\{ 6 ^ 2 \}$` resolves to 36.

SQUARE ROOTS

`$\$e\{ \text{sqrt}(9) \}$` resolves to 3.

Using an exponent instead would also be appropriate. For example, `$\$e\{ 9 ^ (1 / 2) \}$` .

ABSOLUTE VALUE

`$\$e\{ \text{abs}(-23) \}$` resolves to 23.

ROUNDING

`$\$e\{ \text{round}(10 / 3 , 2) \}$` rounds 10/3 with 2 decimal places and resolves to 3.33.

REMAINDER

```
$(e{ 16 % 9 } divides 16 by 9 and returns the remainder, which is 7.
```

Javascript Code from Tutorial Example:

Code:

```
Qualtrics.SurveyEngine.addOnLoad(function()
{
    /*Place your JavaScript here to run when the page loads*/

    var Value_Guess = parseInt("${q://QID6/TotalSum}");
    var Value_Correct_Example = parseInt("${e://field/Value_Correct_Example}");
    var Value_Correct = Value_Correct_Example+Math.floor(Math.random() * 10);
    var Points_Period = Math.max(0,10-Math.abs(Value_Guess - Value_Correct));
    var total= parseInt("${e://field/total}");
    //var avg1 =parseInt((Value_Guess + total)/4);
    var bot1 = parseInt("${e://field/bot1}");
    var bot2= parseInt("${e://field/bot2}");
    var bot3 = parseInt("${e://field/bot3}");
    var avg1 = parseInt((bot1 +bot2 + bot3 + Value_Guess)/4);
    var goldenval = Math.round(parseInt(avg1 * (2/3)));
    Qualtrics.SurveyEngine.setEmbeddedData( "Value_Guess", Value_Guess );
    Qualtrics.SurveyEngine.setEmbeddedData( "Value_Correct", Value_Correct );
    Qualtrics.SurveyEngine.setEmbeddedData( "Points_Period", Points_Period );
    Qualtrics.SurveyEngine.setEmbeddedData( "avg1", avg1 );
    Qualtrics.SurveyEngine.setEmbeddedData( "goldenval", goldenval );

});

Qualtrics.SurveyEngine.addOnReady(function()
{
    /*Place your JavaScript here to run when the page is fully displayed*/

});

Qualtrics.SurveyEngine.addOnUnload(function()
{
    /*Place your JavaScript here to run when the page is unloaded*/

});
```

Screenshot of Code:

Edit Question JavaScript

```
Qualtrics.SurveyEngine.addOnLoad(function()
{
    /*Place your JavaScript here to run when the page loads*/

    var Value_Guess = parseInt("${q://QID6/TotalSum}");
    var Value_Correct_Example = parseInt("${e://field/Value_Correct_Example}");
    var Value_Correct = Value_Correct_Example+Math.floor(Math.random() * 10);
    var Points_Period = Math.max(0,10-Math.abs(Value_Guess - Value_Correct));
    var total= parseInt("${e://field/total}");
    //var avg1 =parseInt((Value_Guess + total)/4);
    var bot1 = parseInt("${e://field/bot1}");
    var bot2= parseInt("${e://field/bot2}");
    var bot3 = parseInt("${e://field/bot3}");
    var avg1 = parseInt((bot1 +bot2 + bot3 + Value_Guess)/4);
    var goldenval = Math.round(parseInt(avg1 * (2/3)));
    Qualtrics.SurveyEngine.setEmbeddedData( "Value_Guess", Value_Guess );
    Qualtrics.SurveyEngine.setEmbeddedData( "Value_Correct", Value_Correct );
    Qualtrics.SurveyEngine.setEmbeddedData( "Points_Period", Points_Period );
    Qualtrics.SurveyEngine.setEmbeddedData( "avg1", avg1 );
    Qualtrics.SurveyEngine.setEmbeddedData( "goldenval", goldenval );

});

Qualtrics.SurveyEngine.addOnReady(function()
{
    /*Place your JavaScript here to run when the page is fully displayed*/

});
```

General Javascript Math/ Embedded Variable Display Notes:

```

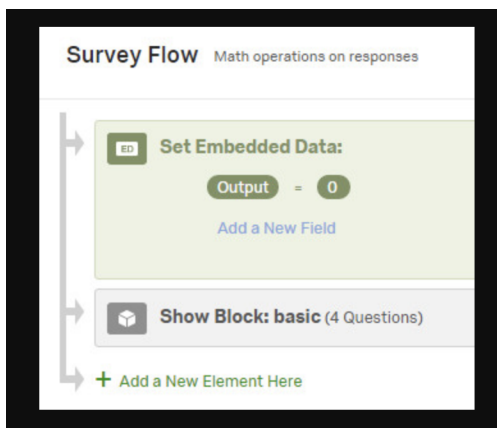
Qualtrics.SurveyEngine.addOnload(function()
{
// Next two lines read the value of the slider;
var question_text =
"${q://QID1/ChoiceNumericEntryValue/1}";
var slider_value= parseInt(question_text);

// Performs some simple math operations on the value of
the slider;
// (doubling it and adding a small random value);
var for_output = slider_value * 2 + Math.random();

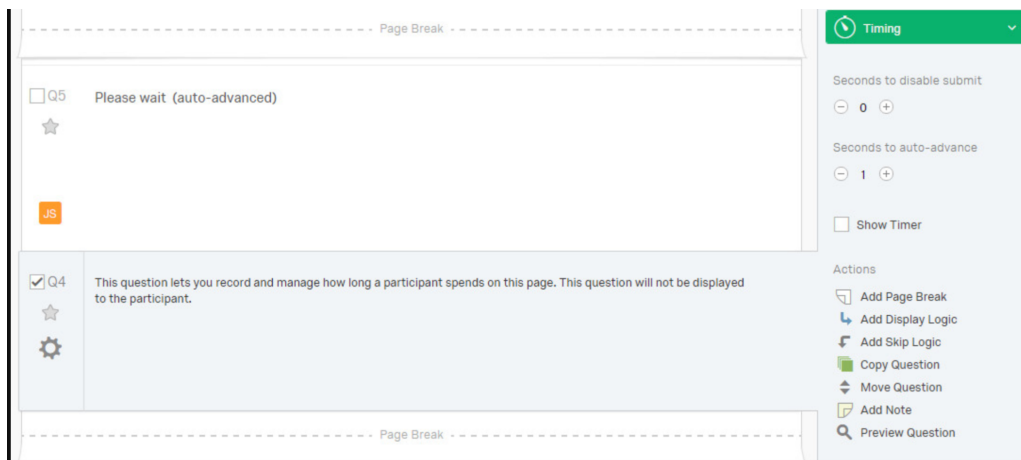
// Writes the result into the EmbeddedData variable named
"Output";
Qualtrics.SurveyEngine.setEmbeddedData("Output",for_output
);
});

```

First, it's necessary to initialize the Embedded Data variable in the Qualtrics Survey Flow.
Example:



A simple display question and a timer with a one-second auto-advance work together to give the Javascript code a place to reside. When the Javascript is put into the display question, the code loads, runs, and finishes after the input question (e.g a slider) and before the output display.



The Javascript in the display question performs the mathematical operation.

```
Qualtrics.SurveyEngine.addOnload(function()
{
  // Next two lines read the value of the slider;
  var question_text = "${q://QID1/ChoiceNumericEntry/1}";
  var slider_value= parseInt(question_text);

  // Performs some simple math operations on the value of the slider (doubling it and adding a small random value);
  var for_output = slider_value * 2 + Math.random();

  // Writes the result into the EmbeddedData variable named "Output";
  Qualtrics.SurveyEngine.setEmbeddedData("Output",for_output);
});
|
```

A simple display question can be used to show the input you're working with (e.g. the slider value previously chosen by the respondent) and the output of the mathematical operation. Note that the second line of the display is simply piping the Embedded Data variable "Output" to the screen. The "Output" variable also shows up in the data when it's exported from Qualtrics.

