**Student Activity Guide: Limitations of Representing Numbers with Bits** Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 1 Lesson 8

**Activity 3: JSFiddle and the alert() method**

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| 1. Open a browser window and go to <http://jsfiddle.net>. This website enables you to simulate code in a web page. We will use the part of page that has the label JavaScript. | Screen Shot 2014-05-17 at 12.02.35 PM.png |
| 2. In JavaScript, the alert() method enables the user to create output in the form of an alert box. Place your cursor in the JavaScript box and enter the command:  alert(“Hello Friends!”)  The quotation marks are important because they tell JavaScript that ‘Hello Friends!’ Is the exact text that you want outputted. | Screen Shot 2014-05-17 at 12.04.28 PM.png  Screen Shot 2014-05-17 at 12.03.41 PM.png |
| 3. Now, find the Run button and click on it. | Screen Shot 2014-05-17 at 12.03.02 PM.png |
| 4. If you typed the command correctly, you should see an alert box like this one. Click OK to continue. | Screen Shot 2014-05-17 at 12.00.30 PM.png |
| 5. You can also use the alert() method to make calculations. Try to calculate how many seconds there are in one day. Use the \* key for multiplication. | alert (60 \* 60 \* 24) |

**Activity 4: Precision Errors in Addition**

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| 1. Change the alert() command to:  alert( 4 + 7).  Write the answer in the space to the right. |  |
| 2. Try this one: alert(0.1 + 0.2)  Write the answer in the space to the right. |  |
| 3. Why do you think the computer produced this answer? |  |
| 4. Experiment on your own to find two other numbers that give an addition error. Write the numbers, and the incorrect answer in the space to the right. |  |
| 5. Investigate why these errors happen by entering in numbers such as 0.1 and 0.2 into a [Binary-Decimal Converter.](http://www.mathsisfun.com/binary-decimal-hexadecimal-converter.html) (<http://www.mathsisfun.com/binary-decimal-hexadecimal-converter.html>)  What happened when the decimal numbers were converted to binary that can explain the addition errors? |  |