1. Log in to your Sage Cloud account.
   
   (a) Start the Chrome browser.
   (b) Go to http://cloud.sagemath.com and sign in.
   (c) You should see an existing Project for our class. Click on that.
   (d) Click “New”, call it c05, then click “Sage Worksheet”.

A string is a sequence of characters (letters, numerals, symbols, etc). If you put a sequence of characters between quotes, you are telling Sage to treat what’s between the quotes as a string (instead of as a keyword). Strings can be manipulated, and have places that can be filled in.

2. Type and evaluate `print 'This string has { }'.format('17 characters')`. Now try replacing ‘17 characters’ with any other string.

3. Type and evaluate the following program.

   ```python
def superstring(x):
    print 'This string has { }'.format(x)
```

4. Now test your function. Type and evaluate `superstring('black letters')`.

More graphing and calculating basics.

5. Make a point at (4, 4) Evaluate `point((4,4))`.

6. Make it bigger by adjusting the “size” parameter. Get help with `point`?

7. Draw a line from (−1,1) to (4,4). Get help with `line`?

8. Make the line thicker by adjusting the “thickness” parameter.

9. Make the line dashed by adjusting the “linestyle” parameter.

10. Now make the line red.

11. Draw a triangle between (1,1), (1,2), and (2,1) using the line command.
12. Now draw a triangle between (1,1), (1,2), and (2,1) using the polygon command. What’s the difference?

**Boolean Expressions in Sage**

A boolean expression is one that evaluates to True or False.

15. Evaluate $3 > 3$.
16. Evaluate $3 >= -3$.
17. Evaluate $13/2 == 1$.
18. Evaluate $13/2 == 0$.

While “==” is used as a claim of equality of expressions (the left-hand-side and the right-hand-sides of the “==”) the symbol “!=” is used to express in-equality.

20. Evaluate $5 != 5$.

21. We will assign a value to a variable “a”. Then we will use that variable in a boolean expression. (These two lines can be typed in one cell, or each in its own cell). Type and evaluate:

   ```python
   a=5
   a>2
   ```

   Boolean expressions can be combined with boolean operators like “and” and “or”.

22. Evaluate $3 == 3$ and $3 == 4$.
23. Evaluate $3 == 3$ or $3 == 4$.

**Lists in Sage**

A list is a basic data structure in Python and Sage. They are represented by square brackets with comma separated numbers, strings, etc., between them (like [2, 5, 9] or ["red", "blue"]). We have already seen lists in our use of both the solve() and line() commands which used, respectively, a list of equations and a list of points.

24. Lists can be given names. Evaluate L=[2,5,9]. Then evaluate L.