Week 1;

Introduced variables, math operators, functions (returns), printing to the console, codeskulptor

Week 2:

Review:

Integers vs floating points

Introduce:

booleans, comparisons (and, not, or)

Conditionals

Assignment

<http://rice.codeskulptor.org/#comp140_class_2b_conditionals.py>

Given 3 side lengths, determine whether it is possible to construct a triangle from those sides.

Given the dimensions and weight of a bag, determine whether it can be brought on southwest as a carry-on

Determine whether two numbers are within some delta of one another

Return the string representation of the current season(spring, summer, fall, winter) given the month and day

Given angle and velocity of a baseball leaving home plate, determine whether it was a home run assuming ball is in bounds (there is a 6 foot barrier around the field that the ball has to clear)

Part 2

Lists, Strings (concat, slice, index, split)

Lists (coupled pieces of data, indexing, slicing, concatenation)

Iteration: Central to all interesting programsAMEN. The reason we build computers (they are really good at thinking this way). Break problems into a series of steps to be done over and over:

Example: exponentiation: iterated multiplication

Work really well with lists and strings: python lets us “iterate over” these data structures using what is called a “for-loop”

Mention range function: range(4) returns [0,1,2,3]

If we just want to iterate while a condition is true, we use a while loop (note that these can be infinite loops)

Possible examples:

1. the students create a counter to count the number of times a word appears in a text.
2. Fizz buzz
3. Print the first n prime numbers
4. Approximate the area under the sine function from [0, pi] (hint: can I do this using random numbers?)
5. Given a polynomial represented as a list of coefficients (how can we do this), and a given x, evaluate the function at that point.
6. Bisection given a polynomial represented as a list, lower bound, and upper bound

Take a circle of radius 1.

Within the circle, inscribe an equilateral triangle. Then, within the triangle, inscribe new smaller circle.

Within the smaller circle inscribe a regular square, and within the square, inscribe yet another circle.

Within the smaller circle inscribe a regular pentagon, and within the pentagon, inscribe yet another circle.

Iterate this process of inscribing regular polygon and a new smaller circle, increasing the number of sides of the polygon by 1 each time.

What is the radius of the limiting circle?