Business & Computer Science

Brunswick School Department
Computer Programming with Python
Branching For Loops, Strings, and Tuples

Essential Understandings	▪ Every different programming language was written to make solving specific problems easier. ▪ Python has a variety of powerful decision and loop structures that allow software to appear to interact with the user. ▪ Python's Tuples allow strings to be manipulated in ways that are more convenient than many other languages.
Essential Questions	▪ What are the advantages of coding in Python over popular programming languages like C++ and Java? ▪ Does Python do a better job with lists (or arrays) and string manipulation than other programs? ▪ What functions and operators are available in Python for sequences and strings?
Essential Knowledge	▪ Branching power continues with for loops. ▪ Strings are a data type that follows a series of strict rules for storage and manipulation. ▪ Python makes lists (or arrays) easier with the use of Tuples.
Vocabulary	▪ <u>Terms</u>: o for loop, string, Tuple, sequence, list, index, slicing, len()
Essential Skills	▪ Use the in operator effectively. ▪ Use the len() function . ▪ Slice strings. ▪ Create Tuples. ▪ Write effective for loops. ▪ Apply random number generation, words, and strings.

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Related Maine Learning Results	Mathematics A. Number Real Number A1.Students will know how to represent and use real numbers. a. Use the concept of nth root. b. Estimate the value(s) of roots and use technology to approximate them. c. Compute using laws of exponents. d. Multiply and divide numbers expressed in scientific notation. e. Understand that some quadratic equations do not have real solutions and that there exist other number systems to allow for solutions to these equations. D. Algebra Functions and Relations D5.Students express relationships recursively and use iterative methods to solve problems. a. Express the (n+1)st term in terms of the nth term and describe relationships in terms of starting point and rule followed to transform one terms to the next. b. Use technology to perform repeated calculations to develop solutions to real life problems involving linear, exponential, and other patterns of change.
Sample Lessons And Activities	▪ *Word Jumble game* is a version of the Mastermind game where you solve a scrambled word puzzle. ▪ *Pizza Slicer game* teaches how to grab slices of strings or words.
Sample Classroom Assessment Methods	▪ *Print_it_Backwards; Word_Jumble_w_Hints*
Sample Resources	▪ Publications: o Python Programming for the Absolute Beginner – Michael Dawson