Three standards

Standard	**9-12.CT.2**	**9-12.CT.5**	**9-12.CT.4**
Clarifying Statement	Collect and evaluate data from multiple sources for use in a computational artifact.	Modify a function or procedure in a program to perform its computation in a different way over the same inputs, while preserving the result of the overall program.	Implement a program using a combination of student-defined and third-party functions to organize the computation.
Activity/Task	Long term project: ➢ Data Collection with surveys ➢ Data analysis using MS Excel pivot tables and graphs	**While** vs. **for**: ➢ Which is better suited for this task? ➢ Which loop structure can be written with most simply to accomplish this task?	Long term project: ➢ Create a program simulating the functions of an ATM machine

Explanation	Students can collect data from a different sources or people using a survey. They can learn how to organize the data using pivot tables in Microsoft Excel. Pivot tables are a powerful tool in Excel because they allow you to summarize and aggregate large amounts of data into a more simplified and comprehendible format. Students can learn how to "weed out" redundant or bad data. This skill will come in handy when it comes to doing their own data analysis. It is important especially for students to be able to understand how repetitive data can affect their analysis or model. They can accomplish this is in a long-term project and write a report on their findings and explain what they think their data says.	Students are given a method or function that performs a repetitive action to achieve a desired result. If the method/function is written with a for loop, how can it be written most effectively in a while loop? What challenges are there when accomplishing this? Vice versa is true if method/function is written as a while loop and students need to convert it to a for loop.	Students can work on a program that simulates an ATM. They can create custom functions that: ➢ Takes in money and adds it to a bankroll ➢ Takes money out and subtracts the amount from the user's account ➢ Students can create methods/functions that will request input from the user about how they want the money to be distributed ➢ Other methods can: ○ check for if the user is trying to draw more money than there is in the account ○ it will count the number of each bill denomination needed to distribute to the user ➢ methods can also check if there is enough cash in the safe to distribute to users or a service call needs to be made before any of services can be provided to customers or clients