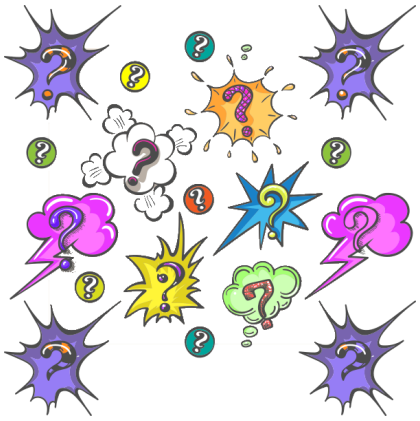
Unit 2: Putting it all Together

Mission 8: Answer Bot



Intro and Discussion Points:
This project builds on the concept of selecting from a **list** of items and adds **random** number generation to the mix. Up to this point the CodeX has been pretty predictable – as you'd expect a computer to be! But some applications need randomness, or unpredictable results:

- Games, where there shouldn't be an obvious pattern for the human player to learn.
- Cryptography, where randomness helps secure stored passwords and messages.
- Scientific studies, where statistical sampling requires random selection.

The CodeX uses a pseudo random number generator, which means the "random" numbers it provides are really just a fixed sequence that's meant to have an unpredictable pattern.

*Note - this would be a great time to collaborate with math teachers!

CodeX Lesson Plans

UNIT 2 : Putting it all Together	**MISSION 8: Answer Bot**	**# DAYS:** 2
UNIT GOALS: Students will synthesize skills to create more complex programs.	**ADDITIONAL MATERIALS:** ● none	**VOCABULARY:** ● List ● Variable ● I/O (Inputs and Outputs)

FOCUS CSTA STANDARDS:1B-AP-09, 1B-AP-10, 2-AP-11, 2-NI-05, 3A-DA-09, 3A-AP-14, 3A-IC-26

LEARNING TARGETS:

- I can apply properties of lists to a new program.
- I can utilize multiple variables in a program and describe their purpose.
- I can apply I/O (inputs and outputs) to make my code more efficient.

SUCCESS CRITERIA:

- ❑ Program the CodeX to generate and display a random number when a button is pressed.
- ❑ Change the program to display a random text message from a list of possible “answers”.

KEY CONCEPTS:

- Random number generators are crucial for many computer applications.

DISCUSS REAL WORLD APPLICATIONS:

- Video games
- Secure password encryption
- Real-world simulator trainers
- Scientific statistical sampling

ASSESSMENT STRATEGIES:

Remix suggestions (set aside 0.5-1 period to complete):

- Add random **Images** to the list.
- Make **button B** choose from a different list.
- Remove the button control, and just continuously cycle random messages.
  - Delay for effect in between messages
- Make a “Magic 8 Ball” program.
- Change your code to use `random.choice()` to pick from your list (see toolbox for ‘`random`’)

TEACHER NOTES:

Always refer to **Appendix A:** if you get stuck. It has the “Answer Keys” for you.