**Encoding and Decoding Data Day 1**

Instructional Days: 1-2 days

Topic Description: Today the students will learn methods to encode and decode letters and numbers and gain intuition for finding patterns in given sequences.

# Objectives:

The student will be able to:

* Encode and Decode messages using a given cipher
* Encode and decode messages by identifying patterns in sequences.
* Learn the importance of encoding and decoding data.

# Outline of the Lesson and Teaching Strategies:

* Motivate student interest in the topic of encoding and decoding (15 minutes)
  + Watch “Meet Agent Zhivago” video and discuss the “Thinking About Encoding” questions
  + Discuss when and why encoding is necessary
    - It may be helpful to use the Encoding and Decoding Presentation linked in the Encoding and Decoding Overview section under “Resources for this Section”
* Introduce the Activity (10 minutes)
  + Watch the “Intro to Activity” Video
  + Have students complete the “Your Turn” section to make sure they have a basic understanding of encoding and decoding.
* Complete the Activity (20 minutes)
  + Have students complete the “Encoding and Decoding Messages” worksheet by themselves or in small groups
  + Go over the worksheet solutions
  + Have a group discussion about the “Activity Wrap-Up” questions
* Introduce the idea of translation as a form of encoding and decoding (15 minutes)
  + Watch the “Imperfections in Encoding” video
  + Complete the “Your Turn” exercise
* Wrap Up Day 1 (10-15 minutes).
  + Watch the “Activity Reflection” video
  + Watch the “Day 1 Wrap-Up” video
  + Talk about the questions and ideas mentioned in the “Wrap up Discussion”
  + Bonus: Watch the “Encoding, Decoding, and its Relationship to Cryptology” video if you have extra time

Resources:

* All the resources including the Presentation Slides and the worksheet are available on the Encoding and Decoding Overview page of the muddX website (http://muddx.com/courses/HMC/MyCS/Middle-years\_Computer\_Science/courseware/a339ca7ac9004ffb86da90388d1a9c15/4feed2fc77ae4806a62b4162e37bf448/)