



## 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)

## Lesson Plan: Encoding and Decoding Data Day 1

- 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/](http://muddx.com/courses/HMC/MyCS/Middle-years_Computer_Science/courseware/a339ca7ac9004ffb86da90388d1a9c15/4feed2fc77ae4806a62b4162e37bf448/))