Cryptology Making and Breaking Codes Project

Developed/Adapted By

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One sentence description of the assignment or activity

Students will apply their understanding of cryptology to create and use their own unique cipher and to attempt to break a cipher created by their classmates.

Course for which this is used

- ☒ PreAlgebra (Math 0950)
- ☒ Beginning Algebra (Math 0990)
- ☒ Intermediate Algebra (Math 1010)
- ☒ College Algebra (Math 1050)

Key topics taught in this activity

Cryptology

Prerequisites

Modular arithmetic, overview of cryptology, encryption and decryption of simple ciphers

Lesson Plan – Detailed Description

Students will begin by creating a unique cipher which must be different from the ciphers discussed in class. Students will then respond to the code making prompts on the "Cryptology-MakingAndBreakingCodesProject-Assignment" worksheet.

Once the ciphers have been created, students will randomly receive an encrypted message from one of their classmates. They will then try to break the cipher, responding to the worksheet prompts as they do so. The next code breaking phase will involve the students acting out the contents of the message encrypted with their cipher. This will provide code breakers with cribs which can be used to further break the cipher they received. The final phase of the code breaking portion of this project will involve the plaintext and ciphertext messages both being provided for the codebreakers. Then students will make one last attempt to discover how the code they received works.

Activity Grading/Assessment

Students will be assessed based on their lesson participation and on their completion of the making and breaking codes assignment.

Class Time Required

45-60 minutes for code making portion of the project
55-80 minutes for code breaking portion of the project

Out-of-Class Time Required

0-120 minutes completing required code making and breaking portions of the project.

Materials Required

Making and Breaking Codes assignment

Supplemental Web Resources

http://www.pbs.org/wgbh/nova/decoding/
http://www.ciphersbyritter.com/LEARNING.HTM
http://www.cs.trincoll.edu/~crypto/index.html
http://www.simonsingh.net/The_Black_Chamber/chamberguide.html