Name(s)_____ Period _____ Date _____

Activity Guide - Keeping Data Secret

Encoding and Decoding

Here are the binary codes for the emojis that you will use in this lesson.

Use the chart above to decode the following message:

_____   _____   _____

Encryption and Decryption

Here's a message that has been **encrypted**. Encrypted messages have been changed so that only some people are able to read them. Try to use the chart to decode the message.

Before you can read this message, you will need to **decrypt** it. When you decrypt a message, you make it readable again. In order to decrypt this message, you'll need to know the **algorithm** and the **key**.

The **algorithm** is the method that you use to hide your data.

Your **key** is the code that you use in the algorithm to keep your message secret.

Key:

Algorithm: Step 1: Copy the encrypted message into the first row. (The first six bits are done for you.)
Step 2: Copy the key into the second row, and keep repeating it until the end. (The first eight bits are done for you.)
Step 3: For each bit in the third row, if the two bits above it are the same (both white or both black), color it black. Otherwise, leave it white. (The first six bits are done for you.)

Encrypted Message																			
Repeated Key																			
Decrypted Message																			

What is the message? _____ _____ _____

Activity Guide - Keeping Data Secret

Use the same algorithm to decrypt the following message. This time the key is different.

Key:

Encrypted Message															
Repeated Key															
Decrypted Message															

What is the message? _____ _____ _____

Encrypt Your Own Message

You can encrypt a message the same way that you decrypted it. Put your unencrypted message on the top row, your repeated key on the second row, and make the encrypted message by coloring in every bit that has two of the same bits (two white or two black) below it.

What is your message? _____ _____ _____   What is your key? _____

Unencrypted Message															
Repeated Key															
Encrypted Message															

Post the encrypted message somewhere everyone in the class can see it.

Why can't you decrypt any of the messages yet, even though everyone used the same algorithm?

_____

Decrypt a Classmate's Message

Write down your key and trade with someone else, then use the key to decrypt that person's message below.

Encrypted Message															
Repeated Key															
Decrypted Message															

What is the message? _____ _____ _____