SfS Away from the Classroom!

T04: Cryptography (Recommended for Grades 3-8)

Please use the following resources to learn about cryptography.

Watch this Video: SciShow video on Cryptography (you can stop after 3:00 if you'd like)

Answer these questions:

- What are the two things you need in order to encrypt a message?
- What are two strategies for breaking a cipher?
- Which is easier to break, a longer cryptogram or a shorter cryptogram? Why?

Activities: Follow these directions to write secret messages with your own Scytale cipher, a cipher used by Roman soldiers!

You will need:

• 2 pencils	• paper	• tape	• scissors	• lab partner

1. Cut a thin strip of paper (less than 1 inch).

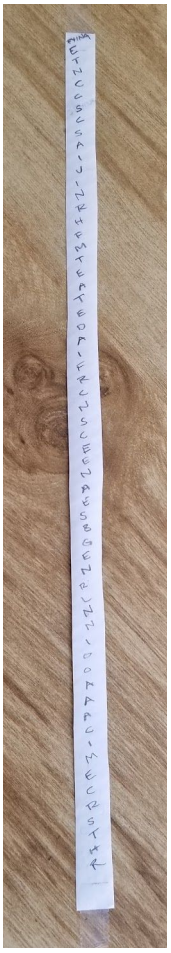
2. Wrap the strip of paper around one of the pencils.

3. Tape down the ends of the paper.

4. Write a message on the paper, along the length of the pencil.

5. Carefully un-tape the paper from the pencil. Flatten out the paper. Your message is encrypted!

6. Pass the message to your friend. They need to wrap it around a pencil **of the same size** in order to read it!



Is a pencil too small for you? Try using a marker to make your cipher instead. Here's one example:

Questions to ask yourself:

- How secure is the Scytale cipher?
- What are its weaknesses?
- What could you add to make it more secure?

<u>Make observations & use Claims, Evidence, and Reasoning!</u>

1. **Claim**: The key to an encrypted message may be a physical object.
    - **Evidence**:
    - **Reasoning**:
2. **Claim**: It is easy to accidentally give away clues to your cipher.
    - **Evidence**:
    - **Reasoning**: