

## Cool Careers for Girls in CyberSecurity Cryptography

**Duration:** Each student session last for 20 minutes. Students will need a five minutes to travel to their next session.

**Session Overview:** Each group of students will decrypt a message found using a frequency chart or cryptography wheel which will provide a clue to the criminal.

### **Objectives:**

- Understand pattern recognition and letter frequency
- Decrypt messages which may help to locate the missing hard drive

### **Materials/Supplies :**

- Letter frequency chart or Cryptography wheel
- Encrypted messages to be decrypted

### **Introduction:**

- Discuss with the students ciphers they use in real life and the reasons they use them.
- They shorten words when texting to make it quicker to send a message but also if their parents are looking over their shoulder when they are messaging.
  - They use UPC codes when they go shopping to turn a small piece of information into a product name, description and price.
  - If they or their parents shop online, the transaction is encrypted to keep criminals from stealing identity information
  - Passwords

### **Lesson:**

Give students the cipher sheet, wheel or frequency table. Ask them to solve the cipher.

### **Final Thoughts:**

One way to protect yourself online is to have a strong password. A cipher can help you to create a strong password. Turning a phrase or a pattern on the keyboard in a combination of numbers, symbols, upper and lower case letters based on a cryptology algorithm will help you keep your data safe and help you create something you will remember. Using the same password for every website can be a security risk. Use varied passwords.

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# HANDOUT: FREQUENCY CHART

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Letter	Frequency	Letter	Frequency	Letter	Frequency	Letter	Frequency
A	8.167%	H	6.094%	O	7.507%	V	0.978%
B	1.492%	I	6.966%	P	1.929%	W	2.360%
C	2.782%	J	0.153%	Q	0.095%	X	0.150%
D	4.253%	K	0.772%	R	5.987%	Y	1.974%
E	12.702%	L	4.025%	S	6.327%	Z	0.074%
F	2.228%	M	2.406%	T	9.056%		
G	2.015%	N	6.749%	U	2.758%		

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Decrypt this message

20-8-5-25 1-18-5 19-5-1-18-3-8-9-14-7 20-8-5 3-15-  
19-20-21-13-5 20-18-21-14-11-19 1-12-16-8-1-2-5-  
20-9-3-1-12-12-25

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**Want to know more about the frequency of letters?**

Go to the Wikipedia: Letter Frequency page! You can learn which letters occur most frequently at the start of English words. And the frequency of letters in other languages!

[http://en.wikipedia.org/wiki/Letter\\_frequency](http://en.wikipedia.org/wiki/Letter_frequency)

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Decrypt this message

jhw ulg ri wkh prgho idvw

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