



# Welcome to Forensic Science 25



**Your teacher:** Mr. Wisniewski

**Google Classroom Code:** vnrkx2u

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# Today's Agenda

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- 1) Course Outline, Evaluation, Norms (handout)
- 2) Google Classroom
- 3) CSI Challenge (slides 4-8)
- 4) What is Forensic Science? (handout)
- 5) Fort Saskatchewan
- 6) Teaser Forensics 25 Q's! (handout)
  - Choose the best answer & discuss
- 7) The CSI Effect – Article & Video clips (slide 9)
  - Answer Q's 1-4 of the Article



# Google Classroom

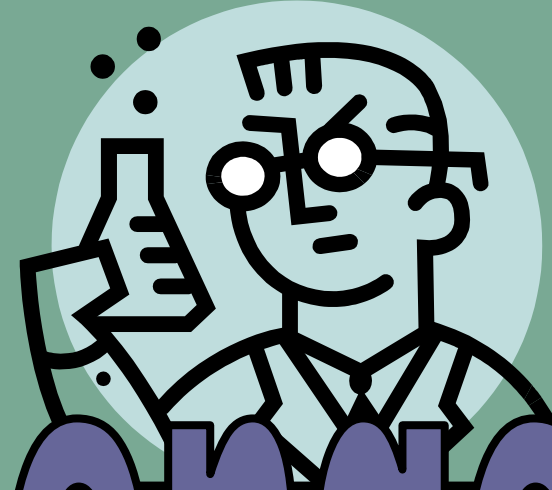
■ Class Code:

vnrkx2u



Set #1

Daily CSI



# CSI Challenge

Name That Scientist



# Can you identify each scientist?

A. Anthropologist  
B. Botanist  
C. Odontologist

D. Pathologist  
E. Psychiatrist  
F. Serologist



- \_\_\_ 1. Examines body tissues to determine cause of death
- \_\_\_ 2. Analyzes dental records and dental work
- \_\_\_ 3. Analyzes botanical (plant) evidence
- \_\_\_ 4. Analyzes skeletal remains
- \_\_\_ 5. Provides personality profiles based on evidence
- \_\_\_ 6. Analyzes blood evidence

# The answers are ...

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A. Anthropologist

D. Pathologist

B. Botanist

E. Psychiatrist

C. Odontologist

F. Serologist

D 1. Examines body tissues to determine cause of death

C 2. Analyzes dental records and dental work

B 3. Analyzes botanical (plant) evidence

A 4. Analyzes skeletal remains

E 5. Provides personality profiles based on evidence

F 6. Analyzes blood evidence

There are many different types of scientists that work in criminal cases. Can you identify each scientist?

A. Chemist

D. Meteorologist

B. Entomologist

E. Radiologist

C. Geologist

F. Toxicologist

- 1. Works with X-rays
- 2. Use insects to determine time of death
- 3. Examines soil samples
- 4. Work with climatic conditions
- 5. Analyzes paint, glass, and residues
- 6. Analyzes blood and body tissues for evidence of drugs and poisons

# The answers are ...

A. Chemist

D. Meteorologist

B. Entomologist

E. Radiologist

C. Geologist

F. Toxicologist

E 1. Works with X-rays

B 2. Use insects to determine time of death

C 3. Examines soil samples

D 4. Work with climatic conditions

A 5. Analyzes paint, glass, and residues

F 6. Analyzes blood and body tissues for evidence of drugs and poisons

# What is Forensic Science?

**Anderson Cooper 360: The CSI Effect (5 min)**



# What is Forensic Science? 'CSI'

**Behind The Scenes (CBS News) (4 min)**





# Fort Sask. Crime Stats



- **Share a Story of a Crime you know of in Central Alberta!**

# Crime Severity Index: Fort Sask.

Geography <sup>3, 8, 9</sup>		Canada <sup>7, 10</sup> (map)					
Statistics	2018	2019	2020	2021	2022		
Geography <sup>6</sup>		Fort Saskatchewan, Alberta, Royal Canadian Mounted Police, municipal [48800] <sup>7</sup> (map)					
Statistics	2018	2019	2020	2021	2022		
<b>Index</b>							
Crime severity index <sup>8, 9, 10, 11</sup>	76.06	87.65	81.53	66.93	84.63	78.10 4.27	
<b>Percent</b>							
Percent change in crime severity index <sup>12</sup>	1.62	15.24	-6.98	-17.91	26.45	97.74	
<b>Index</b>							
Violent crime severity index <sup>11, 13</sup>	40.81	82.78	73.05	88.99	92.66	4.61	
<b>Percent</b>							
Percent change in violent crime severity index <sup>12</sup>	-18.54	102.84	-11.75	21.82	4.12	70.91	
<b>Index</b>							
Non-violent crime severity index <sup>11, 14</sup>	88.56	89.19	84.39	58.67	82.14		





# FS25 Teaser – 25 Q's



# Welcome to FS25 – Mr. Wisniewski

## Easiest Quiz Ever!

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- 1) How long did the 100 years war last?
- 2) Which country makes Panama hats?
- 3) From with animal do we get catgut?
- 4) In what month do Russians celebrate the October Revolution?
- 5) What is a camel's hair brush made of?
- 6) The Canary Islands (Pacific) are named after what animal?
- 7) What was King George VI's first name?
- 8) What color is a purple finch?
- 9) Where are Chinese gooseberries from?
- 10) How long did the Thirty Years War last?

# Welcome to FS25 – Mr. W. Easiest Quiz Ever - Answers

- 1) 116 years (1337-1453)
- 2) Ecuador
- 3) From sheep or horses
- 4) November. (Russian calendar was 13 days behind ours)
- 5) Squirrel Fur
- 6) Island of Dogs – in Latin Insularia Canaria
- 7) Albert. As per Queen Victoria request no future King would be named Albert
- 8) Crimson
- 9) New Zealand
- 10) 30 years (1618-1648)

Forensic Science is never that obvious.  
Sometimes we have to dig for deeper meaning.

# The Science of Crime Video

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# Handwriting Analysis

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- **Background Information**

- A handwritten note may become evidence in some crimes, particularly in cases of ransom notes. A person's handwriting contains individual characteristics and is reasonably unique. A number of techniques can be used to analyze and compare the characteristics of handwriting samples. Some of these characteristics are as follows:

# Handwriting Analysis

- 1. **Size**- Height and width of letters: Analyze this by measuring the height of the writing.

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- Some people write very **large**, medium-sized or very small.
- 2. **Slope**- Draw a line through each letter in the same direction as the slant of the letters.
- Some people write straight, *slanted to the right*, or a *combination of both*.
- 3. **Spacing**- See how much spacing is between each word.
- Some people leave a large amount of spacing between their words.
- Some people leave an average amount of spacing between their words.
- Some people leave little spacing between their words.

- **4. Printed or written-** Has the author chosen to write or print his/her message, or has s/he used a combination of writing forms?
- 
- There are some people who prefer to write in **print**.
  - There are some people who prefer to write in *cursive*.
  - There are some people who prefer to combine **print** and *cursive*.
- **5. Special characteristics-** Examine the overall style including any unusual features.
  - Are the **i's** dotted with a big circle, or dotted with a heart?
  - Look at distinguishing letters, such as the L's and Y's.
  - Are the *l's* looped 'like' this? Are the L's 'like' this, or 'like' this?
  - How are the Y's? Does it look like this: "*yellow*" or like this: "yellow."



# Grip, the Raven Handwriting Analysis

## Background Information about Grip, the Raven

At the Central Parkway Branch in the Rare Books Collection, you can visit “Grip” the Raven. Grip is Charles Dickens’ pet raven and it was also a minor character in Dickens’ historical novel, *Barnaby Rudge*, published in weekly installments in 1841. Poe published his poem “The Raven” in 1845. A widely held belief among Poe scholars is that Poe consciously imitated Dicken’s raven. **Mystery**

## Connection

One day, an employee of the Rare Books department came to work and realized that Grip, the raven was missing. Inside the glass case where Grip used to be, there was a ransom note, which read:

**To the director of the Libary,**

**i got the bird up in Central Libary. i think its called “grip the raven” by poe. Unless u got \$1,000,000 by tuesday, you not gettin’ it back. i give u more details l8er 2day.**

**Call the cops n you aint gettin nuttin.**



To the director of the Library,

i got the bird up in Central Library. i think its  
called "grip the raven" by poe. Unless u got \$1,000,000  
by tuesday, you not gettin' it back. i give u more  
details later 2day.

Call the cops n you aint gettin nuttin.

- 1) Slant of letters
- 2) Larger spacing
- 3) Similar letter shapes
- 4) Connected letters

To the director of the Library,

i got the bird up in Central Library. i think  
its called "grip the raven" by poe.

# Cryptanalysis

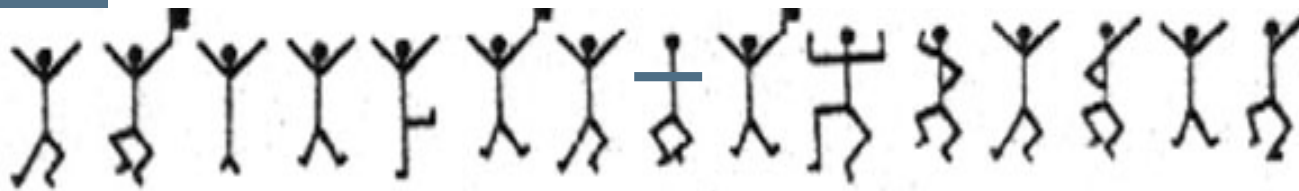
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- What is encryption?
- In cryptography, encryption *is the process of encoding information.*
- What kinds of codes have you encountered?
- A **cipher** is a secret or disguised way of writing

# Replacement Ciphers

## *Adventure of the Dancing Men*

In Sherlock Holmes' story "The Adventure of the Dancing Men", a man reports that his wife, Elsie, became upset when she received several notes with figures of dancing men on them. Holmes went about deciphering the code. He knew that E is the most common letter in the English language and that there was a high probability that the name "Elsie" appeared somewhere in one of the messages. Using this information, can you decipher the messages she received and the one message she sent? You may also want to find out what the other most common letters used in the alphabet are in order to help you.



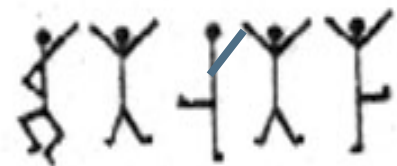
AM HERE ABE SLANEY

criminal's message (1)



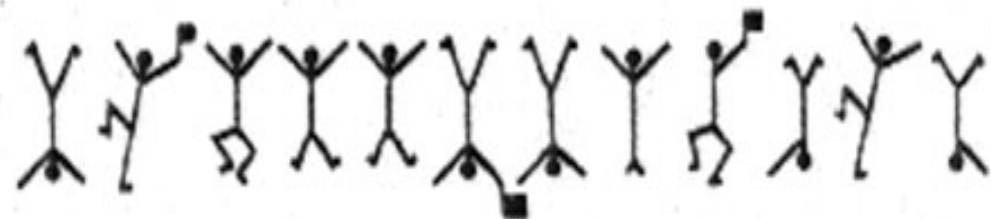
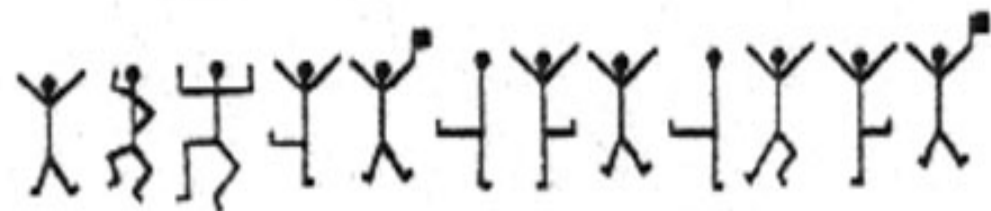
COME ELSIE

criminal's message (2)



NEVER

Elsie's reply



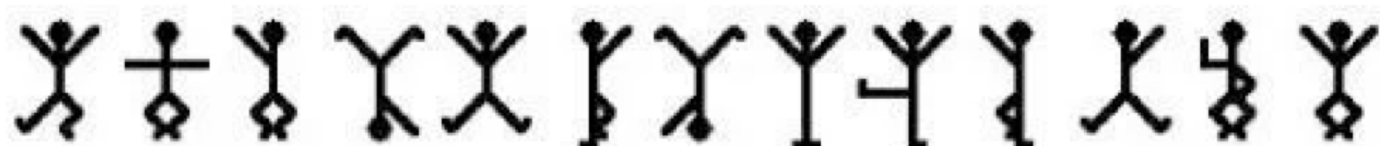
criminal's message (3)

## Dancing Man Code (Sherlock Holmes)

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	0			

ELSIE PREPARE  
TO MEET THY GOD

# Dancing Man Code (Sherlock Holmes)



A B C D E F G H I J K L M



N O P Q R S T U V W X Y Z



1 2 3 4 5 6 7 8 9 0

# Sherlock Holmes was a Basic Replacement Cipher

## Identify Common Pairs Of Letters:

- focus on pairs of repeated letters
- most common repeated letters are ss, ee, tt, ff, ll, mm and oo.

## Identify The Smallest Words First:

- The only one-letter words in English are a and I
- The most common two-letter words are **of, to, in, it, is, be, as, at, so, we, he, by, or, on, do, if, me, my, up, an, go, no, us, am.**
- The most common three-letter words are **the** and **and**.

**Play The Guessing Game:** This can be one of the most useful skills for a cryptanalyst to employ - the ability to identify words, or even entire phrases, based on experience or sheer guesswork.

Al-Khalil, an early Arabian cryptanalyst, demonstrated this talent when he cracked a Greek ciphertext. He guessed that the ciphertext began with the greeting 'In the name of God'. Having established that these letters corresponded to a specific section of ciphertext, he could use them as a crowbar to prise open the rest of the ciphertext. This is known as a crib.

Order Of Frequency Of Single Letters

E T A O I N S H R D L U

Order Of Frequency Of Digraphs

th er on an re he in ed nd ha at en es of or nt ea ti to it st io le is ou ar as de rt ve

Order Of Frequency Of Trigraphs

the and tha ent ion tio for nde has nce edt tis oft sth men

Order Of Frequency Of Most Common Doubles

ss ee tt ff ll mm oo

Order Of Frequency Of Initial Letters

T O A W B C D S F M R H I Y E G L N P U J K

Order Of Frequency Of Final Letters

E S T D N R Y F L O G H A K M P U W

One-Letter Words

a, I.

Most Frequent Two-Letter Words

of, to, in, it, is, be, as, at, so, we, he, by, or, on, do, if, me, my, up, an, go, no, us, am

Most Frequent Three-Letter Words

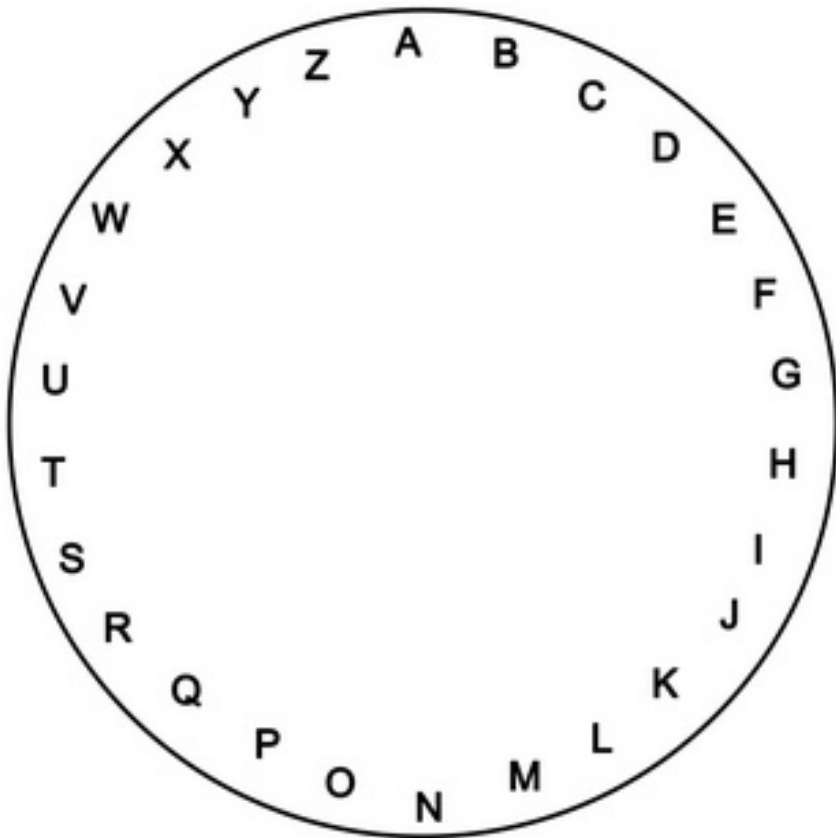
the, and, for, are, but, not, you, all, any, can, had, her, was, one, our, out, day, get, has, him, his, how, man, new, now, old, see, two, way, who, boy, did, its, let, put, say, she, too, use

Most Frequent Four-Letter Words

that, with, have, this, will, your, from, they, know, want, been, good, much, some, time

## : Shift Ciphers

Suppose that we created a "clock" that had 26 numbers on it. We could match every number to a letter. Then what could we do to "encode" the message? Have the class "shift" the cipher by adding a constant to each letter's numeric value. For an example, let's have a constant of 5. In this case, A=0. Go around 5 spaces so in the cipher "F" will be the letter "A" in the actual word.



With a constant of 5 what does this say?

N WJFQQD QNPJ HTIJ RJXXFLJX



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Have you used any types of  
ciphers?

The Enigma Machine

[https://www.youtube.com/watch?v=G2\\_Q9FoD-oQ](https://www.youtube.com/watch?v=G2_Q9FoD-oQ)

# Test Your Friends Code Breaking Skills

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## Task:

- a) Go online and find a cipher of your choice.  
DO NOT USE an automatic code generating app. or program.  
You must do the encoding yourself.
- b) Make a sentence that has at least one single letter, two double letter, and two triple letter words in it. (Keep it nice!)
- c) Encode your sentence using your chosen cipher.
- d) Pass the encoded message to your friend and see if they can decode it.