



CODES AND CODEBREAKING
ACTIVITY WORKBOOK

Codes and Codebreaking

Have you ever created a special way of communicating with your friends, so that only your friends know what you are saying? Now imagine how important it is during a war for you to be able to communicate with your friends and allies without the enemy knowing what you're saying. It can make all the difference.

There are endless ways of creating codes with letters, numbers, shapes, and symbols.

This activity will show some of the common ways that the Royal Air Force in Britain and Royal Canadian Air Force in Canada have used to communicate or translate messages that they have found.

On page 2 and 3 you will find information that you can use to solve the codes on the pages after that.

If you create your own kind of code, let us know about it on Facebook, Twitter or Instagram @thehangarmuseum or #hangarmuseum – we'd love to hear about it!

At The Hangar Flight Museum it's important to us to tell true stories from history. So, here's how someone learned to speak in code:

“In the 1940s if a woman wanted to join the air force there were only a few choices of jobs for them. One of the options was becoming a Wireless Ground Operator (WOG). Before you could be trained for this job, they tested your knowledge of Morse Code. One test was listening to two Morse Code signals and deciding whether they were the same or not. For basic training Canadians in the Women's Division were sent to Rockcliffe Ontario. Further training included Morse Code, lights and flags, and the parts of a radio. In order to pass the test you needed to be able to send and receive Morse Code at 18 words per minute at a minimum!”

To learn more about a specific RCAF veteran and her experience with learning Morse Code and teaching others how to use it, we recommend reading Elinor Florence's article about Merle Taylor at: <https://www.e-know.ca/regions/east-kootenay/rcaf-veteran-merle-taylor-still-loves-morse-code/>

Now it's time to take a look at some codes and get some practice translating and breaking codes! Are you ready?

Royal Air Force Phoenetic Alphabet Throughout the Years

Circle your favourite words and then make up your own word for each letter!

“A as in awesome”

| Letter | 1939-42 | 1942-43 | 1943-45 | Today | Design Your Own |
|--------|---------|---------|---------|----------|-----------------|
| A | Ace | Apple | Able | Alpha | |
| B | Beer | Beer | Baker | Bravo | |
| C | Charlie | Charlie | Charlie | Charlie | |
| D | Don | Dog | Dog | Delta | |
| E | Edward | Edward | Easy | Echo | |
| F | Freddie | Freddie | Fox | Foxtrot | |
| G | George | George | George | Golf | |
| H | Harry | Harry | How | Hotel | |
| I | Ink | In | Item | India | |
| J | Johnnie | Johnnie | Jig | Juliet | |
| K | King | King | King | Kilo | |
| L | London | Love | Love | Lima | |
| M | Monkey | Mother | Mike | Mike | |
| N | Nuts | Nuts | Nab | November | |
| O | Orange | Orange | Oboe | Oscar | |
| P | Pip | Peter | Peter | Papa | |
| Q | Queen | Queen | Queen | Quebec | |
| R | Robert | Robert | Roger | Romeo | |
| S | Sugar | Sugar | Sugar | Sierra | |
| T | Toc | Tommy | Tare | Tango | |
| U | Uncle | Uncle | Uncle | Uniform | |
| V | Vic | Vic | Victor | Victor | |
| W | William | William | William | Whiskey | |
| X | X-Ray | X-Ray | X-Ray | X-Ray | |
| Y | Yorker | Yorker | Yoke | Yankee | |
| Z | Zebra | Zebra | Zebra | Zulu | |

Phoenetic Alphabet With Morse Code

You'll need to refer to this page for the next activity!

| Symbol | Code Word | Morse Code | Symbol | Code Word | Morse Code |
|--------|-----------|------------|--------|-----------|------------|
| A | Alpha | • - | P | Papa | • - - • |
| B | Bravo | - • • • | Q | Quebec | - - • - |
| C | Charlie | - • - • | R | Romeo | • - • |
| D | Delta | - • • | S | Sierra | • • • |
| E | Echo | . • | T | Tango | - |
| F | Foxtrot | • • - • | U | Uniform | • • - |
| G | Golf | - - • | V | Victor | • • • - |
| H | Hotel | • • • • | W | Whiskey | • - - |
| I | India | • • | X | X-ray | - • • - |
| J | Juliett | • - - - | Y | Yankee | - - • • |
| K | Kilo | - • - | Z | Zulu | - - - - - |
| L | Lima | • - • • | | | |
| M | Mike | - - | | | |
| N | November | - • | | | |
| O | Oscar | - - - | | | |

Codebreaking Activities

Did you know: the author of The Lord of the Rings, J.R.R. Tolkien was asked to help with codebreaking during the Second World War. This makes sense as Tolkien was amazing with languages including creating his own languages for Middle Earth.

Codebreaking was important to translate hidden messages that were communicated between allies and to know what the enemy was planning.

Today we're going to try breaking a few different kinds of code. We'll start with morse code.

Message #1: (hint, it's the name of a plane at The Hangar)

• - • • • - • - • - - -

• - • • • • - • - - • - • - • • • • - • • - •

Message #2: (hint, it's a place)

- • - • • • - • - • • • • - - • • - • - • - • - • •

• - • - • • - • • • • • • • - • -

Now try it the other way. If you needed to get across this message, what dots and dashes would you need to use with morse code?

"When the sun rises"

Match the Code

Now let's try matching the Morse Code message with the decoded phrase! Just draw a line from the code to the phrase.

Altitude • • - • • • • • • • - • - - - - - • - •

Aviation - • - • • - • • • - • • - • • • • - • - - •

Elevator - • - • • - • • - • • • - • - - •

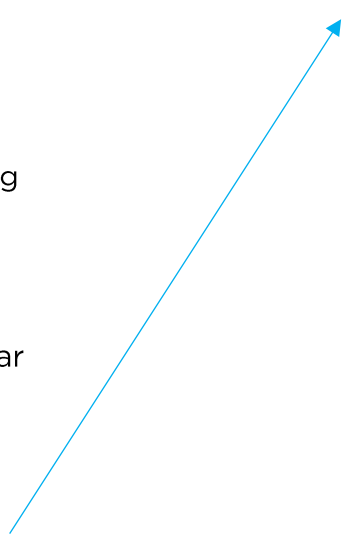
Elevation • - • - • • - • • - • • - - • • •

Training • - - • • - • - • • • - •

Traveling • - - • • - • - - • • • • • - - • • - • - •

Wingspar • • - • • • • • • - • - - • • - - - - •

Winner • - • • • - • • • - - • • - - - - •



Creating Types of Codes

There are many different types of codes that can be created.

One type of code is assigning a number to a letter A=1 B=2 C=3 ... This is called the A1Z26 cipher because A is 1 and Z is 26.

In that case you could write a sentence such as “the plane flew” as:

20; 8; 5; 0; 16; 12; 1; 14; 5; 0; 6; 12; 5; 23

(the 0 means there is a space between words)

You could also change the starting place of the code and have A=12 B=13 C=14... this makes it more difficult to decode.

You could also switch a letter to a different letter and have A=T B=U C=V D=W...

In that case the sentence “the plane flew” would be:

max ietgx yexp

Create your own code and write a sentence using it!

A= _____

L= _____

W= _____

B= _____

M= _____

X= _____

C= _____

N= _____

Y= _____

D= _____

O= _____

Z= _____

E= _____

P= _____

F= _____

Q= _____

G= _____

R= _____

H= _____

S= _____

I= _____

T= _____



























J= _____

U= _____

K= _____

V= _____

Here is one last fun activity using symbols, the official symbols code uses flags.

| | | | | | |
|---|--|---|--|---|---|
| A |  | J |  | S |  |
| B |  | K |  | T |  |
| C |  | L |  | U |  |
| D |  | M |  | V |  |
| E |  | N |  | W |  |
| F |  | O |  | X |  |
| G |  | P |  | Y |  |
| H |  | Q |  | Z |  |
| I |  | R |  | | |

We've made a full sentence out of the shapes and symbols! It is the very last message for you to decode!













