 3-5 min

## DISCUSSION

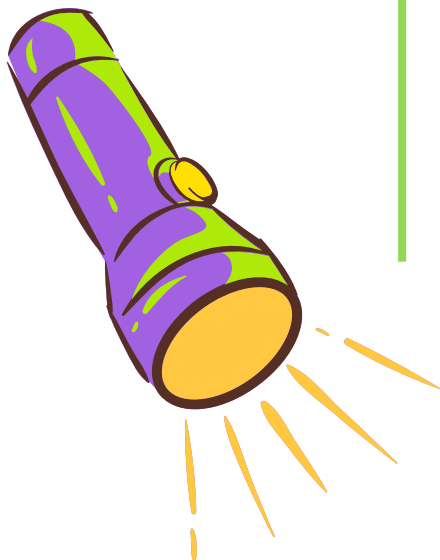
Ask students why spies may find something that is written in code? Discuss how criminals may write in code to make it harder for spies or detectives to catch them and read their messages. Explain to students that there are many different types of codes and they can even make up their own codes!

In the exciting world of secret agents, Morse Code plays a significant role as one of the most famous types of codes. It is a communication system that was invented by Samuel Morse in the 1800s to facilitate the swift transmission of messages using the telegraph.


Morse Code revolutionized long-distance communication, allowing people to send encoded messages across vast distances. The code employs a combination of dots, dashes, and spaces to represent different letters, numbers, and punctuation marks. Each letter of the alphabet is assigned a unique sequence of dots and dashes.

Understanding Morse Code requires both knowledge of the code's patterns and the ability to decode them. For spies, this knowledge is invaluable as it allows them to send and receive covert messages while maintaining secrecy. By using Morse Code, agents can communicate discreetly and efficiently, transmitting important information without alerting potential adversaries.

Explain to students that they will be using Morse Code to figure out the secret message.



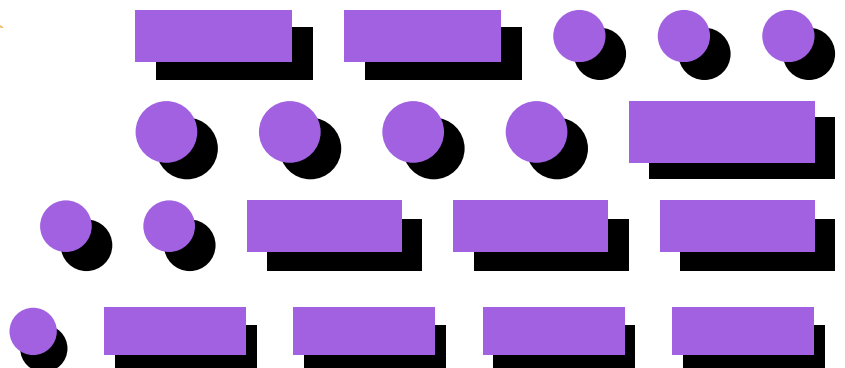
## HYPOTHESIS

 3-5 min


Show students Morse Code cheat sheet. Ask them to discuss and predict.

- What do the dashes represent?
- What do the dots represent?

After students have discussed this, reveal that dots are a short sound or light and dashes are a long sound or light.



## ACTIVITY

 15-20 min

### PART 1: DE-CODE THE MORSE CODE

- Provide students with the Morse Code Handouts which will have a code at the top and the Morse Code Cheat Sheet that will allow them to break the code. Have students de-code the message individually. Who got it first? What was the message?
  - Answer: "Spies are cool"

### PART 2: MORSE CODE WITH FLASHLIGHT


- Once students have found the answer, explain that Morse Code can also be done using lights. Show students how the flashlight can be turned on in quick and long bursts to send a message.
  - Each dot is a light burst to a count of 1
  - Each dash light is light burst to a count of 3
  - There is a one count pause in between each light burst and 3 counts pause in between each word
- Learn together with students how they can send SOS (...---...) message with a flash light using Morse Code. You can watch this Youtube video from 1.45 min to 3.20 min: <https://www.youtube.com/watch?v=i3HOGdQkTvM>
- Then, you can ask students to work in groups of three. Each student will secretly write down their own Morse Code. Then, students will work one at a time to send their Morse Code to their partners using flashlight.
- Partners will write down and solve the code sent by their peer. Let each partner take a turn sending their message using the flashlight.

### PART 3: CREATE YOUR OWN CODE

- Once done, turn the Morse Code Handout around and complete extension exercise "Create Your Own Code" and have students create and de-code their own code.
- Use letters, symbols or numbers to create your own code. Then, write a secret message using your code. Swap with a partner and try to break their partner's code!

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

## OBSERVATION & EXPLANATION

 10-15 min


Ask students to reveal the message from the start of the lesson, 'Spies are cool'.

Then, ask students to discuss the following:

- Was it easier to solve the Morse Code that was written down or sent with a flashlight. Why?
  - Students should notice that it was easier when it was written down because they had longer to use the cheat sheet and figure out each letter. With the flashlight, it was sent quickly, and they had to quickly write down or decode the letters.
- Did you find Morse Code easier to use or one of the codes created during the extension task. Why?

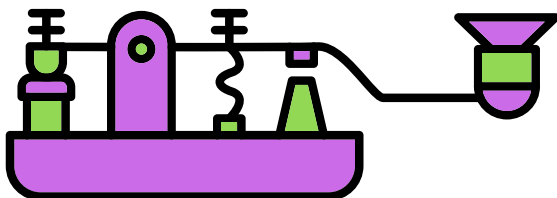
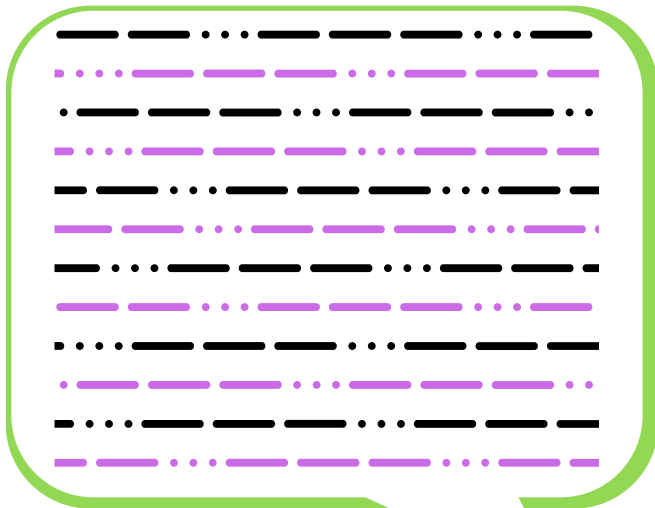
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## CONCLUSION

 5-7 min

Complete Exit Ticket Activity

Instruct students to clean their stations. Make sure to leave the classroom the way you found it.



### Exit Ticket



Ask each student one of the following questions as they walk out the door.

- What do the dots stand for in Morse Code?
  - Short bursts of light or sound
- What do the dashes stand for in Morse Code?
  - Long bursts of light or sound
- Why is it important for a spy to crack a code?
  - To get clues to solve a mystery

# MORSE CODE CHEAT SHEET

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 -.-.-	0 - - - -	1 - - - -	2 - - - -	3 - - - -
4 - - - -	5 - - - -	6 - - - -	7 - - - -	8 - - - -	9 - - - -



### CREATE YOUR OWN CODE

Use letters, symbols or numbers to create your own code.

Then, write a secret message using your code. Swap with a partner and try to break their partner's code!

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

**MESSAGE:**

**DECRPTION:**

### CREATE YOUR OWN CODE

Use letters, symbols or numbers to create your own code.

Then, write a secret message using your code. Swap with a partner and try to break their partner's code!

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

**MESSAGE:**

**DECRPTION:**