

A.I. in Aerospace Activity Guide

Today's Mission: Students will investigate artificial intelligence (A.I.) in the aerospace industry with a hands-on activity. Students will be given a story plot to save the world by solving three error codes to restore communication with a satellite.

Your mission, should you choose to accept it, is to save the world! Using your problem solving skills, you'll need to find the errors in the code in order to restore communication with the satellite to save our planet.

Careers Highlighted	Materials
<ul style="list-style-type: none">● Guidance, Navigation and Control Engineer● Flight Dynamics Officer/ Engineer● Systems Engineer● Communication Engineer/ Specialist● Computational Analyst	<ul style="list-style-type: none">● Printed copies of error code activity handout● The Aerospace Corporation branded pens/pencils● Laptop (optional)
Grade Level	Time for Activity
<ul style="list-style-type: none">● Middle school (grade 6-8)	<ul style="list-style-type: none">● 10 minutes

Activity #1 Overview

- Share the scenario with students:
 - *The world is in danger! A satellite has malfunctioned, causing it to send out four mysterious error codes, disrupting communication with other satellites and jeopardizing important missions. As natural problem solvers, your team of brilliant scientists and engineers knows that you will need to step up and embark on a mission to resolve the error codes and restore communication. You and your team quickly realize that to solve such a big problem, you will need the help of an Artificial Intelligence in the laboratory to check your progress to resolve the problem. Your team will encounter four error codes; a jumble of numbers and symbols, a series of binary numbers, complex mathematical equations, and finally an encrypted top secret message. When each code is solved, team members will check the answers with the located A.I. in the room. The A.I. can let your team know if your answer is correct or incorrect. Please note the A.I. can not explain to your team why*

your answer is wrong or right. When each code is solved, the team will be one step closer to the satellite's systems coming back online, and communication with other satellites will be restored.

- Pass out [activity handouts](#) to students and have them solve the cyphers on their own or in pairs. When each team has resolved an error in a code, they should go to the located A.I. in the room (the person running the activity) to check their work. **As A.I, you cannot tell students what they have done wrong, only if their team is correct or incorrect.**
- When the team has solved all four codes, they have restored communication in the satellite and that team has saved the world!
- **Answer Key:**

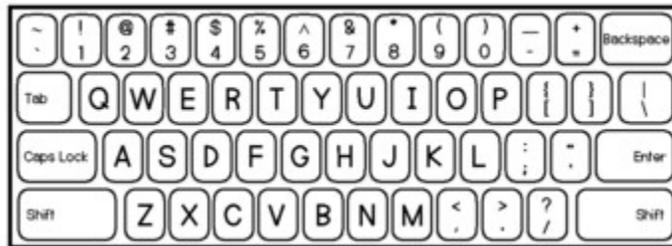
Code 1:

12#34%56&78*90

Answer: The * is the error in code.

Correct code: 12#34%56&78(90

12[shift 3 = #]34[shift 5 = %]56[shift 7 = &]78[shift 9 = (]90



Code 2:

$$\text{❤️} \text{🌻} + \text{☂️} \text{🐼} = ?$$

$$52 + 89 = 141$$

$$\text{🌀} \text{🌵} / \text{🌀} = ?$$

$$14 / 1 = 14$$

$$\text{🐼} \text{🍉} \times \text{🌻} = ?$$

$$36 \times 2 = 72$$

1	2	3	4	5	6	7	8	9
🌀	🌻	🐼	🌵	❤️	🍉	🦎	☂️	🐼

Code 3:

Message: OCEJKPG NGCTPKPI

Answer: Machine Learning

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

Error Message: Oops, message has been intercepted! Send a decrypted message to grant access.

Caesar Cipher: A type of cipher that shifts letters in a message to make it unreadable if intercepted. To decrypt, reverses the shift.

2 letter shift : K=I

- Optional: have a laptop open to the [Crack a Caesar Cypher](#) experience so students can participate virtually.

Explore More!

[A.I. in Aerospace Lesson Plan](#)

[Crack a Caesar Cypher](#)