ALEXANDRA THE ASTRONAUT

EXPLORE MARS

Hello engineers! My name is Alexandra and I'm an astronaut! When I was in fifth grade, I saw the brightest stars I've ever seen while on a camping trip with my family. I was fascinated and knew that I wanted to learn more! I went to Hancock for two years to study physics and then transferred to Cal Poly to study aerospace engineering. I was the first one in my family to go to college!

Physics is the study of how objects in our universe interact with each other. Physics explains the effect invisible forces, such as gravity, have on objects! Aerospace engineers design and create things that are used in space and for space travel, such as rockets. It is very important that aerospace engineers understand physics so they can understand how forces will act on the objects they design.

My current mission, Explore Mars, is to set up a communication base on the planet Mars which will help us collect data and information about the planet! Scientists across the globe are interested in learning if there is life on Mars, and with the help of this communication base, we could be one step closer to making that dream come true! I need your team's help to travel through space and find a safe path from Earth to Mars without crashing into anything so my robot, BOT, can set up the base. Let's get going!

ALEXANDRA THE ASTRONAUT

EXPLORE MARS

Hey space rangers, it's time for blast off! Our first challenge of entering outer space involves traversing Earth's atmosphere and I need your team to code our pathway. First, we need to set our rocketship to Lift Off mode. To do this, your team needs to **set all three of BOT's lights (left ear, right ear, and chest) to different colors** and **wait for 2 seconds** in between each color change. Then, I need to **move a distance of 40 at speed 100.**

ALEXANDRA THE ASTRONAUT

EXPLORE MARS

Nice job space rangers, we made it through Earth's atmosphere! Now that we're in deep space, be careful! Avoid space objects that can get in our way to Mars. Let's zig zag our way through them. Start by **turning 135 degrees,** then **moving forward a distance of 20 at speed 50. Turn -50 degrees** and **move forward a distance of 20 at speed 50.** Now, **turn 50 degrees** and **move forward a distance of 20 at speed 50.** Finally, **turn 160 degrees** and **move forward a distance of 50 at speed 50.** Let' face the moon by **turning 75 degrees**!

ALEXANDRA THE ASTRONAUT

EXPLORE MARS

We must be extra cautious about avoiding the Moon! Your team must add code to help me move around the Moon. First, **turn 90 degrees,** then **move forward a distance of 25 at speed 20. Turn back -90 degrees** and **move forward a distance of 25 at speed 20.** Once more **turn -90 degrees, move forward a distance of 25 at speed 20,** and finally reposition me towards Mars by **turning 90 degrees**. Go for it!

ALEXANDRA THE ASTRONAUT

EXPLORE MARS

Awesome work space ranger, we're ready to land! To land safely, first **move BOT forward a distance of 15 at speed 20** to the edge of Mars' atmosphere. Second, **move BOT in a Figure 8 pattern** to pass through Mars' atmosphere. Finally, **move BOT a distance of 10 at speed 20** and **land on Mars with a Forward Spin**. Get started, it's landing time!

ALEXANDRA THE ASTRONAUT

EXPLORE MARS

Great teamwork everybody, we successfully traveled through space and set up a communication base on Mars! Thanks for all your help, I could not have done it alone! Remember to shoot for the stars, achieve your goals, and maybe someday YOU will be the reason us Earthlings can learn more about other planets!