Name:

Crewmember Type:

Crash Landing

Each group has at least 4 scientists: a stellar astronomer, an atmospheric scientist, a planetary geologist, and orbital dynamicist. Your group represents the crew of an interstellar space mission designed to seek out exoplanet systems with habitable, Earth-like planets. Each crewmember has an expertise in determining particular characteristics of exoplanets. The stellar astronomer, for example, knows all about the different types of stars in terms of their size, mass, temperature, light output, age, and activity levels. This crewmember can tell you the limits of the habitable zone for each particular stellar type.

In the middle of your mission a meteoroid hits your ship and you are forced to make a crash landing to perform repairs. Fortunately, there are two nearby planetary systems, each with 5 planets, and your crew is an expert at determining habitability. You must choose which system you will head towards and on which planet in that system you will crash land. Start with the stellar astronomer, and have her or him choose which star you are going to head towards. Then ask each crewmember to decide which planet is most likely to be habitable based on the information they gather about the planets around that star from their area of expertise. Work together to combine your information, and good luck finding a habitable planet for your crash landing!

Discussion Questions:

1) Did your crew choose the system around the M or the K star? Why?

2) Which planet did your crew choose to crash land on and why? Give at least 2 reasons.

3) In what ways in your planet Earth-like?

4) In what ways is your planet unlike Earth?

5) Imagine you could only take one measurement from each crewmember. What measurement would you take from each, i.e. in your opinion what are the most important characteristics that each crewmember measures?

Stellar Astronomer:
Atmospheric Scientist:
Planetary Geologist:
Orbital Dynamicist:

6) After going through this activity, come up with your own habitable planet and list the characteristics of that planet below. You can include characteristics like host star type, planet mass, planet size, planet atmosphere characteristics, planet geological activity, etc.