



ASTRONAUT ACTIVITY CHALLENGES

Good luck in your training for a NASA-Based Challenger Center Mission!

Name:

__ 1. **Join the Crew:** *Select your team and field of study (crew position).*
Q: What team (BIO, COM, ENG or SCI) and position did you choose? Why?

A: Team: _____ Position: _____ Reason: _____



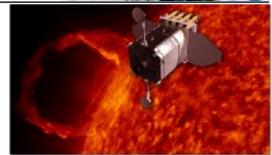
__ 2. **Consider the Moon:** *Test your knowledge about the Moon.*
Q: What is the average amount of gravity on the Moon compared to the gravity on Earth?
A: 1/6th B: 1 half C: the same D: zero gravity E: unknown



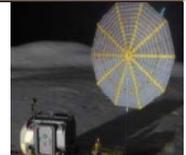
__ 3. **Check the Weather:** *Determine atmospheric weather conditions before launch.*
Q: What are the following readings currently?
A: Temperature: _____ Air Pressure: _____ Chance of Precipitation: _____



__ 4. **Monitor Solar Activity:** *Tap into NASA spacecraft to look for flares and sunspots.*
Q: Circle the features you can find in the current telescope / camera images....
A: Corona Flare Granules Prominence Sunspot



__ 5. **Peek through Portals:** *Chart lunar features including craters, domes and maria.*
Q: Circle the features you can see....
A: Craters Ejecta/Rays Flags/Landing Sites Mare (darker lava) Mountains/Ranges



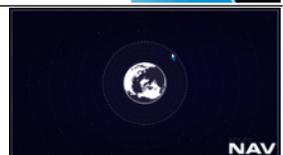
__ 6. **Document the Space Race:** *Explore historic and contemporary Moon-related artifacts.*
Q: 1. Who was the first woman in space? 2. What vehicle took people to the Moon?
A: 1. _____ 2. _____



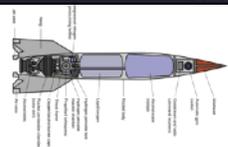
__ 7. **Discover Science:** *Survey experiments being done on the International Space Station.*
Q: What are TWO experiments or subject areas you discovered were being researched?
A: 1. _____ 2. _____



__ 8. **NAV Station:** *Understand orbits by launching simulated rockets.*
Q: To achieve orbit an object must have just enough *what (1)* to counter *what (2)*?
A: 1. _____ 2. _____



__ 9. **SCI Station:** *Engineer rockets by installing essential components. Note: Complete NAV first.*
Q: What are TWO important components of most rockets?
A: 1. _____ 2. _____



__ 10. **FLY Station:** *Launch into Low Earth orbit. Note: Complete NAV and SCI first.*
Q: To decrease Maximum Dynamic **Pressure** from the atmosphere (Max Q) after the sonic boom, you must reduce the throttle / thrust to: _____ %



__ 21: **Photograph an Earthrise**: Check out some of the most famous photos ever taken.

Q: 1. Why did Apollo Astronaut Michael Collins call his photo "3 Billion + 2"?

A:



__ 22: **Pinpoint Landmarks**: Find Great Basin locations on a 3D space view of our watershed.

Q: 1. Circle the items you could see as an astronaut looking down on our watershed:

A: 1. Mt. Rose Lake Tahoe Truckee River Reno Pyramid Lake



__ 23: **Sample Song Selections**: Enjoy a range of Moon songs from a variety of musical styles.

Q: Which is your favorite Moon song? Why?

A:



__ 24: **Touch a Meteorite**: Lift a real "crater-creator," an actual traveler from deep space.

Q: Describe this meteorite in terms of its weight, appearance, and properties.

A:



__ 25: **Phone a Friend**: Listen in on the most famous phone call in history.

Q: What major effect does the President say has resulted from the Moon landing?

A:



__ 26: **Reduce the Weight / Protect the Crew**: Discover the thinness of the LM's walls.

Q: How thick were the walls in terms of sheets of heavy duty aluminum foil?

A:



__ 27: **Explore Space in VR**: Ask a Planetarium Staff Member to help you try out a VR Viewer.

Q: What are some things you saw in the virtual environment?

A:



__ 28: **Smell the Moon**: Take a whiff of what Apollo astronauts say the Moon smells like.

Q: What did the Apollo astronauts say the Moon smells like?

A:



__ 29: **Plug in the Parts**: Rapidly assemble a component board while wearing "space gloves."

Q: How many pieces did you fit into the board in 60 seconds?

A:



__ 30: **Liftoff**: See how a rocket engine tested in Nevada allowed Apollo 11 to come home.

Q: What reaction occurs when the two propellant chemicals come into contact?

A:



__ 31: **Navigate the Ship**: *Operate the Apollo Guidance Computer and use a planisphere.*

Q: 1. Punch in the code and locate the constellation that helps sailors find true north?

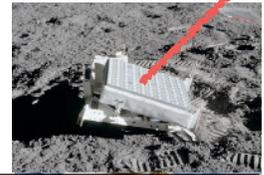
A: What is this constellation?



__ 32: **Fire a Laser** : *Aim a laser at our Moon target and measure its precise distance.*

Q: Ask a (tall) adult to push the power button and the "read" to get a measurement.

A: _____ feet and _____ inches



__ 33: **Shield the Capsule** : *Experiment with a thermal layer for the Columbia Module.*

Q: Look through the material at one of our lamps and wrap the sheet around you?

A: Your observations?



__ 34: **Extend Your Exploration**: *Get a Boarding Pass for a next-level adventure!*

Q: Sign up for Fleischmann Friday, Mission Mars or other Planetarium Programs.

A: Program, Date and Time:



__ 35. **Parachute to Earth**: *Make and test a parachute for a space capsule.*

Q: Time how long it takes for the parachute to descend.

A: _____ seconds



__ 36: **Capture the Moon**: *View Apollo Astronauts photos of the Moon in 3D.*

Q: How did the Apollo astronauts capture 3D images?

A:



__ 37: **Imagine the Moon** : *Reflect on examples of the Moon in art and pop culture.*

Q: What is your favorite example of the Moon in popular culture? Why?

A:



__ 38: **Change the World** : *Explore how the Apollo missions have transformed our lives.*

Q: What are significant ways the Apollo program impacted human history?

A:



__ 39: **Return to the Moon** : *Review NASA plans to explore the Moon and design a mission patch.*

Q: What elements did you choose to include in your future mission patch?

A:



__ 40: **Claim a Reward**: *Complete 10 or more Mission Moon Challenges to earn prizes.*

Q: What prize or prizes did you earn on this trip to the Planetarium?

A:



Check in with the Front Desk Team Member to "Claim Your Rewards" once you've completed a section of 10 challenges. You could collect a NASA or Mission Moon Sticker Patch, a Moon-Type Rock – or a coupon / discount for future adventures!