Big Dipper (Ursa Major)

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Mission:
Look at the different views of the Big Dipper

Instructions:
1. View the Big Dipper from different angles

The purpose of this display is to give you perspective of viewing the constellations from other places in the galaxy.

We only see the Big Dipper (Ursa Major) as it is from Earth. If you go to another planet it would look different. The stars that we put together to make the constellation are at different distances from the Earth.

So when we look at these stars from a different point in space we could make up totally different constellations.

A couple of the stars that make up the Big Dipper (Ursa Major) are:

1. Mizar (the closest to Earth)
2. Dubhe (the farthest from Earth)

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Different Worlds, Different Weights

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Mission:
Compare gravity on different planets in our solar system.

Instructions:
1. Feel the weight of each apple.
2. Try to match up the apples to the planets they might be from.
3. Check underneath the apple to find out which planet it is from.
4. Use the balance to measure the different apples.

If you traveled to other planets, you would have to get used to different amounts of gravity. You and other objects would heavier or a lot lighter than you are used too. The stronger the gravity a planet has the more things weigh on that planet, including you!!

1. Pluto 25g
2. Moon 85 g
3. Mercury 131 g
4. Mars 143 g
5. Uranus 264 g
6. Venus 277g
7. Earth 295g
8. Saturn 314 g
9. Neptune 345 g
10. Jupiter 608 g

Can anyone describe gravity? (Let the class answer, then give them your definition.)

Gravity is different on every planet and on every moon. For example, if you weigh 80 pounds on Earth, and then you flew to Jupiter. You would weigh 160 pounds. That is because the gravitational pull on Jupiter is 2 times stronger than on Earth. But then if you flew to Pluto, you would then weigh only 6.5 pounds. This is because the gravitational pull is almost 12 times less than on Pluto than on Earth.

(Pass the Pluto and Jupiter apple around so students can feel the difference)

This is how much an apple would weigh on Jupiter and one on Pluto. However, if you just went out in to space and didn't land on a planet you would weigh close to nothing because there would be no gravitational pull, you would just be floating in weightlessness.

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Pressure Suit

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Mission:
To show the effect of pressure on the body

Instructions:
1. Close the valve to hold in the air.
2. Pump the handle to release the pressure inside the container.
3. Compare the two 'astronauts' to each other.
4. Repressurize the container by opening the valve back up.

The purpose of the pressure suit is to protect you from the vacuum of space. Without the suit your blood would boil. As the pressure gets lower and lower when you pump out the air the 'astronaut' expands.

We can't expand like that; we would just heat up. It would feel like we were boiling. NASA designed space suits that could hold in air at the right pressure so we would be comfortable and be able to work in space.

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Mars Rocket

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Mission:
Launch your rocket to reach Mars

Instructions:

1. Drop the ball (your rocket) into the launcher.
2. Aim for the holding circle (Mars) on the outer part of the spinning disk.
3. Land your ball in the holding circle and you land on Mars; go past it you miss and fly off into space.

If you traveled to other planets, you would have to plan ahead during your launch. You have to launch towards where the planet is going to be years after you launch. This is called your launch window, a certain time during the year where the plants line up.

It will take a lot of time to fly to Mars. We have to point our rocket to where we want to be when we meet Mars.

This might take you a few tries to get there, could you imagine getting more than one try to fly to Mars?

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Lego Space Colony Build

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Mission:
Build a Space Colony.

Instructions:
Design and construct a model of a building to live in on the Moon.

Script:

Think about where you live. Not just about your house, but think about everything that you use to live, where you go to shop, where you go to eat, and where you go for fun.

Now think about what you need to really survive.

Imagine that you are going to the Moon, or Mars. It is your job to build an entire neighborhood. Remember you have to bring everything you want to build from Earth, there isn't a hardware store near you to run to if you forget something.

Now, Use the Legos to design and build a neighborhood on the moon. Make sure to build all the buildings you will need to store food and to live.

Are there other things that we would need to take to the moon so we could live?

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Star Spectrum

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Mission:
Look at and analyze the different colors within a star spectrum

Instructions:

1. Spin the wheel to see the spectrum for each gas.

The spectrum of a star can tell astronomers a lot about the star. By looking at the star spectrum an astronomer can tell the distance from Earth, the size, the type of gasses it contains, and how fast it is moving or spinning.

Each gas within the star has its own pattern of lines on the spectrum. In this model, it lets you see the gases and their position on the star spectrum. Look at the different tubs while spinning the wheel. You will see different colors and then you can compare them to each other, and to the chart to determine what gas it is.

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Steering with Thrust

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Mission:
Dock the Space Shuttle with the International Space Station while experiencing how the space shuttle moves in space.

Instructions:

1. Use yaw to move the Space Shuttle side to side to dock with the International Space Station.
2. Press the red button to start.
3. Push the thruster button on and off to adjust the yaw .
4. Try to get the red light on, and keep it on as long as possible.

Today, we are going to experience steering with thrust on a Space Shuttle. Thrust is a wind like movement that comes from the engines of the shuttle. There are three different ways to spin and three different ways to move the shuttle.

1. Roll
2. Pitch
3. Yaw
4. Up-and-down
5. Side-to-side
6. Back-and-forth

Questions:

Can anyone describe thrust? (Let the class answer, then give them your definition.)
Can anyone describe yaw?
Does it seem easy to dock a Space shuttle?

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