NISE Hands-on Activity List

Each Explore Science: Earth & Space toolkit comes in a box and includes all the physical materials you'll need plus the activity and facilitator guides and additional information sheets (Print materials in Spanish are included). Each box includes one activity. **To access go to: www.sd-discovery.org/STEM-kit-library.**

Light and Shadows:

Solar Eclipse:

- A solar eclipse occurs when the Moon moves between the Sun and Earth, casting a shadow on Earth.
- A solar eclipse is a rare and beautiful event.
- People have observed and tried to explain solar eclipses for thousands of years.

Big Sun, Small Moon:

- We can see a solar eclipse from Earth because the Sun and Moon appear to be the same size in the sky.
- The further away an object is, the smaller it appears.
- NASA researchers learn new things by studying the Sun during a total solar eclipse.

Bear's Shadow: (works especially well for younger visitors and their families)

- A shadow is created when an object blocks light from falling on a surface.
- An object's shadow always appears on the opposite side from the light source.

Explore Earth:

Rising Sea:

- Earth's sea levels are rising, submerging land and causing coastlines to recede.
- Rising sea levels will have major consequences for people all around the world.
- Scientists are monitoring the sea level, providing information that can help us prepare for and adapt to the changing ocean.

Investigating Clouds:

- Clouds influence Earth's weather and climate.
- Clouds form when individual water molecules combine into droplets.
- NASA researchers study clouds in order to better understand and predict how Earth's climate is changing.

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- *Particular to the information sheet, worksheet, and Globe postcard that come in the activity:* Citizen science programs collect and share the data with researchers that collaborate with NASA.

Paper Mountains:

- Earth is a constantly changing and dynamic system.
- The shape of the land and the pull of gravity both influence how water moves over Earth.
- NASA scientists use observations to make predictions about the future of our planet.

Explore the Solar System:

Pocket Solar System:

- There's a lot of empty space in our solar system—distances between planets are vast!
- The solar system is made up of eight planets and many other objects orbiting the Sun.
- NASA's science missions are exploring our solar system, and beyond.

Stomp Rockets:

- Some rockets carry science tools—not scientists—into space!
- Sounding rockets take quick, low-flying trips into space.
- Scientists use many different kinds of spacecraft to make new discoveries.

Magnetic Fields:

- Scientists have observed active magnetic fields throughout the solar system.
- Earth has a strong, protective magnetic field.
- The Sun's magnetic field extends out into space and sends powerful bursts of magnetic energy into the solar system.

Mars Rovers:

- Teams of scientists and engineers use rovers and other robotic vehicles to explore distant worlds.
- Rover missions, like those to Mars, are carefully planned here on Earth
- NASA missions require large teams of people working together.

Craters:

- Studying the surface of a planet or moon can reveal its history and composition.
- Impact craters form when a meteorite collides with the surface of a moon or planet (or other body in space).
- Scientists use tools to find and observe craters and learn more about the geologic processes on planets, moons, asteroids, and other worlds.

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Hide and Seek Moon (specifically designed for early childhood)

- Tools help scientists study objects that are very far away.
- Binoculars make distant objects appear closer and brighter.
- NASA scientists use powerful telescopes to study objects in space.

Explore the Universe

Ice Orbs:

- Ocean worlds may be the most likely places to discover life beyond Earth.
- Scientists think that ocean worlds have icy cold, frozen exteriors and warmer, liquid interiors.
- Some astrobiologists are studying ocean worlds for evidence and signs of life.

Orbiting Objects:

- The force of gravity influences everything (with mass) in space.
- Every object in space exerts a gravitational pull on every other object.
- Gravity keeps objects orbiting other objects, and prevents them from flying off into space.

Imagining Life:

- If life exists elsewhere in the universe, it could look very different from life on Earth.
- Life on Earth comes in an amazing variety of forms.
- Astrobiologists use our knowledge about life on Earth to make predictions about what life might be like elsewhere in the universe.

Pack a Space Telescope:

- Engineers design, build, and test new technologies to study the universe.
- Careful planning and design help us make new discoveries and better understand Earth and space.
- NASA teams work together to launch, guide into orbit, and operate a space telescope.

Exoplanet Transits:

- Scientists are searching the universe for planets orbiting distant stars.
- When a planet, or other object, moves between its star and Earth, some light from that star gets blocked from view.
- The transit method is one of the ways NASA scientists search for distant planets.

Objects in Motion:

- Objects in the universe interact in complex but predictable ways.
- Stars, planets, moons, and other objects in space orbit around each other because of gravity.
- NASA scientists use what we know about the laws of physics to make new predictions and discoveries.