

# EXPLORING THE SOLAR SYSTEM

## Asteroid Mining

Your mission is to travel to a distant asteroid to mine for minerals and other resources.



**Use your imagination to design a mining machine.** How does it work? What special instruments or tools does it need? Does your machine need to communicate back to Earth? How would it get power to operate?



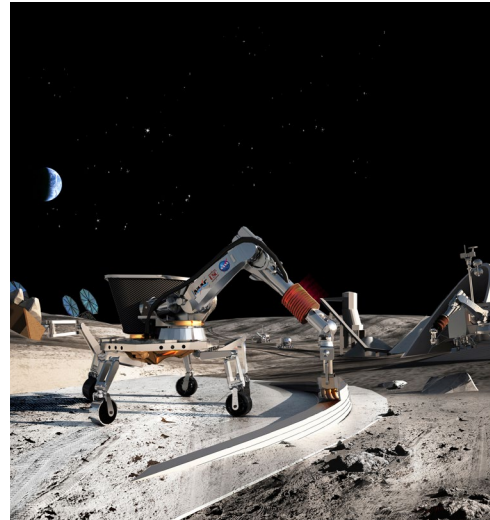
**Draw a picture of your mining machine on the worksheet.** Use the challenge cards if you need inspiration.



**Have a conversation.** Why would you mine an asteroid? What does the asteroid look like after mining? How do you think life on Earth would be different after asteroid mining?

## *Asteroids are small, rocky objects—some contain precious metals or water ice.*

**It's exciting to imagine what our lives might be like in a future filled with more space exploration—and it's also important.** It's still too expensive and difficult to mine asteroids today. But in the future, asteroids and dwarf planets in our solar system could become new sources for materials used in manufacturing, energy production, or supporting humans living in space. When you imagine your asteroid mining machine, you're doing a little bit of science. Before scientists and engineers can start mining, they need to come up with ideas for how their mining machines might work. Our society will also need to consider how mining asteroids might change our lives, now and into the future.



**Robots designed for construction on the Moon, like the one imagined in this artist's depiction, could also be used on asteroids.**

**NASA missions are helping researchers learn more about asteroids and the resources they might contain.** These science missions are developing important technologies for asteroid exploration that could benefit anyone interested in exploring or mining asteroids, whether it's NASA or a private company. There are millions of asteroids orbiting the Sun, ranging in size from a few meters to hundreds of kilometers across.



**NASA's OSIRIS-REx spacecraft, shown here as a model, will collect and return samples from the asteroid Bennu.**

We'll probably never visit them all, but even a small, house-sized asteroid could contain tons of metal for future technology on Earth, or life-sustaining water ice to support deep space exploration. Spacecraft traveling to nearby asteroids, like NASA's OSIRIS-REx probe, are mapping and analyzing these space objects, which could someday help us better understand how to locate and mine potential resources.