

Space at Home: Creating Craters Experiment

Ever wondered how planets and moon got their craters and why craters look the way they do? Find out in this fun science activity as you create your own craters. This experiment is messy - if possible, you should do it outside. If you do it inside, then lay down a sheet or towels first to make clean-up easier. You can watch our demonstration video on our YouTube channel [here](#).

Materials Needed:

- Plastic tub, baking pan or shallow cardboard box
- Flour (1-2 inches deep)
- Cocoa powder (enough to create a thin layer on top of the flour)
- Sieve
- Balls of various sizes for your projectiles (marbles, grapes, bouncy balls)
- Paper tube for dropping your projectiles (*optional*)
- Ruler or meter stick (*optional*)

Instructions

- Fill the plastic tub or baking pan with a thick layer of flour.
- Use the sieve to put a thin layer of cocoa powder on top of the flour.
- Try dropping a ball into the pan from about half a meter above it (optionally, use the meter stick so you can drop from a consistent height).
- Look at the resulting impact crater. What colour is the surface immediately around the crater? How does that compare to the surface of the rest of the pan? How far did the flour and cocoa powder spread? Optionally, use the ruler to measure these distances.
- Try dropping the same ball from a different height. What does the resulting crater look like?
- Try dropping balls of different sizes from the same height and examine the resulting craters.
- You can even try throwing a ball sideways so it hits the pan at an angle, instead of coming straight down. How is the resulting impact pattern different from when you dropped the balls straight down?
- If needed, smooth out the surface of the pan, and sift a fresh layer of flour and cocoa powder on top.
- If you did the project inside, vacuum or sweep up any flour and cocoa powder that got on the floor.

What Happened?

You should have found that the bigger the ball, or the faster it was moving, the bigger the resulting crater would be. This is because larger, faster-moving balls have more kinetic energy than smaller, slower-moving balls. This energy is transferred to the flour and cocoa powder when the ball hits the ground, causing it to fly outward, creating the crater (and a mess!) You should also have seen that the impacts churned up the "soil," bringing some of the white flour to the surface near the impact site. While the pattern around the crater was probably symmetric if you dropped the ball straight down, sideways impacts would result in asymmetric patterns as more flour/cocoa powder were thrown in one direction than the other.