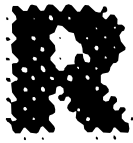


## overview



OVER VEHICLES ENCOUNTER DIFFERENT TERRAIN ON THEIR MISSIONS. ROVERS THAT GO TO OTHER PLANETS OR MOONS MUST BE DESIGNED SO THAT THEY CAN MOVE ALONG THE GROUND EASILY. THE LUNAR ROVER USED TO TRANSPORT ASTRONAUTS ON THE MOON HAD SCREEN-LIKE WHEELS THAT MOVED THROUGH THE FINE MOON DUST. TRACTION IS THE ACT OF DRAWING A BODY ALONG THE GROUND OR WATER. CAR WHEELS HAVE TRACTION SUITABLE FOR THE STREETS AND HIGHWAYS, WHILE TRACTORS HAVE MORE TRACTION TO MOVE ALONG THE FIELDS. ICE SKATES HAVE LESS TRACTION, SO THE SKATER CAN GLIDE SMOOTHLY OVER THE ICE.

IN THIS ACTIVITY, STUDENTS ARE ASSIGNED A SPECIFIC TERRAIN AND THEN MUST CREATE A WHEEL THAT WOULD PROVIDE TRACTION ON THAT SURFACE. IF STUDENTS ARE SEATED IN GROUPS, BE SURE AND GIVE THEM EACH A DIFFERENT TERRAIN THAN OTHER GROUP MEMBERS.

## materials

- *THREAD SPOOL (ONE PER STUDENT)*
- *MODELING CLAY*
- *TOOTHPICKS*
- *THREAD*

## procedures

1. DEFINE TRACTION AND THINK OF THE MANY TYPES OF TRACTION HERE ON EARTH.
2. DISCUSS THE DIFFERENT TERRAIN FOUND AMONG OUTER PLANETS OR MOONS, I.E., SAND, FINE DUST, CRATERS, ROCKY, ICY, ETC.
3. NUMBER THE STUDENTS 1-4. GIVE THE 1'S A SAND TERRAIN, 2'S A CRATERED TERRAIN, 3'S A ROCKY TERRAIN AND THE 4'S AN ICY TERRAIN.
4. GIVE EACH STUDENT AN EMPTY SPOOL, A PIECE OF THREAD (TO CUT THE CLAY) AND SOME CLAY TO GET STARTED. THEIR MISSION IS TO DESIGN AND CREATE A WHEEL TO HAVE TRACTION ON THE ASSIGNED TERRAIN.
5. FIRST, COVER THE SPOOL'S MIDDLE WITH CLAY. THIS ACTS AS A BASE.

*CONTINUED ON NEXT PAGE*

6. USING CLAY, FORM BITS OF THE WHEEL AND ATTACH THEM TO THE BASE, I.E., SPIKES, LONG RIDGES, ETC. WHEN PIECING TOGETHER CLAY ON CLAY, SCORE LINES ON EACH PIECE WITH A TOOTHPICK.
7. WHEN COMPLETE, BRING ALL STUDENTS WITH THE SAME TERRAIN UP FOR A PRESENTATION OF THEIR WHEELS.

