Mission Control: Mars Rover

You're in the driver's seat of an imaginary Mars mission! Using your surroundings, your imagination, and the help of another person, you will simulate the complex process of moving a rover on a different planet.

Materials

A partner to act as your "rover"
A room or area with lots of open space to move around
A toy or object that your partner will retrieve for "study"
A piece of paper and writing tool for listing steps
A blindfold to cover your eyes

Directions

1. **Create** a safe game space to be the surface of Mars for your rover to explore:

   a. **Pick** an indoor or outdoor space at least 10 feet by 10 feet. Make sure the area is clear of stairs, low tables, or anything that would hurt if your blindfolded rover ran into it.
   b. **Add** safe obstacles to your imaginary Mars scene. A pillow might be a flat rock, a chair might be a crystal formation.

2. **Pick** a toy or object that the rover will study. **Place** the object somewhere in the space, and decide a starting place, or "landing site," for your rover.

3. **Plan** your rover's mission. What task will it accomplish? Try having the rover:

   a. make its way to the object
   b. pick it up
   c. return it to the starting position

4. **Write** the step-by-step instructions you will give to your rover in order for them to successfully complete their mission. Rovers are incredibly powerful and precise tools, but they can't think for themselves—scientists have to plan out their rovers' missions very carefully in advance, long before the rovers are even on the planet they're studying! To simulate this, here are examples of actions your rover might take before it starts moving:

   a. Take 5 steps forward
   b. Turn to the right
   c. Walk for 2 seconds
   d. Turn 30 degrees clockwise
   e. Reach down in front of you
   f. Feel around for the object
   g. Turn around entirely
   h. Crawl, step, or jump

5. **Place** a blindfold on your rover and **position** them at your chosen starting point

6. **Read** out the steps you prepared, in order, for the rover to complete. Scientists practice their commands many times, and change their instructions until it works. If your rover didn't successfully get the object and return to the starting spot, change your instructions and try again! What can you do to make your instructions more effective?

7. **Challenges**: Once you have completed a mission successfully, try:
   a. placing 2 objects in the scene to retrieve and grabbing them both in 1 mission!
   b. adding "tools" like salad tongs, big spoons, or lengths of rope.
   c. timing how long it takes to complete a mission. How quickly can you do it?
   d. completing a mission without having to correct any instructions.