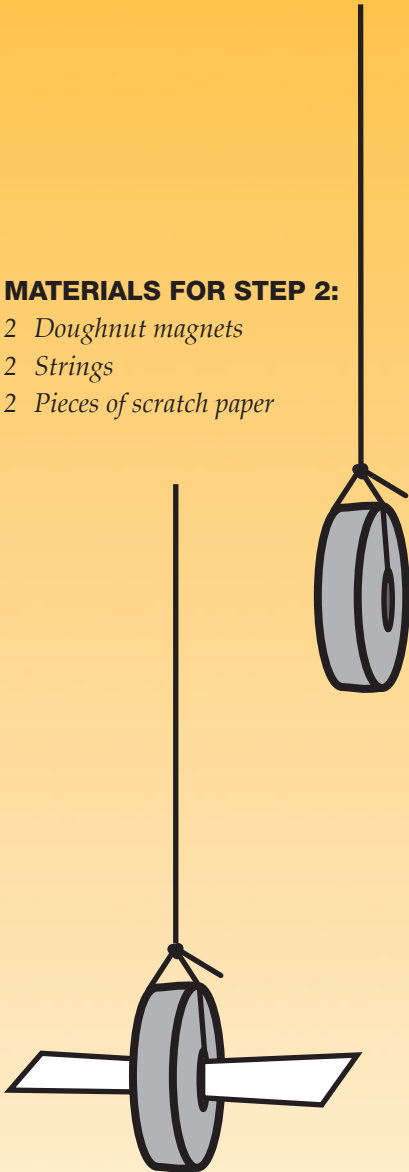


**FOCUS ON STANDARD PS1B**

- Students know how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.

**MATERIALS FOR STEP 2:**

- 2 Doughnut magnets
- 2 Strings
- 2 Pieces of scratch paper


**GUIDING THE INVESTIGATION**
**PART 4: DETECTING MAGNETIC FIELDS**
**1. REVIEW MAGNET CHARACTERISTICS**

Referring to the content chart, review what students have learned about magnets.

- Magnets stick only to iron.
- Two magnets can attract or repel, depending on the orientation of the north and south poles.
- A force is a push or a pull.
- The magnetic force acts through space and most materials.
- The greater the distance between two magnets, the weaker the force of attraction.

**2. MAKE A HANGING MAGNET**

Ask,

- *What do you think will happen if you tie a string to a magnet and let it hang freely?*

Listen to students' ideas and then propose doing it to find out.

Ask Getters to get two doughnut magnets and two 30-cm strings. Working in pairs, students should tie a string to one of the magnets and hang it from the edge of a desk or chair. The hanging magnet should not be close to anything steel.

**3. OBSERVE HANGING MAGNETS**

When the magnets are hanging, ask students what they observe. Students may suggest that all the magnets in the room are hanging in same way—all oriented the same direction.

Suggest that students insert a 6-cm-long piece of scratch paper through the hole in the magnet. This will allow them to see that the magnets are all "pointed" in the same direction.

**4. INVESTIGATE POLES**

Tell students,

*We know these magnets have poles on their flat sides, a north pole and a south pole. The magnets are all aligned with one of their poles pointing toward this wall. My question is,*

- *Are all the poles pointed toward this wall the same pole? In other words, are they all north poles or all south poles? How could you find out for sure?*