



CUB SCOUT BOOMERANG (SILVER) TEST 5

MAKE A COMPASS

Make a simple compass to find magnetic north or south.

Resources

- 1.25 litre plastic soft drink bottle (or similar)
- wine bottle cork
- sewing needle
- magnet
- red nail polish or paint

Instructions

1. Mark one end of the needle with red nail polish or paint, and let it dry;
2. Cut the bottom of the plastic soft drink bottle to create a 'cup' that it is about 5cm high;
3. Fill the 'cup' to about half way with water;
4. Turn the cap of the bottle upside down, fill it with water, and float it in the 'cup'. The water level should be such that the cap bumps into the ridges on the bottom of the 'cup' rather than hitting the side;
5. Press the needle into the cut across the top of the piece of cork, so that it is lying, roughly centred, across the top of the piece of cork;
6. Stroke the needle with the south pole of the magnet, from the unmarked end to the marked end, about 50 times. Make sure you lift the magnet well away from the needle between each stroke (*i.e.* don't just rub the magnet back and forth on the needle);
7. Float the cork (with embedded needle) in the water inside the bottle cap, in the 'cup'. The cork should float high enough that the needle does not touch the edge of the cap. The needle will float around until the marked end points north. I discovered that using the bottle cap in this way (*i.e.* floating the cork in the cap, and the cap in the 'cup') stops the cork and needle from bumping into the side of the 'cup', making it much more effective;

Resource Preparation

Plastic Soft Drink Bottle

1.25l

\$0

Recycle

The PET bottles with the 5-dimple bottom work well, as the dimples tend to keep the floating cork away from the edge, where the needle would otherwise foul.

Cork

From any [still] wine bottle

\$0

Recycle

Cut off a slice about 8-10mm thick, then, with a sharp knife, place a cut across the top and through the centre, a couple of mm deep.

Sewing Needle

Any needle, about 4-5cm long

\$?

Spotlight

Any piece of metal, a piece of a straightened paper clip, for example, should actually work, but the lighter the piece of metal, the more freely it will float on the cork. If the piece of metal hits any part of its container, it will not work as effectively as a compass.

Magnet

Small bar magnet

\$?

Australian Geographic

Anything but the cheapest and nastiest magnets should be OK. It should be strong enough to firmly hold a paper clip (that's just my rough assessment of the requirement—I've never actually tested a range of magnets).