



Modelling Earth's magnetic field

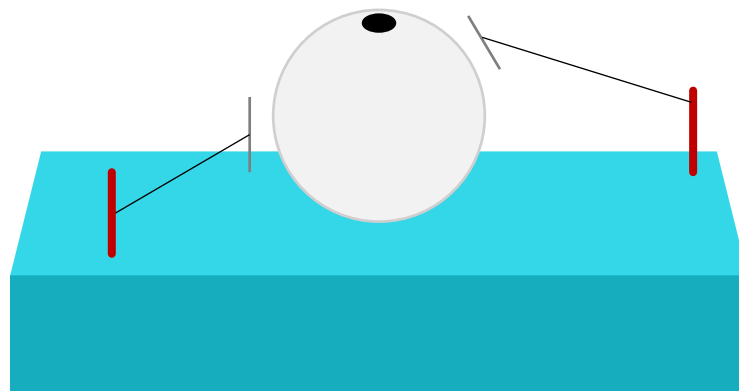
You are going to model the three-dimensional nature of the Earth's magnetic field.

Method

1. Hollow out the centre of your polystyrene ball and fill the hole with a strong magnet.
2. Tie one end of a piece of thread to a cocktail stick and the other to a short piece of metal, about 1-2 cm long.
3. To make the pieces of metal, open out a paper clip and carefully trim the ends so you are left with a straight piece.
4. Make at least eight pieces of thread with the metal and cocktail stick tied on either end.
5. Place your magnetic ball on top of a cardboard box in the centre.
6. Push the cocktail stick into the box and let the other end of the thread with the piece of metal reach towards the magnetic ball.
7. You may need to adjust the length of the thread, so the piece of metal is suspended in the air by the magnetic field surrounding the ball.
8. Repeat with the other pieces of thread, so that the 3D nature of the ball's magnetic field can be seen clearly. Making the pieces of metal rest at different heights around the ball will help achieve this.

Equipment

- Polystyrene Ball (3 inch)
- Strong magnet
- Thread
- Paper clips
- Wire clippers
- Cocktail sticks
- Small cardboard box





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Questions:

1. Sketch the three-dimensional magnetic field of your model in the box below.

2. How can you tell, using this model, where the magnetic poles are?

3. How is this model similar to the Earth's magnetic field?

4. How is this model different to the Earth's magnetic field?

5. How could you improve the model? Justify your answer.
