



Sand pendulums

When you hang a weight on the end of a piece of string and let it swing freely, you have made a 'pendulum'. If you hang a pendulum from more than one point it will change direction as it swings. You can show the pattern made by this pendulum by letting it leave a trail of sand.

Today you will work with your team to set up a sand pendulum.

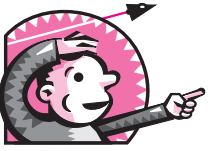


Team investigation

How do we make a pattern with a sand pendulum?

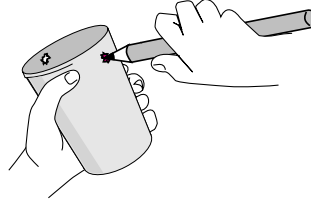
Team equipment

- ◆ 1 paper cup
- ◆ 1 sharp pencil
- ◆ 2 pieces of string
- ◆ 1 container, half-filled with sand or salt
- ◆ 1 sheet of newspaper
- ◆ 1 large sheet of coloured paper
- ◆ job badges for director, manager and speaker

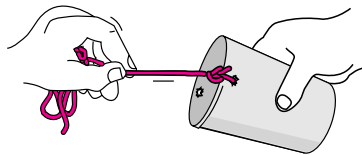


How to do it

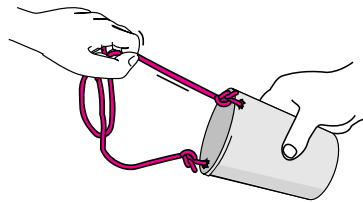
- 1 Use the sharp pencil to make two holes in opposite sides of the paper cup.



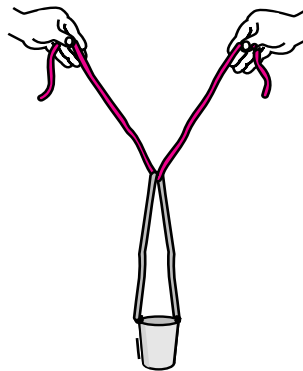
- 2 Thread one end of a piece of string through one of the holes and tie it so that most of the string is hanging free.



- 3 Thread the other end of the string through the other hole and tie it.

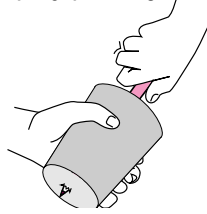


- 4 Take the second piece of string and thread it through the first piece.

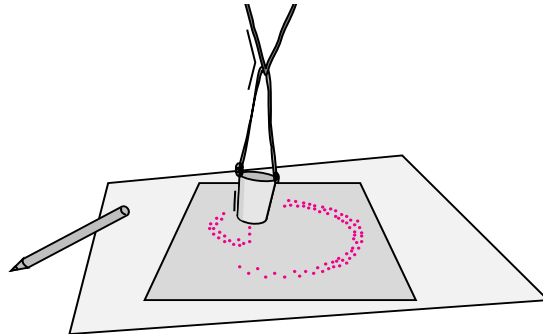


- 5 Your teacher will explain to you how to tie the string to a chair or table. Make sure the cup is just above the floor.
- 6 Put sand in the hanging cup. (Don't make a hole in the bottom of the cup yet.) Put the newspaper and coloured paper under the cup. Adjust the height of the cup so it is about one centimetre above the coloured paper.

- 7 Pull the cup gently to one side (to just above the corner of the coloured paper).
Release the cup and see if it swings freely. If it doesn't, raise the cup by shortening the string.
- 8 Tip the sand out of the cup (into the container) and make a small hole in the bottom of the cup by pushing down through the cup with the point of a pencil.

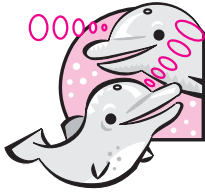


- 9 Put a little sand back into the cup and see if the sand flows freely through the hole. If it doesn't, make the hole larger.
- 10 Block the hole with the pencil and put all the sand back into the cup.
Let the cup hang free. Remove any sand that may be on the coloured paper. Now you are ready to make your pattern.
Pull the cup to one side as you did before and remove the pencil. The cup should swing gently and make a sand pattern on the coloured paper.



- 11 When you have made one pattern, lift the coloured card carefully and roll it to make a funnel. The sand can then be poured back into the spare cup ready for your next pattern.
Adjust the string to different heights to make different patterns.

Let's talk about it



- 1 Did your team work well together?
- 2 How could you improve your team skills and job skills?