



Pendulum Painting

Stem Activities



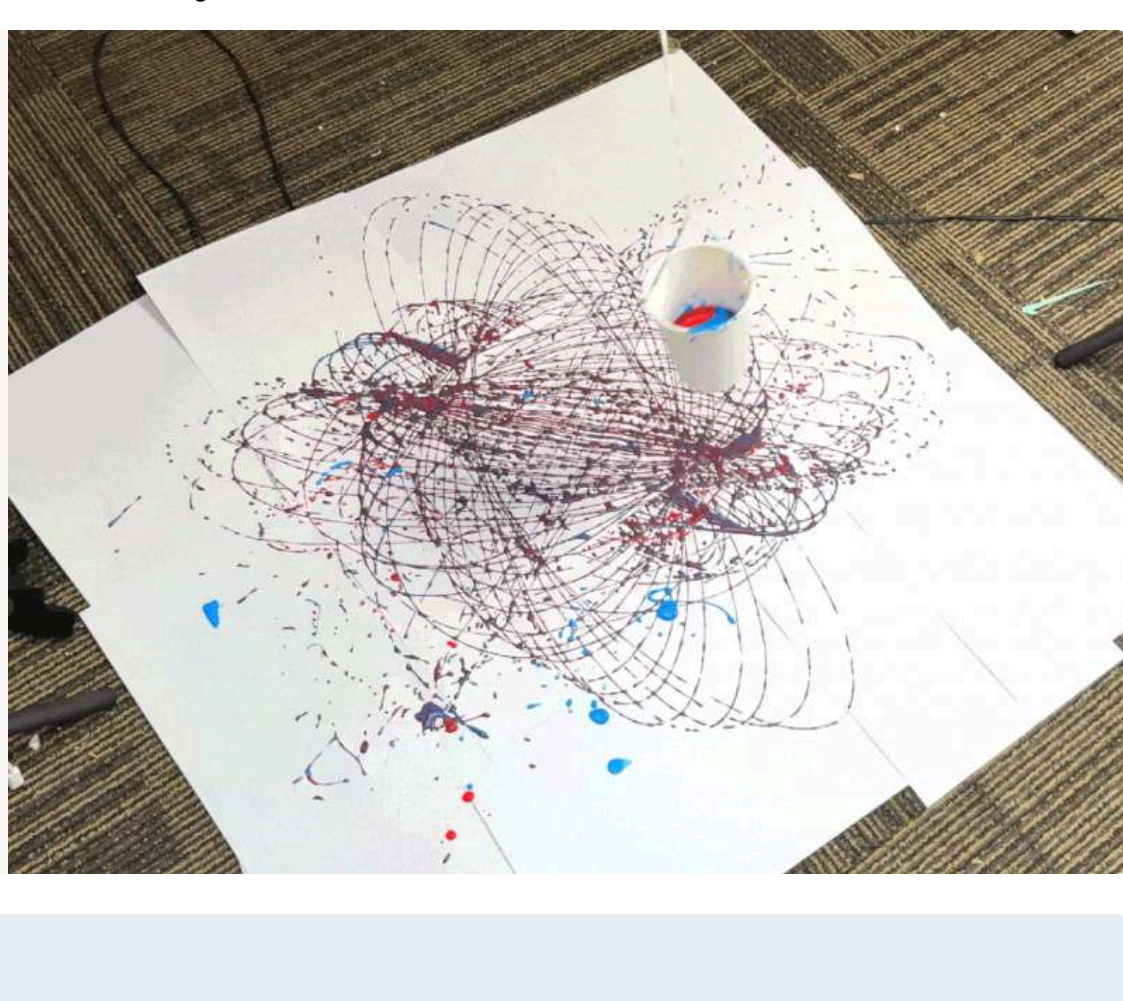
Ages: 6-8



Greater than 30 minutes



Grownup needed



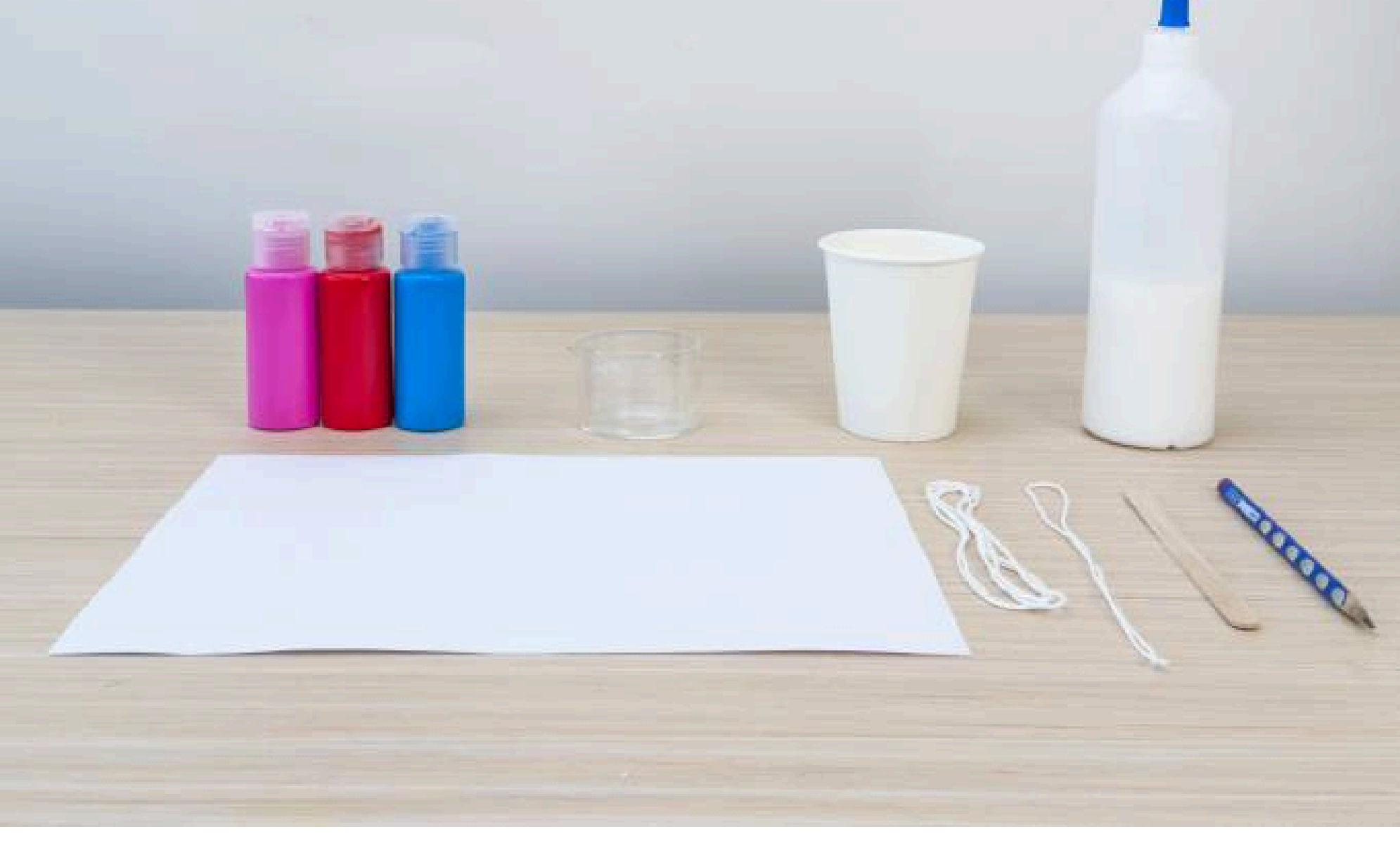
A pendulum is a suspended object that hangs by a string or chain. You might have seen pendulums swinging back and forth in large clocks, or experienced similar motion on a swing. When you pull a pendulum to one side and release it, gravity pulls it down, and it begins swinging back and forth, just like a swing. The path of a pendulum's motion demonstrates fascinating principles of physics!

Materials Needed

Paint
PVA glue
Paper cup
Lolly stick

Glass
Pencil
1m string

20cm string
Drawing paper



Step-by-step tutorial

Step 1

Use a pencil to make a small hole in the centre of the paper cup's bottom.



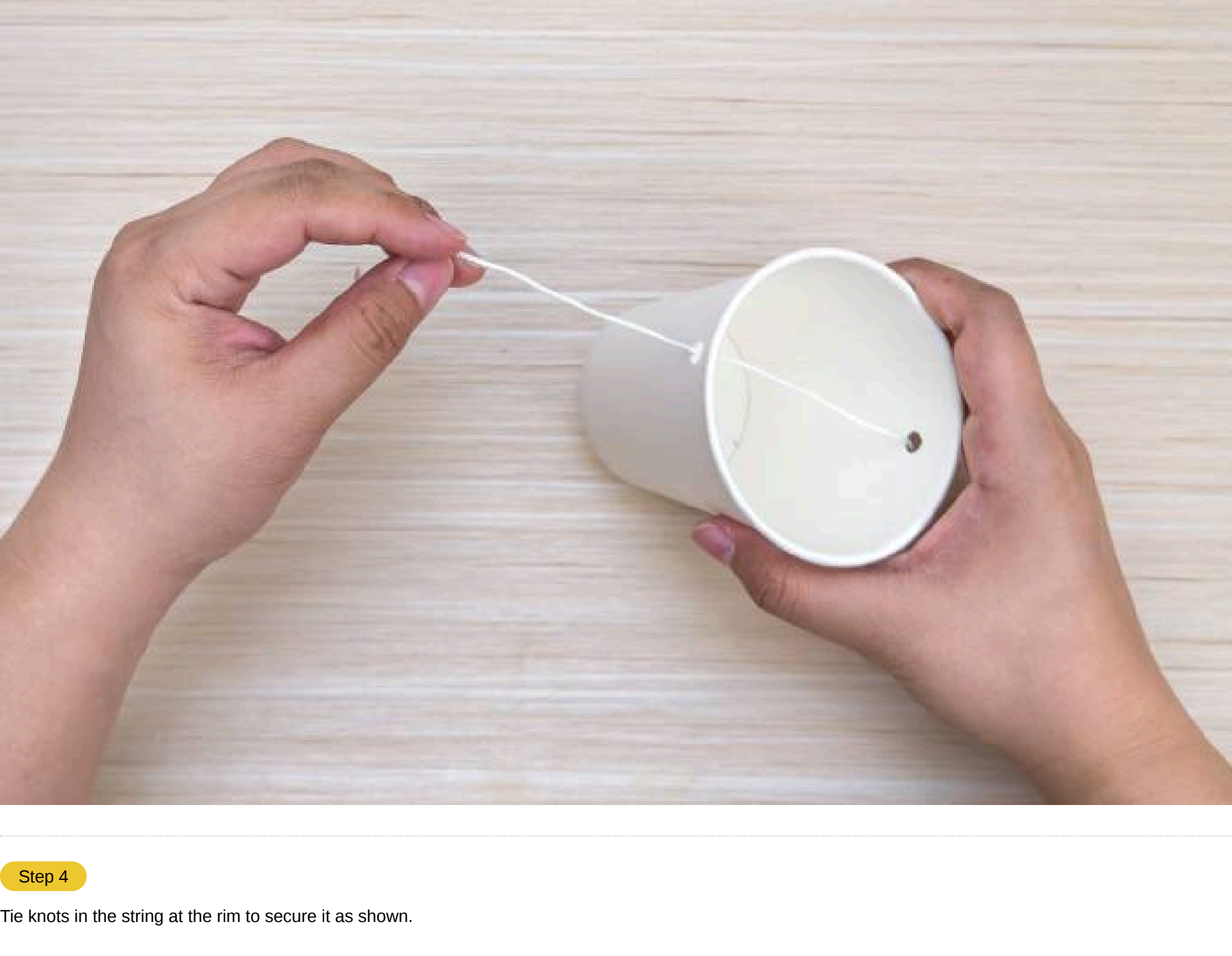
Step 2

Make a small hole near the rim of the paper cup with the pencil, and make another hole on the opposite side. Try to ensure the holes are symmetrical.



Step 3

Thread the 20cm string through both holes in the cup's sides.



Step 4

Tie knots in the string at the rim to secure it as shown.



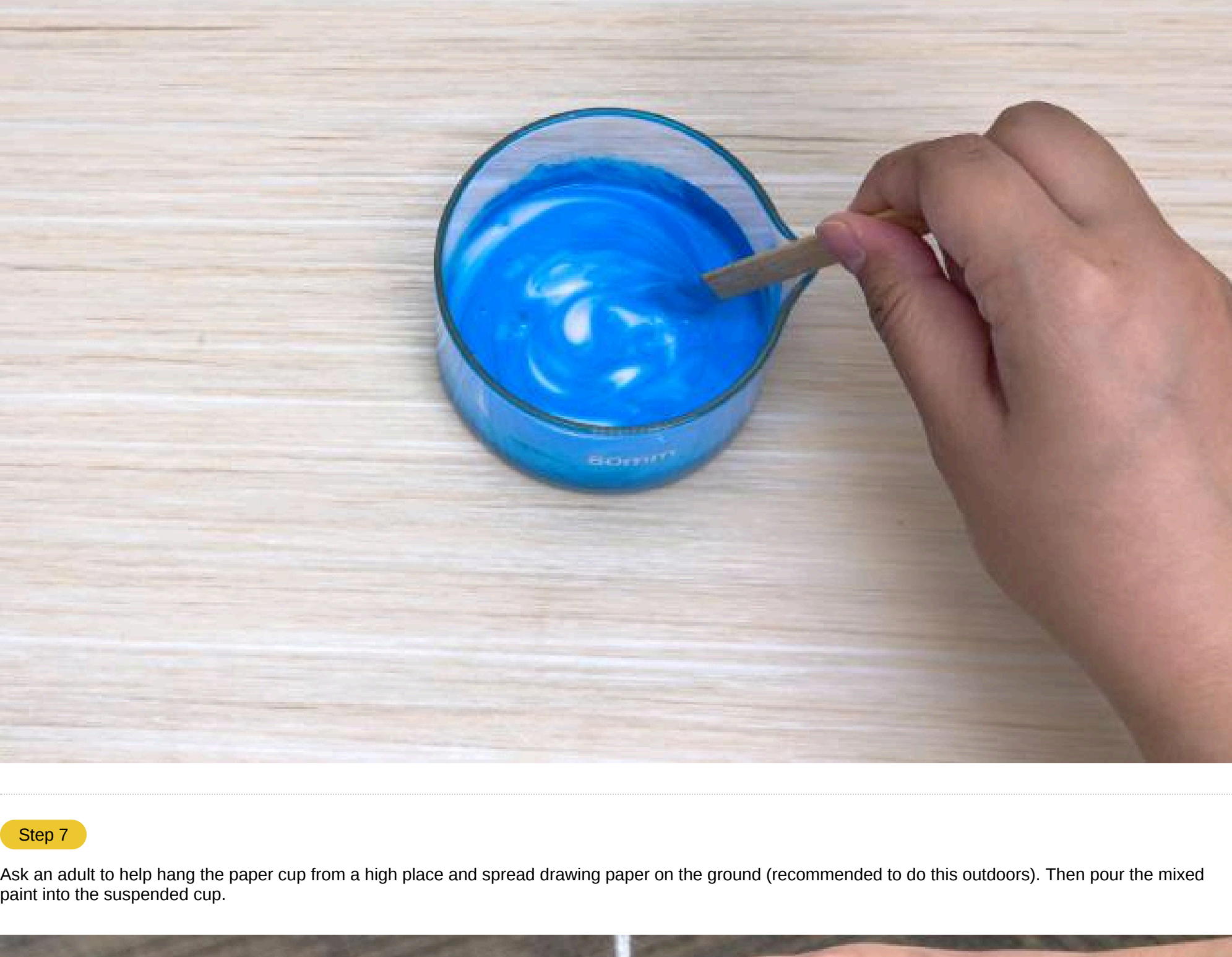
Step 5

Take the 1m string and thread it through the middle of the secured string. Tie a knot at the end.



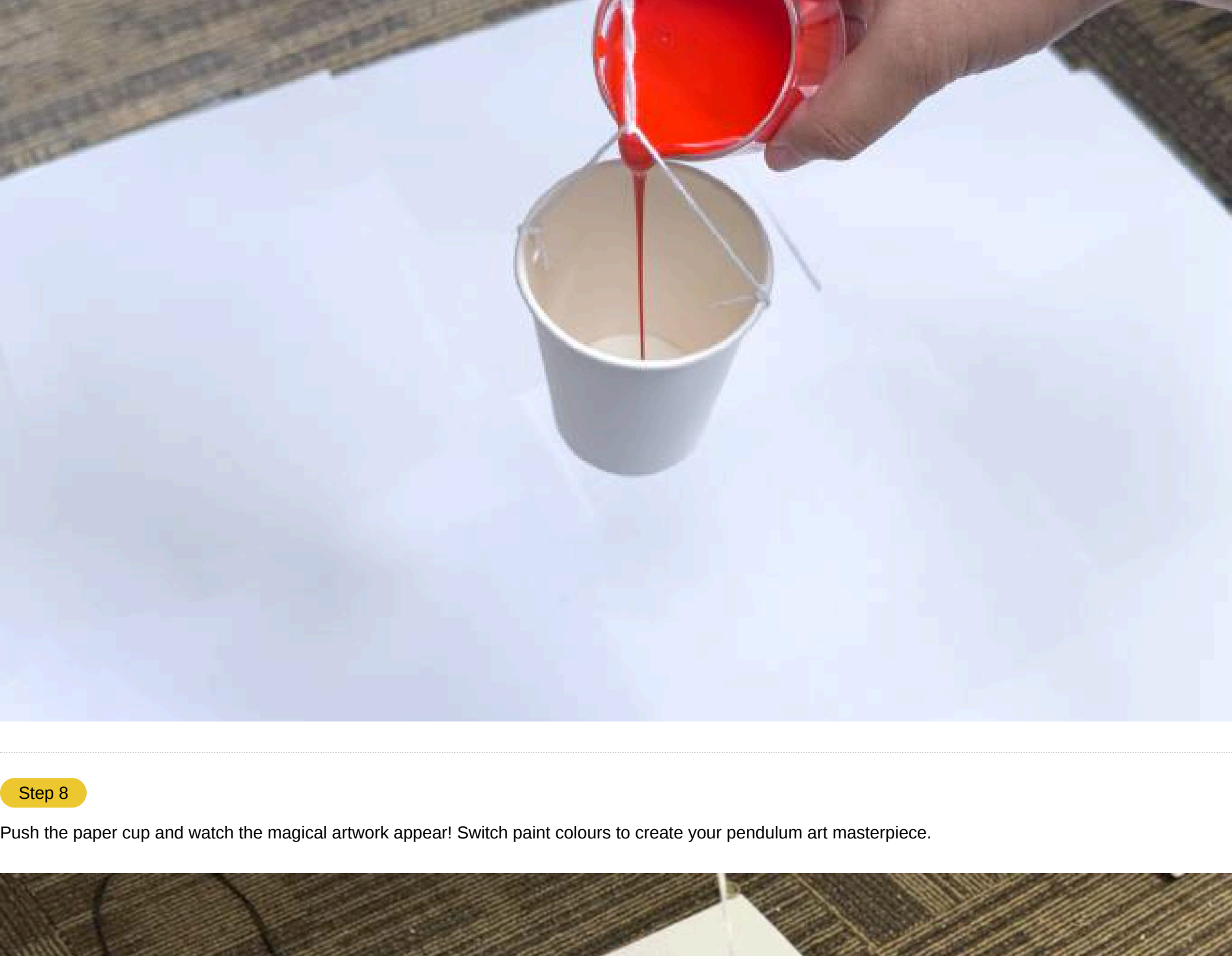
Step 6

Choose your favourite colour and mix the paint with PVA glue in a 1:1 ratio in the glass, stirring well.



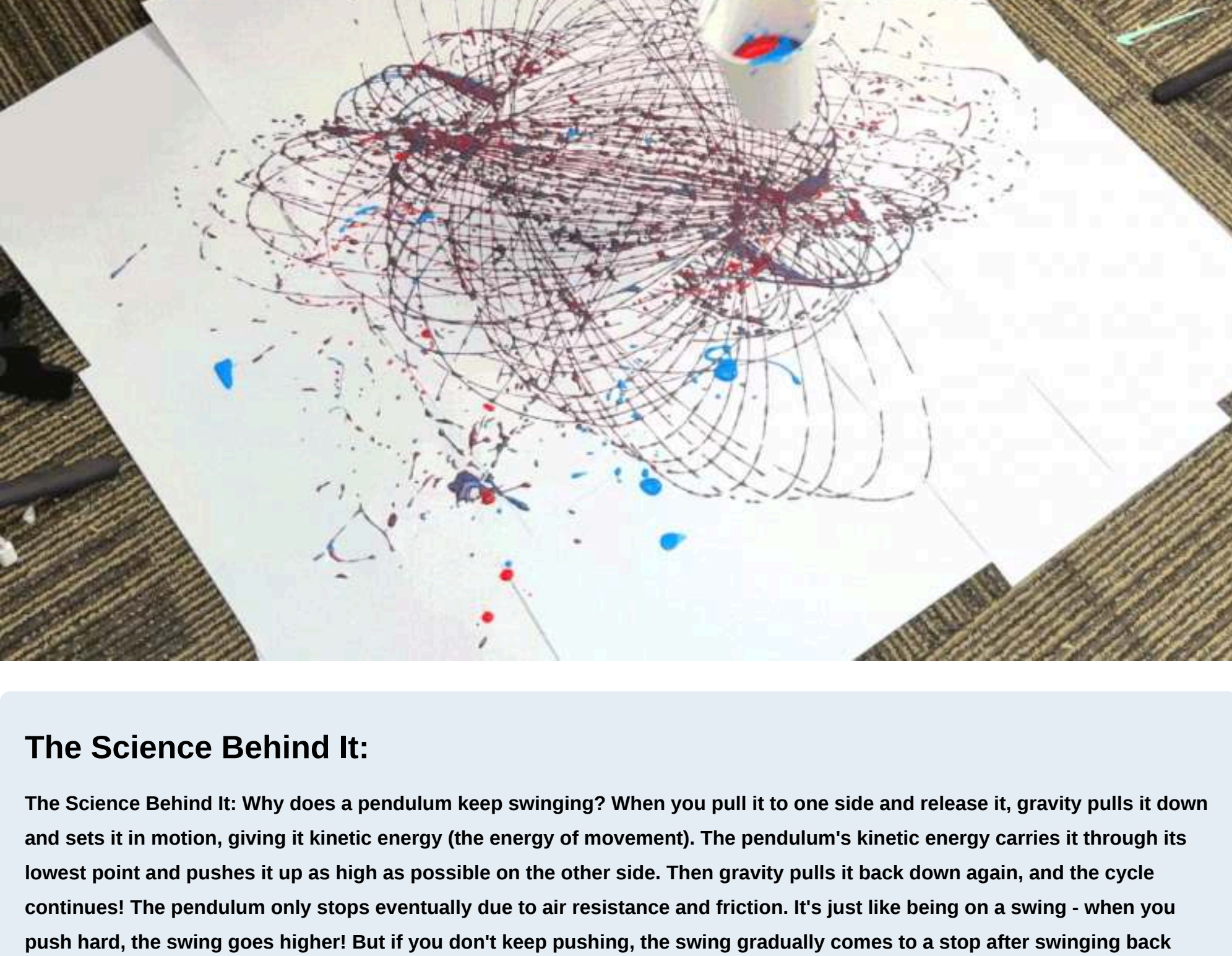
Step 7

Ask an adult to help hang the paper cup from a high place and spread drawing paper on the ground (recommended to do this outdoors). Then pour the mixed paint into the suspended cup.



Step 8

Push the paper cup and watch the magical artwork appear! Switch paint colours to create your pendulum art masterpiece.



The Science Behind It:

The Science Behind It: Why does a pendulum keep swinging? When you pull it to one side and release it, gravity pulls it down and sets it in motion, giving it kinetic energy (the energy of movement). The pendulum's kinetic energy carries it through its lowest point and pushes it up as high as possible on the other side. Then gravity pulls it back down again, and the cycle continues! The pendulum only stops eventually due to air resistance and friction. It's just like being on a swing - when you push hard, the swing goes higher! But if you don't keep pushing, the swing gradually comes to a stop after swinging back and forth.

The pendulum's movement creates curves on the paper, and these curves' shapes depend on how you pull the pendulum and how much force you use. Try using longer or shorter strings and observe how the pendulum's speed affects the patterns. You might notice that a longer string makes the pendulum move more slowly and creates larger patterns, while a shorter string makes it move faster and creates smaller, more compact patterns. Design your unique patterns using different pendulum speeds!