Anti-Gravity Suspension Frame

Stem Activities

Many buildings and art installations use stainless strange angles without collapsing - some even appear to float in mid-air defying the laws. Now it is time yourself! Create this seemingly magical anti-gravity device using wooden string and baby wipes. It requires the fascinating science behind making objects "float".

Materials Needed

Popsicle sticks
Hot glue
Hot glue gun
Paper
Paperboard
Baby wipes
Cotton string
Scissors
Ruler
Pencil
Tape
Scissors

Step-by-step tutorial

Step 1

Select the baby wipes in your favorite colours.

Step 2

Stick the pulleys like the sticks according to the numbered sequence shown in the image.

Step 3

Using the pulleys, draw guide lines where the baby wipes overlap.

Step 4

Repeat the same process to mark guide lines on the other three baby wipes.

Step 5

Using scissors, cut the baby wipes along the guide lines.

Step 6

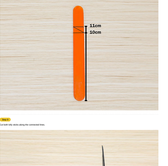
Stack up the cut baby wipes and join them sides to form a triangle as shown. You'll need to make two of these triangles.

Step 7

Using the pulleys, make small holes on each corner of the glued triangles large enough for the string to pass through.

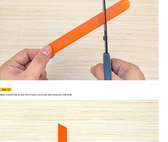
Step 8

Take the remaining baby wipes and make holes on 2cm and 11cm respectively, like combs these holes as shown.



Step 9

Cut both wipes along the combed lines.



Step 10

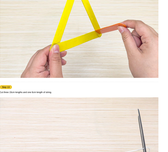
Make a small hole at one end of each wipe by slide each along the credit card.

Step 11

Take one of the cut baby wipes, apply glue to the cut edge, and stack it on the sides of one edge of a triangle.

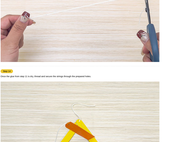
Step 12

Apply glue to the cut edge of the other cut baby wipe and stack it on the sides of one corner of the second triangle as shown. Be careful not to cover the holes in the middle.



Step 13

Cut three 20cm lengths and one 6cm length of string.

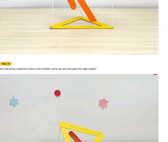


Step 14

Once the glue has dried, (1) cut, thread and secure the strings through the popsicle holes.

Step 15

Tie the remaining 6cm long (2) cut piece down, positioning the corner with the attached stick on the left. Thread the strings through the corresponding holes and secure them according the diagram below.



Step 16

Your anti-gravity suspension frame is now complete. Let the top stick and watch the magic happen!

The Science Behind It:

The anti-gravity suspension frame works by utilizing force balance and tension to create a stable structure. When the strings are pulled taut, they create internal tension that counteracts the structure's natural tendency to fall under gravity, resulting in stable equilibrium.