

# Rudolph's Ready for Take-Off! A Christmas Craft Adventure

October 22, 2024 / DIY / STEM Activities / Marvelous Mechanics Motion / Age 6 - 8 / Christmas Balloon Reindeer Rocket



3, 2, 1, launch! What happens when you use a balloon to power a reindeer? Will it run faster? Children will love this cool and simple Christmas flying reindeer balloon rocket STEM activity. It's not only great fun but also explores physics and the laws of motion!

- Age: 6-8
- Time: Less than 1 hour

## Materials Needed:

Printable templates  
Scissors  
Balloon  
Clear sticky tape  
Drinking straw  
String



## Step-by-Step Instructions:

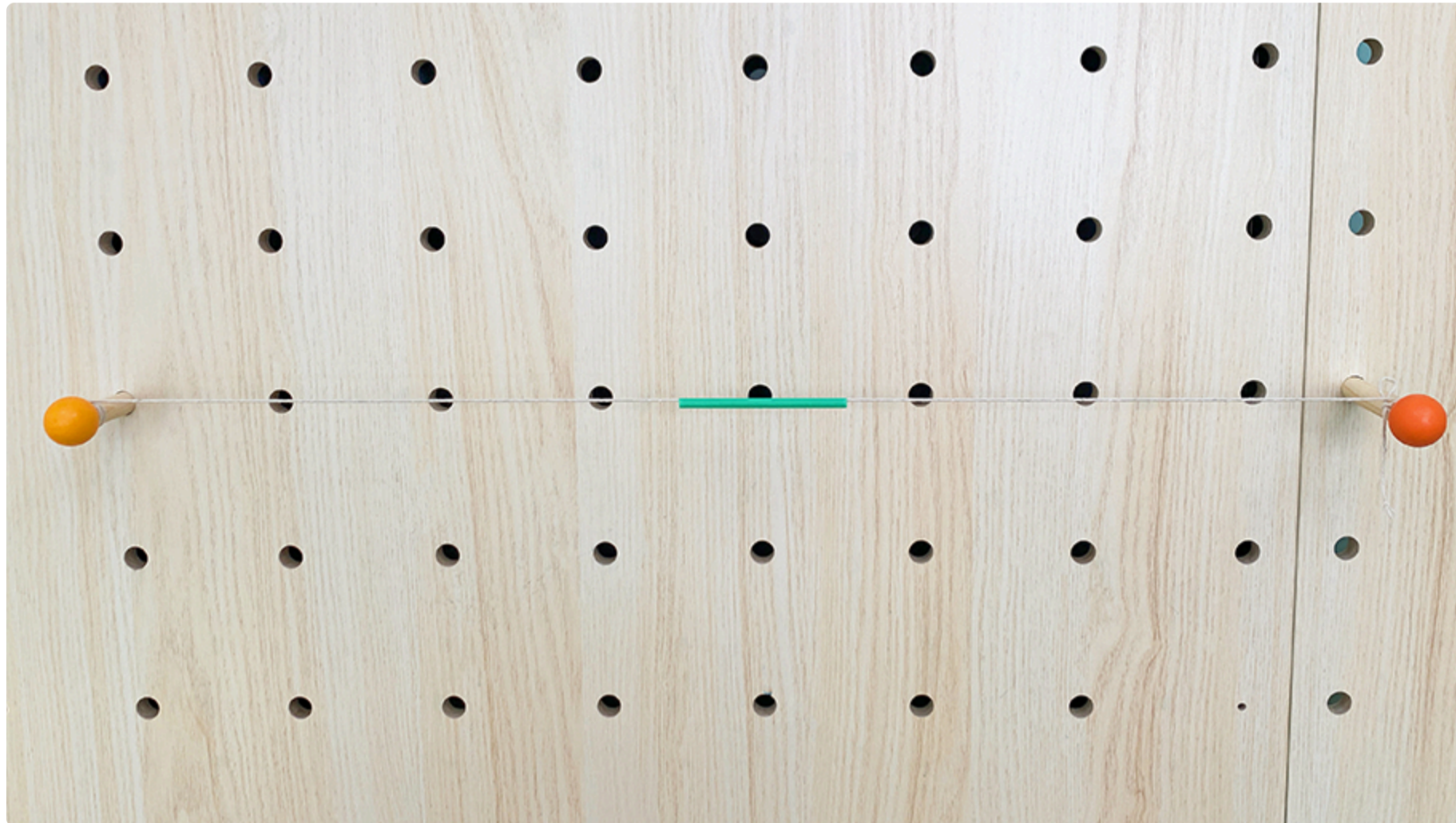
1. Cut out the patterns from the printed templates or design your own reindeer pattern. We've prepared two sets of reindeer templates in different sizes; you can choose the appropriate size based on your balloon size.



2. Cut a 5cm length of drinking straw and thread the string through it.



3. Find an area in your home to tie both ends of the string. You can use door handles or chairs to secure the string. Make sure to pull the string taut.



4. Blow up a balloon. Be careful to pinch the neck of the balloon to prevent air from escaping. You can also use a clip to keep the balloon sealed. This will make your next steps easier.



5. Decorate your balloon with the template you prepared in step 1.



6. Stick the balloon under the straw as shown in the picture below, ensuring the straw can move freely. Release the clip - does your reindeer fly?



## The Science Behind It:

How does the Christmas reindeer take off? Let's start with thrust. First, you inflate the balloon, filling it with air. When you release the balloon, the air escapes from it, creating a force that pushes forward - that's thrust! Thrust is the energy caused by the balloon's release.

According to Newton's Third Law, for every action force there is an equal and opposite reaction force. When the air is forced out of the balloon, it pushes against the air outside the balloon while simultaneously propelling the balloon forward. This is what you see when the reindeer takes flight.



