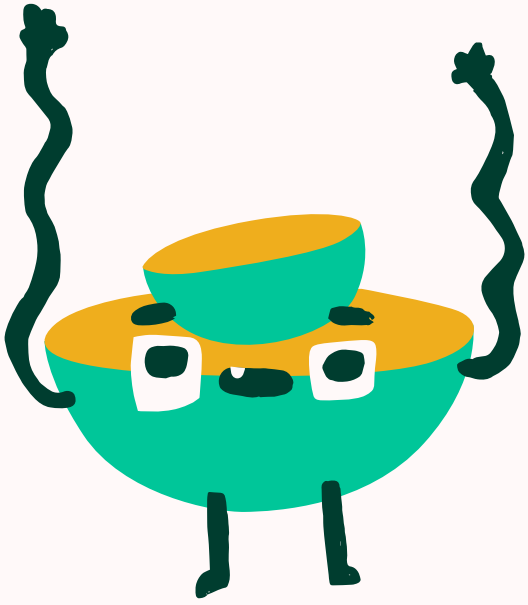
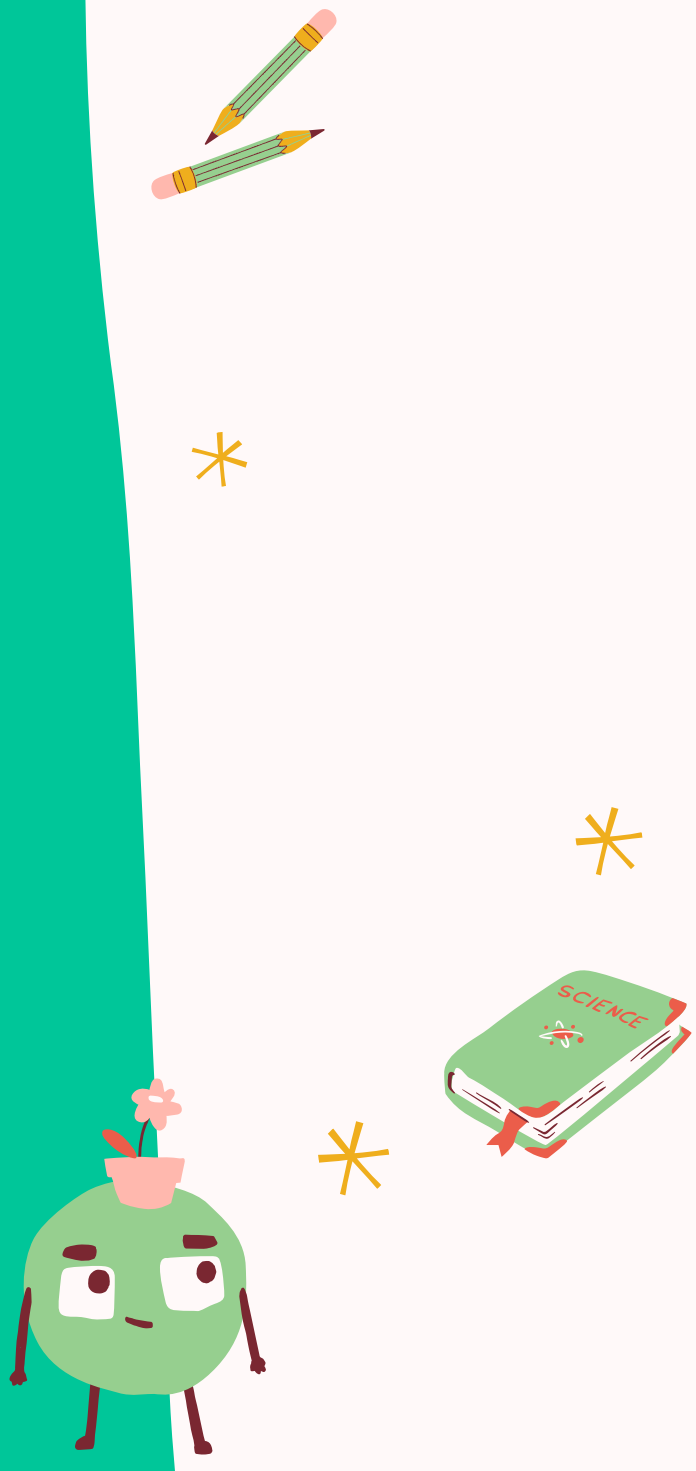
BALLOON POWERED CAR

Time: 25 minutes
Age: 7- 14 years



Key Concepts

- Third Law of Motion
- Force and Air



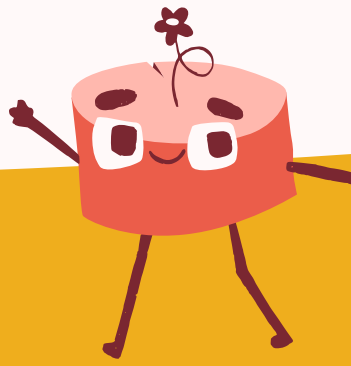
Learning Outcomes

- To learn about the ways to make a successful car.
- To understand the third law of motion with our experiment and everyday examples.
- To understand the force applied by air.

What's the Challenge?

I, Gul Rukh, love the topic of cars and I have always thought of becoming an engineer! My friends, have you heard about the new and latest discovered cars? Some of the cars are running on electricity instead of petrol, and the most interesting fact is, some of them move with the help of air. Isn't this amazing?

Why not try to make our own car that moves from one place to another with air? Today, I have come up with a new challenge for you all! With the help of everyday things, you will be launching your own car that moves with air. So, my junior engineers, are you ready to explore the world of cars with me? Let's do it together!



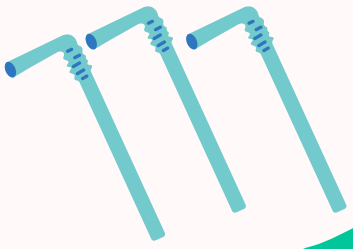
LET'S INVESTIGATE!

Materials Required

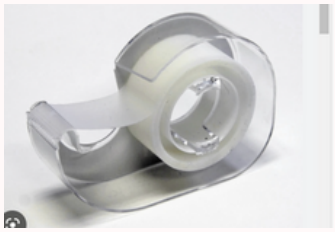
a half-litre empty bottle

a balloon

3 straws

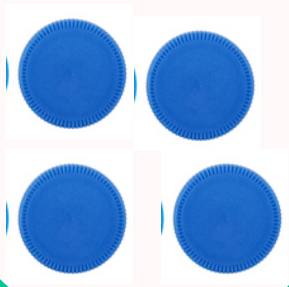


scotch tape



2 wooden skewers

4 bottle caps



Let's do it!

Step 1

Cut your straws short and tape them to your empty bottle.

Step 2

Now push a wooden skewer through a bottle cap.

Step 3

Pass it through one straw and then push the other end through a bottle cap as well.

Step 4

Now, do the same thing with the remaining skewer and bottle caps.

Let's do it!

Step 5

Now you have a four-wheeled car, make sure it is stable.

Step 6

Take a balloon and tape its mouth to a straw so that no air comes out.

Step 7

Blow up the balloon and hold it.

Step 8

Tape the straw to the top of the bottle and release it.

Step 9

What happens?

Science Behind It!

Great job! I am sure you must have enjoyed making
and playing with your balloon-powered cars. Now, let's highlight the science behind this amazing experiment.

First, we created the tires of our car using the caps of the bottles and placed them inside the wooden skewers but as the tires need to move properly, we passed the wooden skewers from the straws and attached them to the bottle. This way the slippery surface of the straws gave way to the tires to move smoothly and we got the tires and the body of our car.

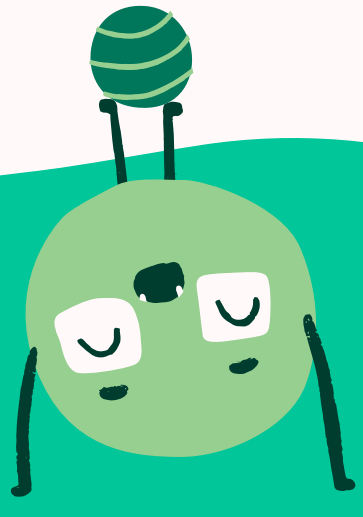
After this, we needed fuel for our car. You must have remembered that we did not make a car running on petrol or electricity but one that moves with the air. We attached a balloon with a straw, filled the air inside it, and pasted it on the bottle. The minute we released the balloon, the air inside it got a way to move outside it.

Here, the third law of motion claimed by our famous scientist, Issan Newton applied. According to this law, when one thing applies force to another thing, it applies the same amount of force back to the first thing. For example, the air coming out of the balloon applied force to the air around the car which also applied the same amount of force to the air coming out of the balloon attached to the car. This is why our car smoothly moved forward.

It is similar to when you throw a ball toward the wall, it comes back to you. This means the ball applies force to the wall and then the wall applies the same amount of force on it and it comes back to you!

THE WORLD AROUND YOU!

Do you know there are airbags inside some of the cars? Airbags save our lives during accidents with the help of a reaction happening inside the steering wheel. During an accident, it just takes 50 milliseconds for us to hit the steering wheel of our cars. So, there is less time within which the airbags must inflate to save us. There are already built-in sensors inside the steering wheel that send electrical signals to produce sodium and a large volume of nitrogen gas. This gas instantly inflates the airbag. Now, as the process takes about 30 to 40 milliseconds, the airbags blow before we hit the steering wheel, helping save our lives.



THINK AND TALK

1. What if we add a different type of air inside the balloon? For example Helium!
2. What if we do this experiment in the mountains?
3. What if we change the surface on which our powered car would move?