

Fun with Funnels

Funnels. What is a funnel?

A funnel is a pipe with a wide mouth on one side and a narrow mouth on the other side. It might not look too exciting. But there is a whole lot of interesting things you can do with this shape.

Why do people use funnels?

To understand this let's try throwing small paper balls into a bottle.

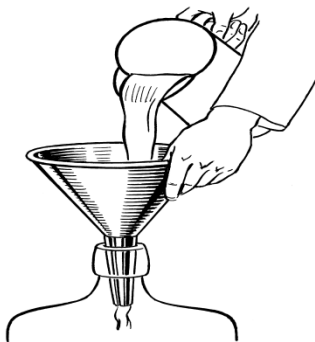
With or without using a funnel.

Obviously the funnel has made it much easier throwing balls into the bottle.

Maybe that is why many factories also use funnels to pour things into narrow mouths.

You may have seen people using funnels while pouring liquids into a narrow space.

It is much easier to pour into the bottle when there is a funnel present as the mouth of the funnel is much wider than that of the bottle.



Let's try that.

Neha here is pouring water into this bottle.

But the water is not going in.

It is stuck in the funnel.

What has happened?

Is there something in the bottle

that is preventing the water from entering the bottle?

No?

Look again.

There is air in the bottle.

The air in the bottle

has to come out in order for the water to go in.

The funnel had formed an airtight lock with the bottle because there was a bit of water on the lip of the bottle.

Now we lift the funnel and see that

the water easily pours into the bottle from the funnel.

The air that was trapped in the bottle

now has space to move out and

lets the water fall in easily.

Using Bottle and Bags to make Funnels

Vivek here is out on the road

and needs a funnel.

But how can he get one?

Ah! Use the plastic bag here.

Can we make a funnel out of the plastic bag?

That's right when we cut only one corner of the bag to pour out liquids it is basically the shape of a funnel that we are using.

Mehendi pipes and pipes used for decorating cakes also have funnels.

However to pour easily

Vivek would prefer to have a funnel that is not so flexible.

Is there anything else that he is carrying that could be used to make a funnel?

What about the plastic bottle?

Does that have a funnel?

Very good! The bottle has a funnel at its top.



Make a Rain gauge

Let's cut out the funnel at the top of the bottle.

If you invert the top part of the bottle onto the rest of the bottle then what you have is a rain gauge!

That's right.

Just mark out the height of the bottle and keep it out in a place



where rain can fall into it easily.

You may have to put some sand or gravel around it so that it does not fall easily with the wind.

There now you have your own rain gauge that will tell you how many centimeters of rain has fallen in the last 24 hours.

The funnel on top makes sure that the rain drops do not splash out of the bottle.

Making a Fruit fly catcher

If you put a slice of banana in the bottle and then put the funnel on the top and tape it in place then



you have got yourself a fruit fly catcher.

That's right- the fruit flies that you see near places where fruits are kept

are attracted by the scent of the banana.

They fly into the funnel.

However they do not feel like coming out.

Keep the contraption wherever you have fruit fly infestation and you will see that the fruit flies get captured into the bottle.

If you keep the bottle for more than a few days

then you can see the fruit flies lay eggs

and grow into larvae and pupae inside the bottle.

While this may be fun to watch the lifecycle of fruit flies

do remember to throw out the bottle in a few days.

Otherwise you will have a fruit fly infestation all over again

if the bottle is mistakenly dropped.

Paper funnels

How can we make a funnel out of paper?

Let's see. If we fold the paper like this

then here we have a funnel.

We can keep it from unrolling

with a piece of adhesive tape.

Making sounds louder

Put the paper funnel near your ear

and try listening.

The girl in the picture

can even hear the other girl's watch tick!

The sound waves not only vibrate the air

but they also make the paper funnel vibrate.

This amplifies the sounds

such that you get a louder sound.



Make your own stethoscope

Doctors use stethoscopes to listen to our heartbeat.

One can make a stethoscope at home

with 2 funnels, a balloon and a pipe.

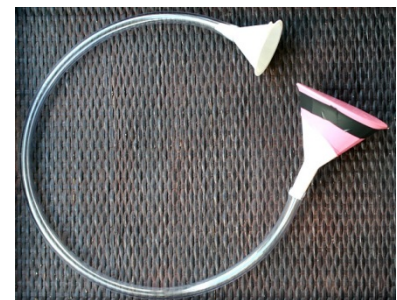
Just pull the balloon across the end of one of the funnels

and attach the two funnels

to the two ends of the pipe.

Try listening to your heartbeat

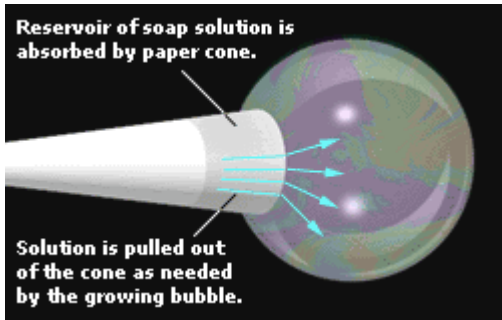
with this homemade stethoscope!



Gigantic bubble maker

If we cut the end of the paper funnel

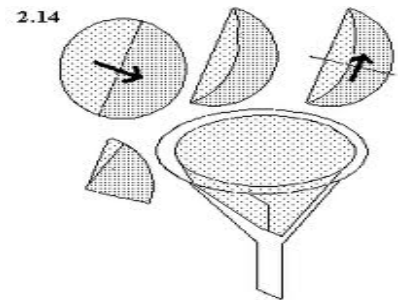
to get a nice cone shape



then we can use this as a wand for blowing football sized bubbles. Just dip the wide end of the cone into Bubble solution and blow through the narrow end. The layers of paper that make the cone, trap quite a lot of bubble solution between them. Hence we can blow gigantic bubbles with them.

Separating solids from liquids

Scientists use funnels to separate immiscible solids from liquids. For this, they place a filter paper folded inside a plastic funnel. To do this, one must fold the paper like this and open it up to fit into the funnels perfectly. Now try adding dirty water into the funnel. What comes out is water that looks much cleaner than the original water. But don't drink that water! It is not that clean!



Looking for funnels in more unusual places

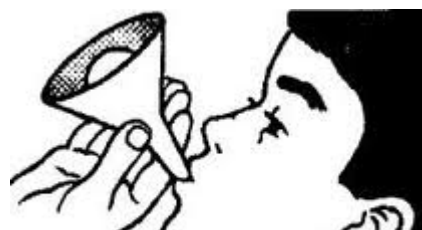
Can you find funnels in the following objects? Picture of fan, ball point pen, What about the ball point pen and the fan? What are funnel shapes being used for in these objects? It is to make sure that the pipes inside do not move around that much. Do we have funnels on our bodies? What about ears or mouths. They are both funnels aren't they?

Air and funnels

Blowing a candle



Here is a fun one. Try blowing out a candle by blowing through a funnel. You can't do it, can you? You see, the wind pressure decreases due to the shape of the funnel.



Blow a small ball out of the funnel. Can't do that also?

Easy model of a lung



We can use a funnel to easily make a model of the diaphragm and lungs.

Just blow up a balloon and release the air several times to soften the rubber of the balloon.

Attach the balloon to the end of the funnel.

Blow some air into the funnel

such that the balloons are slightly inflated.

Place the funnel into the plastic bottle.

And squeeze the sides of the bottle.

What happens to the balloons?

When you squeeze the bottle

it is similar to the diaphragm moving up and squeezing the chest cavity and you can see the balloons deflate.

When you release the pressure on the bottle sides

You can see that the balloons inflate again.

Flashlights also have funnels. It helps to reflect the light and increase the light intensity.

Even astroscientists think and work with funnels.

A gravity well is the result of the pull of gravity caused by a body in space such as a planet. Over the years, mythology has come to view any large holes as "gravity wells" because things fall into them and can't get out. But the technical definitions and forces are more complex than that, and form a beautiful natural funnel shape.

Some have likened space to a mesh fabric, and planets as heavy balls laying on the fabric. The weight of the planet stretches the fabric in such a way that it forms a funnel that is steeper the closer it gets to the planet. The steeper the slope, the greater the gravitational force.

The shape" of the material will bend toward that low point forming a "gravity well". For now, think of a gravity well as a force, specifically the "pull" of objects to the surface of the earth, or other planetary body.

Now place other objects onto that bending surface, and watch them fall to the lowest point in the center. The gravitational force INCREASES toward the lower center.

Generally speaking, the larger the body (greater mass), the stronger and deeper the gravity well.

For instance, the sun has a large (or deep) gravity well. Asteroids and small moons have much smaller (shallower) gravity wells.

We are most familiar with the earth's gravity, so we will use that for further explanations. But, for cosmic purposes, don't think of gravity as what makes an apple fall a few feet to the earth, think of it on a much larger scale, and how the earth's gravitational pull exerts forces on everything around it, even objects out in space. To get away from the earth's gravity well, you have to "escape" the pull of the gravity, and that requires some extraordinary energy as demonstrated during rocket and space shuttle launches.

[Our Spiral Wishing Wells](#) are gravity wells. The funnel portion is a perfect gravity well shape with stronger and stronger pull toward the center which is lower and lower.

So something as humble as a funnel can be used for so many applications. Do you think funnels are fun now?

Different characters could explain how they also use funnels.

One person could be walking around checking out funnels. Sees a funnel in a coffee machine.

Have a animated funnel talking

Have a animated cartoon character who loves funnels to be explaining about funnels

Grandfather could be explaining funnels to everyone