TETRAPAK TEACHING AIDS

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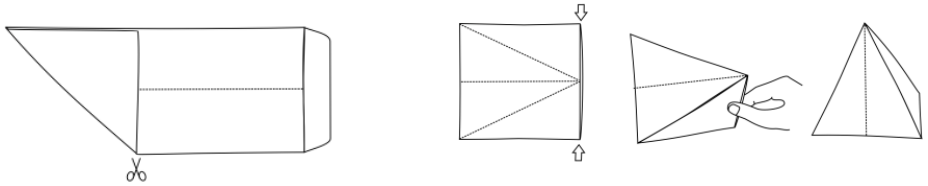
In the last five decades Tetrapaks have changed the face of packaging worldwide. Today milk, tomato puree, cooking oil, juices and many other liquid consumables come in Tetrapaks. In 1941 the Tetrapak Company was founded in Sweden by the Rausing family. When he died in 1983, Ruben Rausing was Sweden's richest person. His son Hans Rausing aged 85, now lives in England is worth 10 billion US$ and is ranked number 81 in the Forbes billionaire list.

Tetrapak's first product was a paper carton used for storing and transporting milk. It was shaped like a triangular pyramid and hence the name *Tetra* (means FOUR in Greek).



A Tetrahedron is easy to make. Fold a triangle in a corner of an old envelope and cut a square. Then crease the slant lines and push the two ends of the mouth to make a 3-D shape made of four triangles. This shape is called a Tetrahedron – a triangular pyramid.

Tetrapaks are made by fusing together layers of different materials - paperboard (73%), plastic (22%) and aluminum foil (5%) into a single composite sheet. The great advantage of Tetrapak is the low weight of the carton compared to its contents. A one-liter Tetrapak carton weighs only 28 gm! This makes it the darling of the packaging industry. Glass bottles or tin cans would be much heavier and costlier to transport. The common *Frooti* pack is square in cross section. The square shape and low ratio of package-to-content optimizes space. Thus less fuel is needed to transport as compared to other shapes and materials. Tetrapaks prolong shelf-life and help in transporting perishable food without continuous cooling. This helps in reducing the environmental footprint.

Here you can see how Tetrapaks are made

http://www.youtube.com/watch?v=5IlrOxRPy0U&feature=related

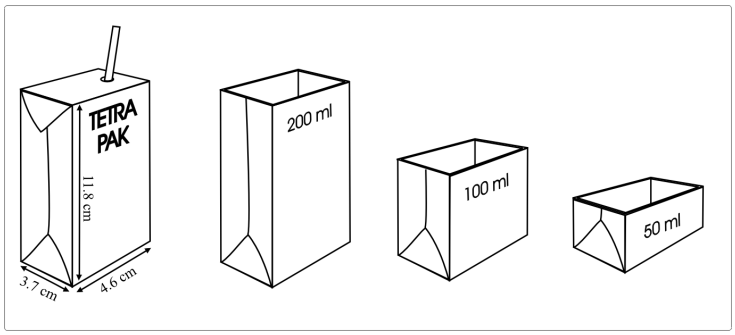
But not all is well with Tetrapaks. If you had lunch on a leaf plate, nature could easily recycle it. Not so with Tetrapaks. Plastic is based on oil and aluminum is one of the most energy intensive metals. So, Tetrapaks are both energy intensive and also very difficult to recycle. For recycling we need to separate the paper, plastic and aluminum. As separating these fused layers requires enormous amounts of energy so most Tetrapaks finally end up in landfills. The Tetra-Pak company has promoted recycling only as a way to increase its sales and profits as you can see in this film. Children who don't have clean drinking water are being given synthetic fruit juice packs!

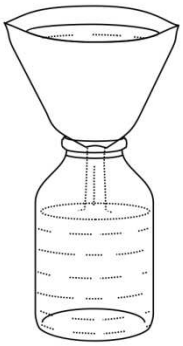
http://www.youtube.com/watch?v=kzWvh2WruI8

In spite of all talk of recycling, the amount of solid waste is increasing. Not slowly but very rapidly. Over a 100 billion Tetrapaks are discarded every year! Only a small fraction is recycled. The rest lie buried in landfills, for nature is helpless against this man-made material. In India, because of economic reasons some articles like eating plates and cups are made from waste Tetrapaks.

"LIVE SIMPLY THAT OTHERS MAY SIMPLY LIVE," said Mahatma Gandhi. Children are being increasingly targeted by advertisers to fuel the consumer boom. But smart kids can give these junkies a boot by not falling into their trap. Instead, they can pick up used Tetrapaks and make some great learning aids. Here are some examples.

Frooti Facts

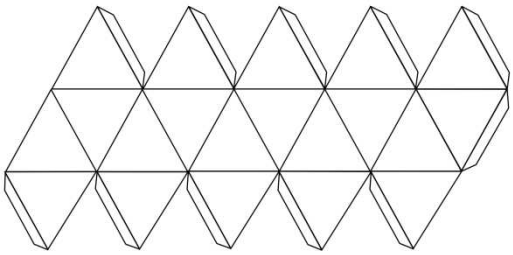


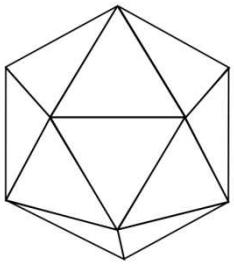


The *Frooti* pack contains 200-ml liquid. Remove the straw and cut the top to make a lovely 200-ml box for measuring volume. Cut in half and a quarter to make 100-ml and 50-ml measures. Flatten this 100-ml box and carry it in your pocket as a flexi-cup for drinking water! Flatten the 200-ml Tetrapak and cut a triangle in one corner. Open it up and make a hole at the bottom to make a funnel. This flexi-funnel can be flattened and stowed away in the pocket!

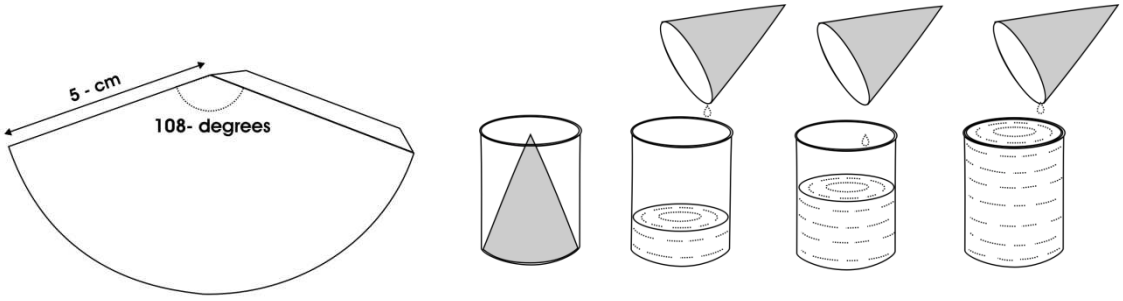
Platonic Solids

Plato talked about five solid shapes - the tetrahedron, cube, octahedron, icosahedron and the dodecahedron. Because of their innate symmetries these shapes seemed to be nature's favorite. You could make beautiful models of these solids using Tetrapaks. Cut a 1-litre used Tetrapak. Wash and dry it. Make a network of 20-equilateral triangles using a divider. Score all the lines with a needle so they fold well. Finally fold the network and glue the tabs to make a beautiful Icosahedron (*Ico* means twenty, *Hedrons* means triangles)





How many cones in a cylinder?



There is a relationship between the volume of a cylinder and a cone. Children read it but never test it. Draw a 5-cm radius circle on a Tetrapak and cut a 108-degree arc. Fold and tape it into a cone. This cone will fit perfectly in a camera film bottle. The cylindrical bottle and the cone will have the same diameter and height. Now fill the cone three times with water and pour it in the bottle to see it level full. This way you will never forget that the volume of the bottle was 3 times more than the cone. Watch this wonderful video

http://www.youtube.com/watch?v=Rd5cRzwiB1E