Hexaflexagons!

Post a picture of yourself with your Non-Newtonian Fluid on Facebook and tag Worlds UNBound to be entered into a draw for a FREE week of camp. Let us know how your experiment turned out!

Materials:

- Hexaflexagon worksheet
- Markers or pencil crayons
- Glue stick

Flexagons are flat models that are constructed by folding strips of paper and can be flexed or folded in certain ways to reveal faces besides the two that were originally on the back and front! A flexagon with three faces is the simplest of the hexaflexagons to make and to manage, and is made from a single strip of paper, divided into nine equilateral triangles! They are so fun to play with, kind of like a fidget spinner! Alright, how about we get going?!

Instructions:

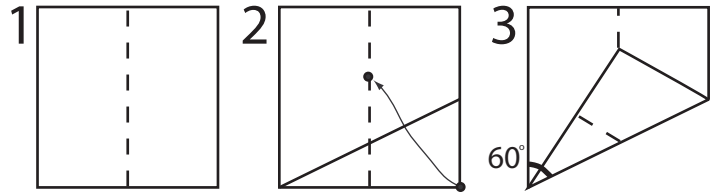
1. Print off the following worksheets (on next page).
2. Cut out the hexaflexagons (either, or both!)
3. Decorate with any colour! Make sure you can still see the numbers though.
4. Follow the instructions on the next page and you will have your own hexaflexagon!

Thank you for participating. We hope you enjoyed this activity! Check out our final activity on FRIDAY!

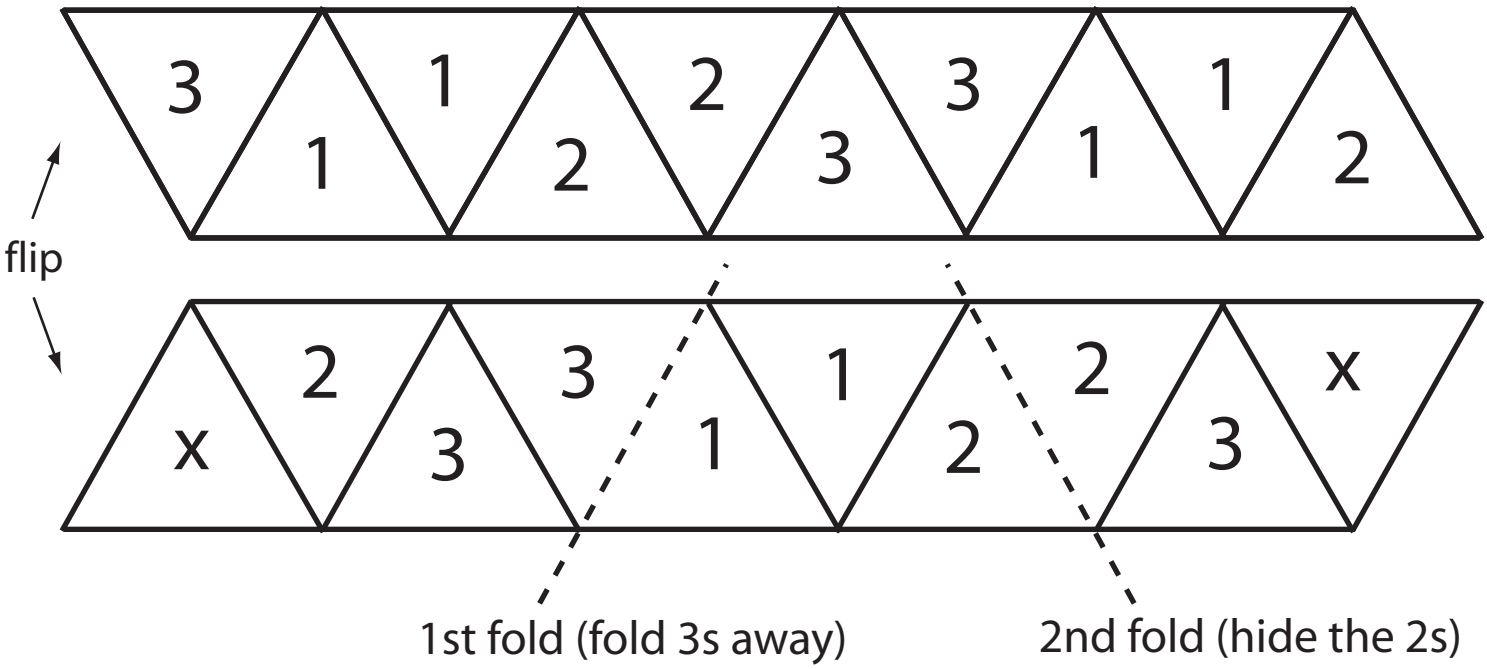
How to make a trihexaflexagon

The simplest hexaflexagon is the trihexaflexagon. It is shaped like a hexagon, and it has three faces. You need a long strip of paper, and you divide it into ten triangles. You can find an angle of 60° with which to make your triangles by following the method to the right. Before you fold it up into a flexagon, crease each line both ways, so it is easier to flex.

Folding a 60° angle

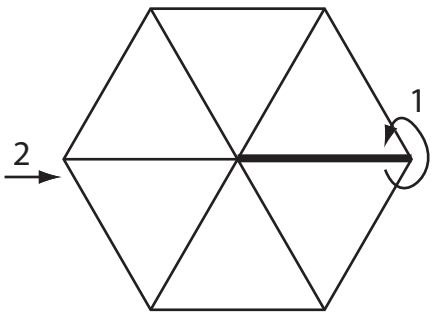


1. Fold a piece of paper in half
2. Make a fold from one corner, so that the other corner lands on the first fold
3. The resulting angle will be 60°



This diagram shows how to label the triangles on each side of the strip. Once you have made this strip and creased each line both ways, make the 1st fold then the 2nd fold as shown, **so that each face has the same number on all triangles**. Tuck the last part behind, and fold the flaps marked x together and glue the faces with x on to each other.

How to flex a hexaflexagon



1. Pinch two triangles together so the fold between them points towards you.
2. Push the other two triangles in from the other side, then open the flexagon out from the point nearest you. If it does not open, try a different pair of triangles.

Make a photo trihexaflexagon at snurl.com/fotothf

How to make a hexahexaflexagon

A hexahexaflexagon is more complicated than a trihexa-flexagon. If you haven't made a trihexaflexagon yet, turn this sheet over and make one first.

For the hexahexaflexagon, you need a longer strip of paper, divided into 19 triangles. Again, make the markings as shown and fold all the edges both ways before assembling.

First, follow the numbered folds, to wrap the strip around itself, always hiding the 4s, 5s and 6s. You will have a shorter stripwith only 1s, 2s and 3s on the outside. Now turn this sheet over, and assemble this strip as for the trihexaflexagon!

The hexahexaflexagon flexes in the same way as the trihexa, but it has six different faces. Can you find them all?

Things to think about

- Do the numbers on each face always appear the same way round? Mark them and investigate what happens.
- Which other faces can you get to from each face by flexing? Draw a map of all the routes.