



UNIVERSITY OF
KWAZULU-NATAL™
INYUVESI
YAKWAZULU-NATALI

Issue 11



STEC@UKZN

"Lock Down"

DEAR FAMILIES

Welcome to the eleventh issue of the STEC@UKZN "Lock Down". Missed the first issues? Find them at http://www.stec.ukzn.ac.za/lockdown_activities.asp

Join us this Thursday for our "live" workshop on "Going Nano - What's inside a crystal?". For more information or to register contact us via email on: stec@ukzn.ac.za



WHAT ANIMAL AM I?

I have 4 legs.
I was once found throughout Africa, Asia and Europe but now I exist only in Africa and a small area in India.
I eat an average between 5kg and 7kg of meat a day, but I can also eat up to 50kg of meat at a time.
Males and females of my kind look different.
We live in prides and are very social.
I am one of the big 5.
I am one of the most widely recognised animal symbols and even appear on flags.
I feature in a Disney movie together with Pumbaa and Timon.

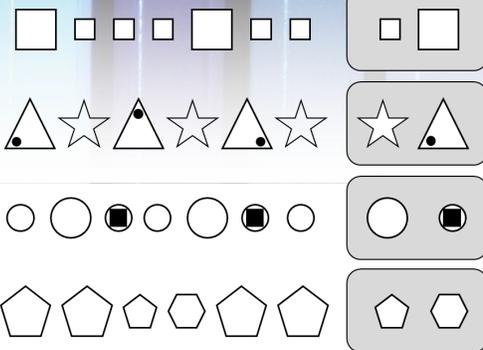


WHAT FRUIT OR VEGGIE AM I?

I grow as a small shrub.
I am indigenous to South America, but you can find me here in Northern KZN and the Eastern Cape.
Humans even use me to make beer.
I contain a chemical that you can use to tenderize meat.
I am arranged in interlocking spirals and a great example of the Fibonacci sequence in nature.
You can find the largest man made copy of me about 15 km from Port Alfred, in Bathurst.
I am a major topping on the Hawaii Pizza.



MATHEMATICS CHALLENGE



Circle the shape in the grey box that continues the pattern.

Source:

<https://www.mathinenglish.com/worksheetview.php?id=667&stid=190030>



"ESSENTIAL GOODS" EXPERIMENT

DIY Spectroscope

A spectroscope is a device that allows us find out what things are made of. It works by taking light and splitting it up into its colour components. Different elements make different colours when they glow. We can make objects and gasses glow by heating them up in a flame, or by passing electricity through them. The spectroscope spreads out the colors of the light, and we can identify the elements by the bright lines we see in the spectroscope. Most of the light that we see appears white or yellowish. Our "white" light is a small part of the electromagnetic spectrum and it actually contains several wavelengths, which the human eye sees as different colours. From the colours that we can see red has the longest wavelength and violet the shortest. At both ends of the visible spectrum, there are wavelengths that we cannot see, such as ultraviolet and infrared radiation.

Source:

<http://science.hq.nasa.gov/kids/imagers/ems/waves3.html>



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What to do

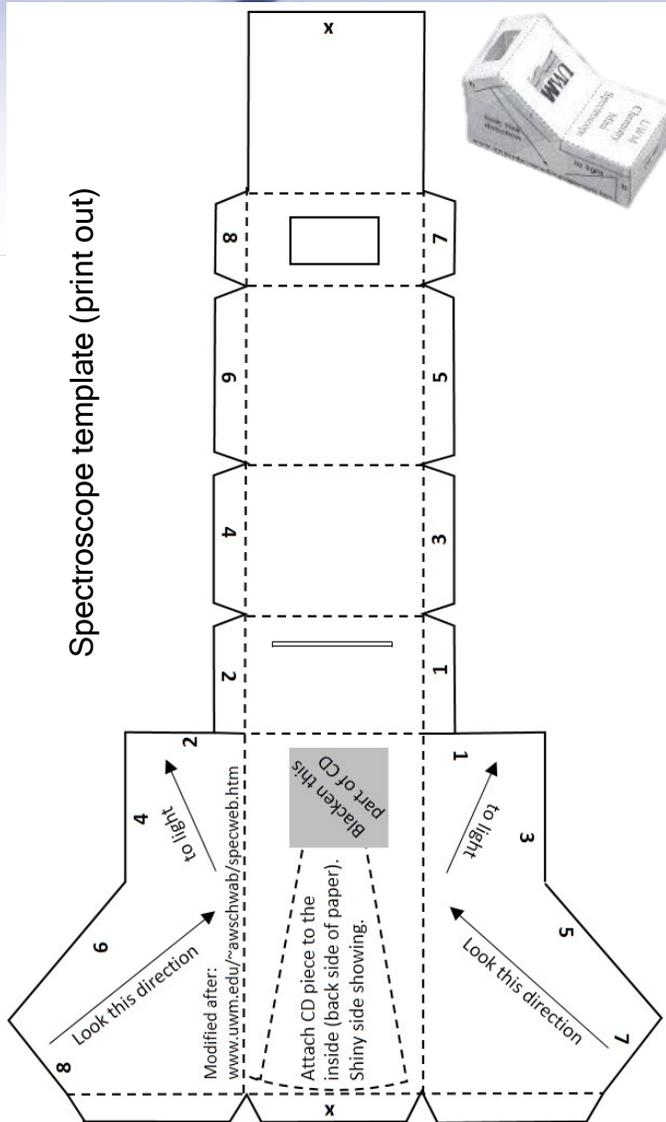
- Carefully cut out the pattern along the solid lines, but don't cut on the dashed lines. The small slit is important. Cut the slit carefully with straight smooth edges, so as to let through some light. The slit should be about 0.5 mm wide. You can use a sharp knife for cutting slits, but be careful to not cut yourself. Cut out the rectangular eyehole (between 7 and 8). This will be your viewing hole.
- Fold the paper along the dotted lines. You can use a ruler to get straight lines. The pattern folds to make a little box. Fold it so the printing is on the outside.
- Glue the CD wedge to the inside where indicated by the dashed outline, but on the other side of the paper (the unprinted side). Make sure the iridescent shiny side of the CD wedge is exposed.
- Complete the spectroscope by folding it into a little box. Glue or tape edges closed (1 to 1, 2 to 2, etc.) so that they don't leak light. Do not cover the slit!

Safety note:

Do not look directly at the sun!

A bright spectrum of sunlight is visible if you point the spectroscope toward a window

Spectroscope template (print out)



What you need

- The cut out template from above
- Some glue and/or tape
- A small piece of an old DVD or CD



Source:
http://www.amnh.org/content/download/45894/703630/file/du_u03_spectroscope.pdf
http://sci-toys.com/scitoys/scitoys/light/cd_spectroscope/spectroscope.html

How to use the spectroscope

Note the arrows at the side of the spectroscope. Point the arrow that reads “to light” to the light source that you want to investigate. Look through the little square between 7 and 8 and you should see the spectrum of colours that make up the light you are pointing at. If you don't see one, slightly move your spectroscope up and down in front of your eyes until you see it. Try looking at different light sources. Has an incandescent light the same spectrum as a fluorescent light bulb? Try your computer monitor. What about a red or blue single colour LED?

Solution:

What animal am I: Lion
What fruit or veggie am I: Pineapple
Mathematics Challenge:

