



STEC@UKZN

"Lock Down"

DEAR FAMILIES

Welcome to the fifteenth issue of the STEC@UKZN "Lock Down". Missed the first issues? Go to http://www.stec.ukzn.ac.za/lockdown_activities.aspx



Join us every Thursday at 15.30 for the "Live experiment of the week". For more information and to register contact us via email on: stec@ukzn.ac.za

WHAT ANIMAL AM I?



I have 2 wings.
I hunt mostly small mammals, insects, and other birds, but a few of us hunt for fish.
You can find me all over the world, except polar ice caps and some remote islands.
I usually hunt at night.
I have a very large head and enormous eyes.
I can rotate my head and neck as much as 270°.
In some cultures I am associated with bad luck, ill health, or death, in other cultures I represent wisdom and vigilance.
They use me as a messenger in the Harry Potter films.



WHAT FRUIT OR VEGGIE AM I?

I am a fruit.
I am part of the rose family.
I grow on medium sized trees.
Unlike other fruit, I do not ripen well on trees.
I am ancient fruit that came from Western Europe, Africa, and Asia.
I have been painted by famous artists like Paul Cezanne and Vincent van Gogh.
I can be round, or have the shape of a teardrop.
My shape is used to describe a situation that has gone awry, perhaps horribly so.



You will need:

- Some coins
- Large sized paper or plastic drinking cups

How to Play:

- Place the cup on a chair, on the floor or on the table in front of you
- Take 5 coins each (you can also use marbles, Lego blocks or small ping pong balls)
- Take a few steps away from the cup in accordance with your age.
- Toss the coins, one at a time, into the cup
- The person with the most coins in the cup wins

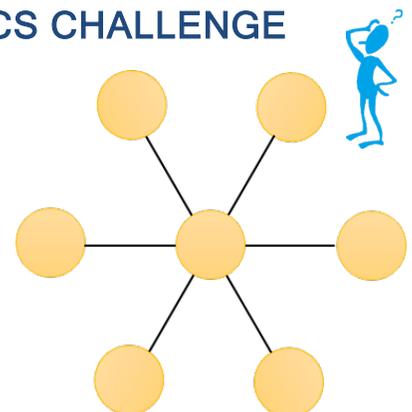
Try this:

- Take 3 cups and write the number 1 on the first cup, 3 on the second and 5 on the third cup. Those are your points.
- Place the cups in different positions. The one with the highest number should be placed in the most difficult position (e.g. the furthest away).
- Try to toss the coins into the cups. Each coin in a cup will win points. Add the points according to the value on the cup. The person with the highest score wins.

Source: <https://parenting.firstcry.com/articles/top-40-fun-indoor-games-for-kids/>

MATHEMATICS CHALLENGE

Place the numbers **1, 2, 3, 4, 5, 6** and **7** in the circles. When you add up the 3 numbers of each straight line, they should give you the same total.



Source: <http://www.mathsphere.co.uk/downloads/maths-puzzles/maths-puzzle-03-seven-up.pdf>



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“ESSENTIAL GOODS” EXPERIMENT

Extracting DNA from a banana

All living things, bananas and people included, pass on information from one generation to the next using the same basic material, DNA. Let's see if we can extract some of this magical substance.

You will need:

- ½ peeled ripe banana (you can also use strawberries and other fruit)
- ½ cup hot water
- 1 tsp salt
- ½ tsp liquid dishwashing soap
- Reseal able zip-top bag (quart size)
- Very cold rubbing alcohol (isopropyl alcohol) or methylated spirit and place in freezer ahead of time.



- Coffee filter, paper towel, or old piece of cloth
- Narrow glass
- Wooden stirrer or tea spoon

What to Do:

1. Remove the banana peel and mash half of the banana in the zip bag for 1 minute. *This helps to separate the cells, so that they can be exposed to the chemicals.*
2. Fill a cup with the hot water (1/2 cup) and salt (1 teaspoon). Stir until the salt is dissolved.
3. Add the saltwater to the bag and close it. Gently mash the water and banana for 45 seconds. *The salt will help the DNA stick together once it is out of the cells.*



4. Add ½ teaspoon dishwashing liquid into the bag and **gently** mix, trying not to make it foam up. *The soap breaks apart the cell membrane and the cell parts that hold the DNA.*
5. Place the paper towel, coffee filter or cloth in a clear glass cup, securing the top of the filter around the lip of the cup. Pour the mix into the filter a little bit at a time to avoid breaking the filter. Let it sit until all of the liquid drips down into the cup.
6. Remove and throw away the used coffee filter.
7. Tilt the glass and **slowly** add cold alcohol or methylated spirit down the side of the cup. You want the alcohol to stay on top of the banana mix in a layer that is 2.5 to 5 cm thick. Now wait for about 8 minutes. *DNA doesn't dissolve in alcohol, so this step helps DNA clumps to form.*

If you see cloudy material...
Congratulations!
You have extracted
DNA!



Source: <http://askabiologist.asu.edu/activities/banana-dna>

Solution:

What animal am I: Ow
What fruit or veggie am I: Pear
Mathematics Challenge:

