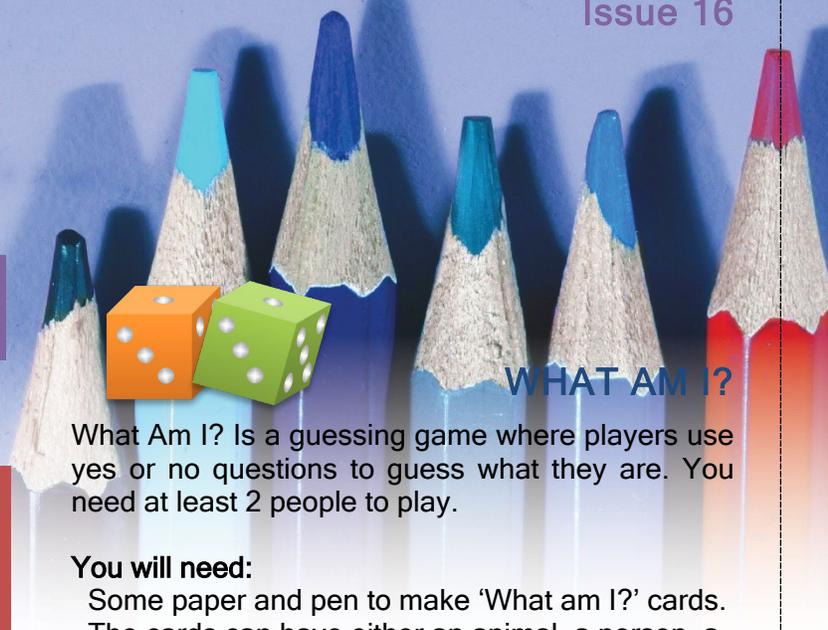




STEC@UKZN

"Lock Down"



DEAR FAMILIES

Welcome to the sixteenth issue of the STEC@UKZN "Lock Down". As we are moving on to level 2, this will be our last issue. Find all previous issues at:

http://www.stec.ukzn.ac.za/lockdown_activities.aspx



WHAT ANIMAL AM I?

I have 8 legs.

There are more than 45,000 known species of my kind, found in habitats all over the world.

I am an air-breathing arthropod.

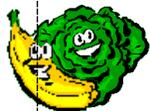
I produce a strong, flexible protein fiber for many different purposes: to climb, to create egg sacs, to wrap up prey, to make nests, and more.

I usually have eight eyes although some members of my species have no eyes and others that have up to 12 eyes.

When people are afraid of me it is called arachnophobia.

The rock band "The Who" made a song about me.

A Marvel super hero is also named after me.



WHAT FRUIT OR VEGGIE AM I?

I am a vegetable.

I usually have dark green leaves.

People have been growing me for more than 2,000 years.

I belong to the same family as cabbage and Brussels sprouts.

I am very healthy and contain fiber, antioxidants, calcium, vitamins C and K, iron, and a wide range of other nutrients.

My flavored chips are now produced as a potato chip substitute.

WHAT AM I?

What Am I? Is a guessing game where players use yes or no questions to guess what they are. You need at least 2 people to play.

You will need:

Some paper and pen to make 'What am I?' cards. The cards can have either an animal, a person, a place or a thing on them.

How to Play:

- Place the cards face down on the table.
- One person picks a card and holds it up against their forehead, or props it up in front of them, without looking at it.
- The person with the card has to ask yes or no questions and try to find out what they are. The rest answer the questions until the person with the card is able to guess who or what they are.

Source: <https://picklebums.com/what-am-i-game/>



SCIENCE QUIZ

1. Which rocket fuel produces only water when burnt in oxygen? Is it a) RP1 kerosene, b) hydrazine, c) hydrogen, or d) xenon?
2. Most televisions are made up of a tiny grid of elements that come in three colours. What colours are they? Are they a) red, green and blue, b) red, yellow and blue, or c) white, red and black?
3. Halite can be used to season your food, but what is it more commonly called? Is it a) rock salt, b) pepper, c) vinegar, or d) margarine?
4. Which of the following is not a square number? Is it a) 64, b) 125, c) 169, or d) 196?
5. What weighs more - a cup of sea water or a cup of fresh water? Is it a) sea water, b) fresh water, or c) they weigh the same?

Source: <https://blog.doublehelix.csiro.au/category/quiz/>



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MATHEMATICS CHALLENGE

The 2-9 buttons on a cell phone correspond to letters in the alphabet. Each of those numbers represent 3 or 4 letters. We can select the letters on the same number by pressing the key more than once. For example: (2) -> A, (22) -> B, (222) -> 3



Crack the phone cipher to find out what one algebra book said to the other!

(3) (666) - (66) (666) (8) - (22) (666) (8) (44) (33)
(777) - (6) (33) - (444) - (44) (2) (888) (33) - (4)
(666) (8) - (6) (999) - (666) (9) (66) - (7) (777) (666)
(22) (555) (33) (6) (7777)

Source: <https://passionatelycurioussci.weebly.com/blog/cryptography-murder-mystery>
<https://www.prodigygame.com/main-en/blog/math-jokes#counting>



"ESSENTIAL GOODS" EXPERIMENT

The Science behind baby nappies

You will need:

- A disposable nappy
- A zip lock bag
- A glass
- Some water

What to Do:

1. Place a new nappy on a sheet of paper. Use a pair of scissors and carefully cut away the thin layer of tissue on the inside of the nappy. Once you removed the thin tissue layer you will find some cotton like material (white fluffy stuff).
2. Remove the cotton material and put it into the zip lock bag. You might see some white grains on the sheet of paper. Put it into the bag together with the stuffing. Blow a little air into the bag to make it puff up like a pillow, then seal the bag.

3. Shake it for a few minutes. You should see white powder granules (this is the polymer) collecting in the bottom of the bag.
4. Now, without opening the bag, move the cotton, toward the top of the bag. Keep the material at the top of the bag as you shake the bag again. This will allow the powder to settle down to the bottom without getting picked up by the cotton again.
5. Open the bag and carefully remove the cotton from the bag. Look at the amount of polymers you just extracted from the nappy.
6. Pour the polymer into the Styrofoam cup and add some water to it. What do you observe?
7. Turn the cup upside down? What is happening?

What's Happening?

The secret behind the nappies is a water-absorbing chemical in the nappy. The chemical is a superabsorbent polymer called sodium polyacrylate. A polymer is simply a long chain of repeating molecules (connected atoms).

What happens is that when the superabsorbent polymers gets into contact with water it expands tremendously. The water is drawn into and held by the molecules of the polymer. They actually act like giant sponges. And what you will see is that the small grains increase in size. Some of these polymers can soak many 100 times their weight in water! As a result of absorbing so much water, the powder turns to a gel. That is the gooey stuff that you see once you poured the water into the cup with the polymer.

Source: <http://www.stevespanglerscience.com/experiment/diaper-secret>
<http://www.letstalkscience.ca/programs-and-services/hands-on-activities/chemistry/how-do-diapers-keep-a-baby-dry.html>

Solution:

What animal am I: Spider

What fruit or veggie am I: Kale

Science Quiz: 1c, 2a 3a, 4b, 5a

Mathematics Challenge: Do not bother me I have got my own problems

