SA NUMERACY CHAIR PROJECT

NICLE SESSION 7

NOVEMBER 2013

ACTIVITY

- Think of a learner who epitomises a positive productive mathematical learning disposition:
  - list the habits the learner displays that makes you identify the learner as having a positive learning disposition?
- Think of a learner who epitomises a poor learning disposition:
  - list the habits the learner displays that makes you identify the learner as having a poor learning disposition
- Compare aspects of dispositions noted in your group

Learning dispositions

Kilpatrick, Swafford and Findell (2001)

PRODUCTIVE DISPOSITION (maths specific):

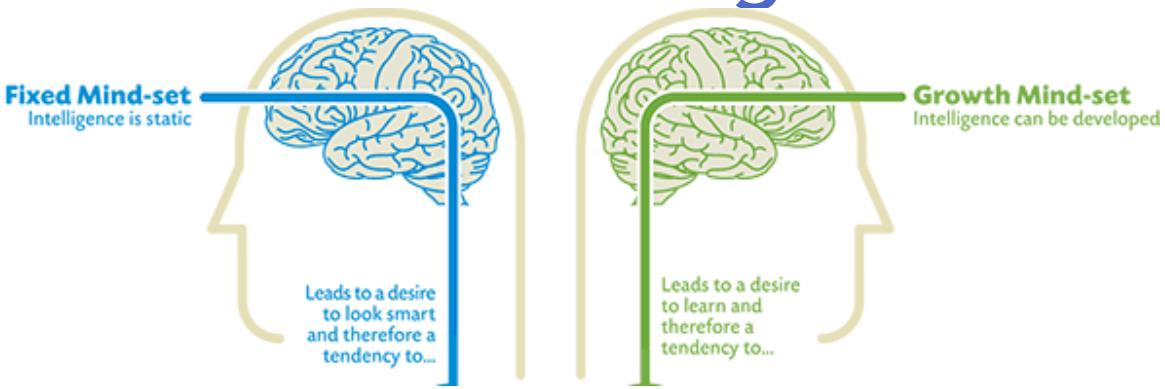
- See sense in maths
- See it useful & worthwhile
- Believe steady effort pays off
- See oneself as effective learner and doer of maths

Carr & Claxton (2002)

Key learning dispositions (early learning):

- Playfulness/ resourcefulness
- Resilience
- Reciprocity (willingness to engage with others)

A fixed versus growth mindset



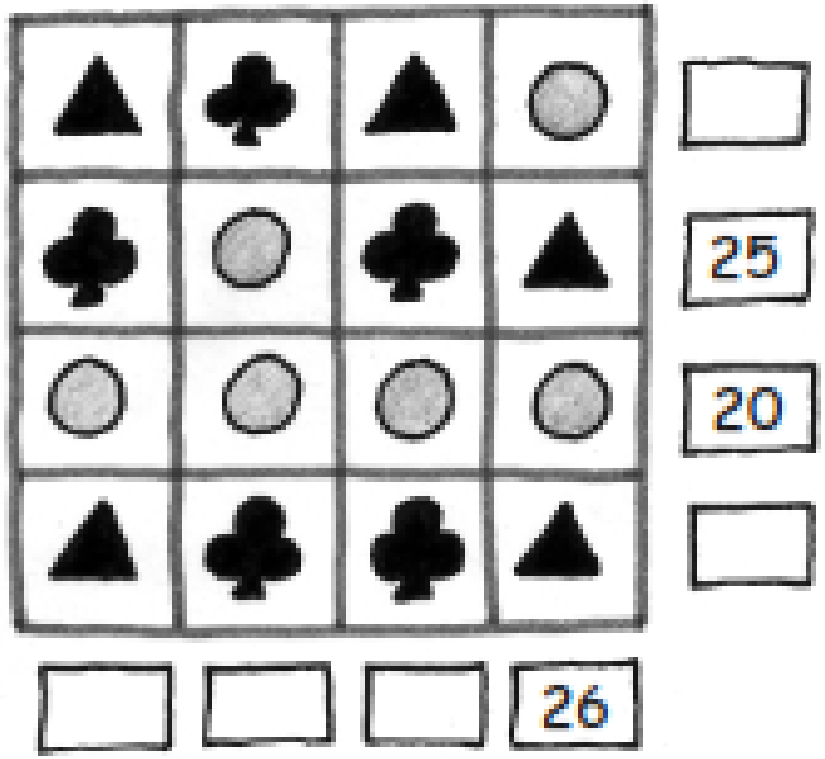
Avoid challenges	Embrace challenges
Give up easily	Persist in the face of setbacks
See effort as a waste of time	See effort as the path to mastery
Ignore useful feedback	Learn from criticism
Feel threatened by success of other	Find lessons and inspiration in the success of others
Deterministic view of the world	Sense of free will

"Every time children make a mistake in maths they grow a new synapse"

"Mistakes are our friend"

"I can grow my maths brain"

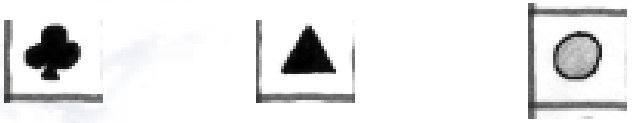
Disposition anecdote

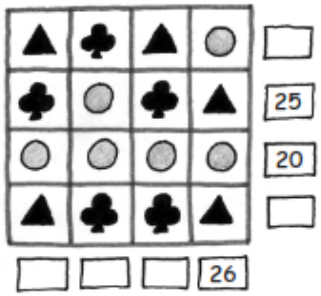


In this grid, each shape stands for a number.

The numbers shown are the totals of the line of four numbers in the row or column.

Say what number each shape stands for.



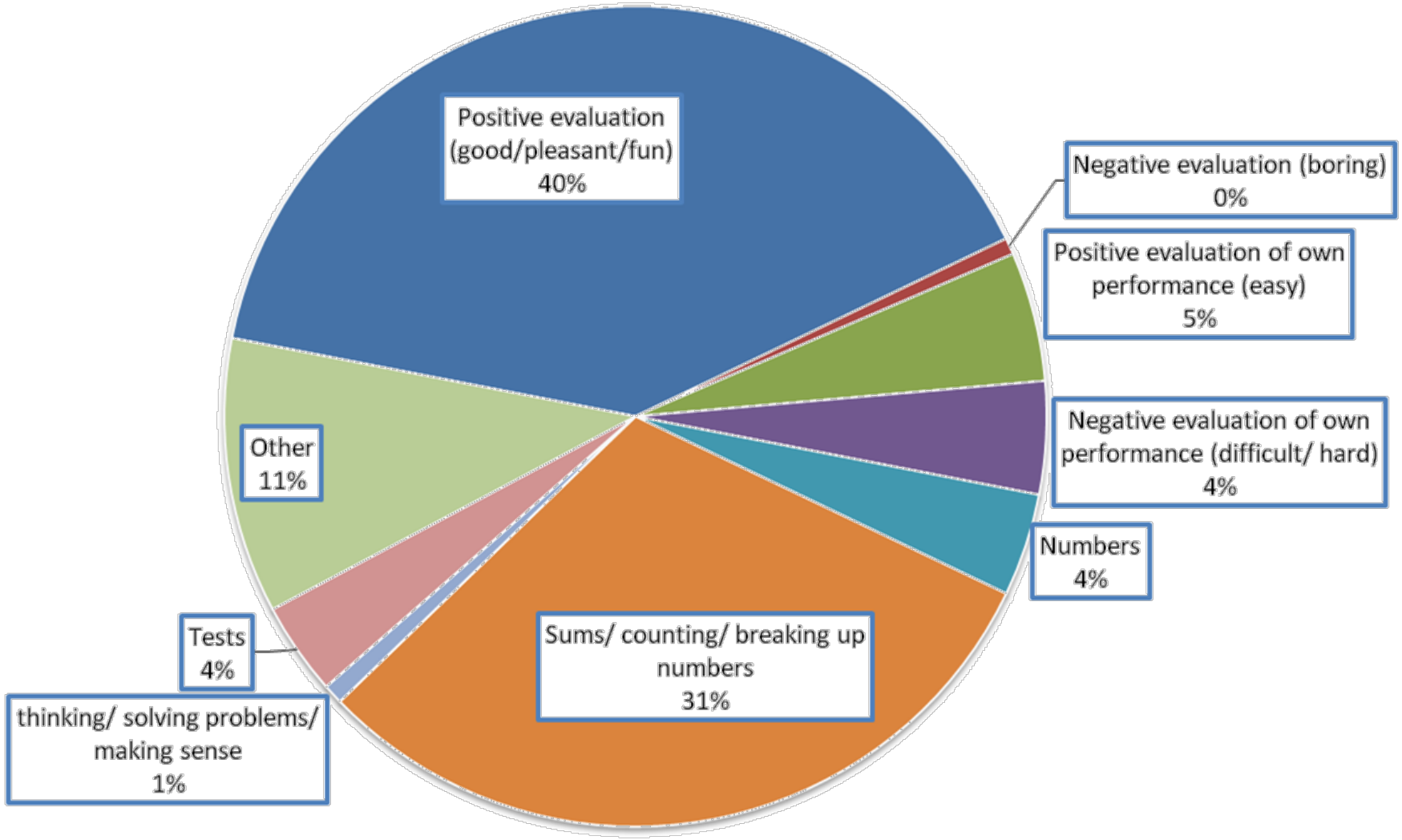


Transcript

Mellony 20:28	So how are you going to figure out the club?	Nandi walks to a desk away from the group to work on it.
Nandi and Mellony 21:16 – 21:42		Nandi shows Mellony her answer of 3 for the triangle and Mellony engages her in why it doesn't work because the column will then give a total of 16 not 26.
Nandi 21:42	I don't understand.	Nandi mumbles this as she walks away from Mellony.
Mellony 21:44	It isn't that you don't understand you need to keep trying. …	A lot of children are wanting Mellony's attention.
Nandi 22:18	Teacher teacher - I don't understand! 34 secs later	Complaining in an emphatic tone that she doesn't understand. Nandi stands and looks confused.
Mellony 22:20	No, it is not that you don't understand it is that you have to think. You do understand, because you found the circle. But, it's not so easy to find the club, and the triangle, you have to think. You have to problem solve. So stop thinking you don't understand and think.	
Nandi 22:32	Shoo	She turns her head away seemingly unimpressed by the instruction
Mellony 22:33	You have to problem solve. So stop thinking you don't understand and think.	
22:33 – 23:35	63 secs later	Mellony works with other learners individually. Nandi sitting looking at her problem solving sheet and doing some counting with her fingers against her cheek
Nandi 23:36	Teacher, teacher, teacher, teacher.	Nandi comes running from her side of the table to show Mellony what she has got. She is so excited.
Nandi 23:38	I found it. It is	Nandi gives her card to Mellony and points to her answer
Mellony 23:50	Shh. Ahhhh! Very good!!! Now who told me they didn't understand? And all she had to do was think.	Nandi goes out of the cameras site but you can hear her excitement.

Dispositional Data: Gr3 & 4s 2012

MATHS IS …

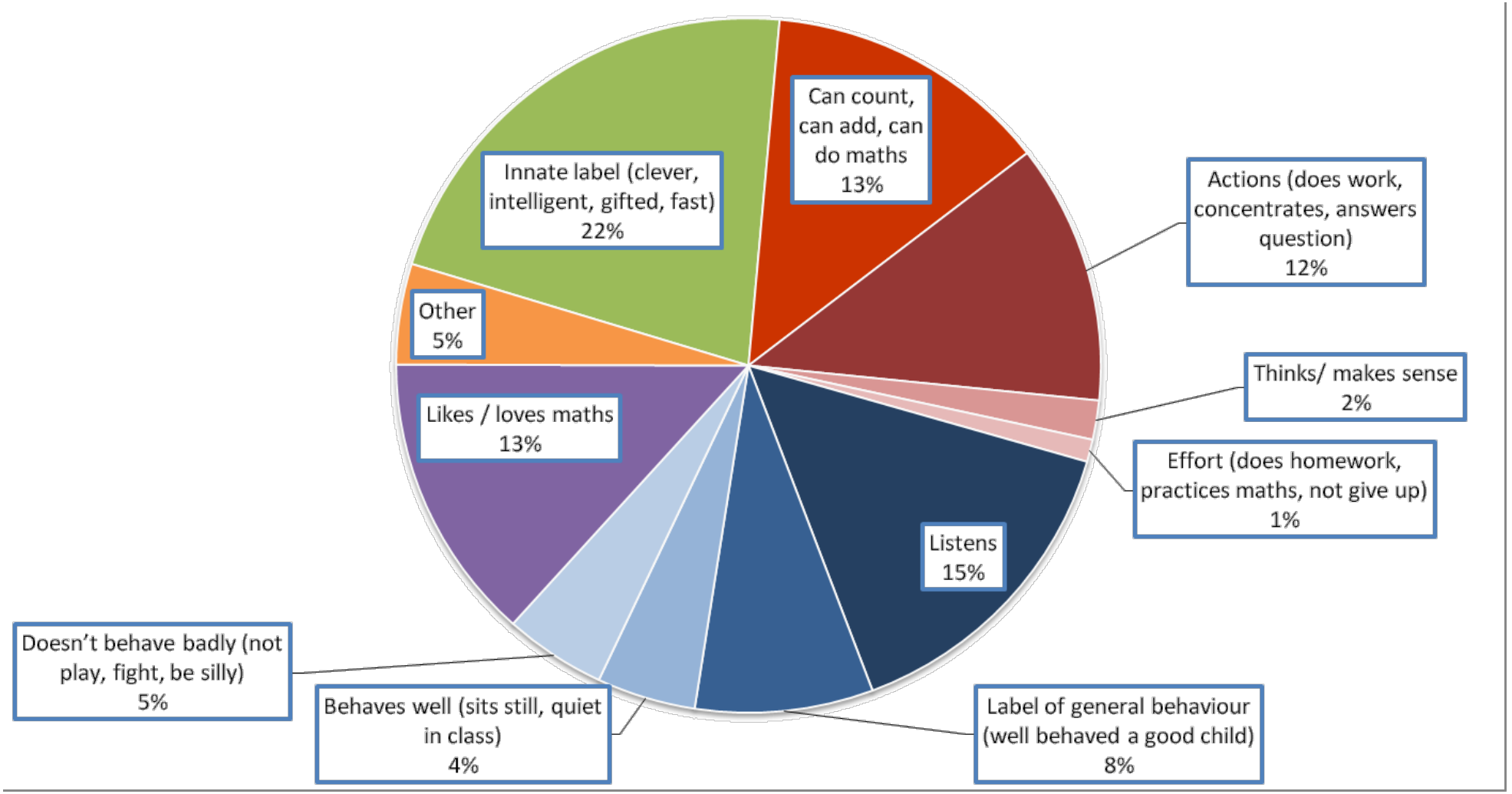


Dispositional Data: Gr3 & 4s 2012

SAM IS …

A PRODUCTIVE DISPOSITION is:

- See sense in maths
- See it useful & worthwhile
- Believe steady effort pays off
- See oneself as effective learner and doer of maths



"I expect you all to be independent, innovative, critical thinkers who will do exactly as I say!"

Long summer holidays are coming up…

Holiday learning loss

- In general
  - low-income students lose around **3 months** of grade-level equivalency during the summer months
  - middle income students lose about **1 month** of grade-level equivalency over the summer
- Therefore, the achievement gap widens
- **RESEARCH SHOWS THE SUMMER PROGRAMS AND FAMILY PROGRAMS WHICH INCREASE READING AND NUMERACY IN A RECREATIONAL WAY HELP TO OVERCOME THIS**

Some inspiration from people who have fun with maths …

Dr Sizwe Mabizela, Deputy Vice Chancellor, Rhodes University on having fun with maths

- "Doodling with mathematics is one of those things that I do all the time. It's something that just comes naturally to me and which I really enjoy doing."

- "Mathematics is something that's truly amazing because sometimes you try to solve a problem and you don't really make any headway on it so you just put it aside. And then there's a period of incubation when nothing seems to be happening at all, but then you are astounded when you return to the problem and suddenly realise that the solution is so simple and straightforward. And when you look at it afterwards you say 'of course it had to be!'"

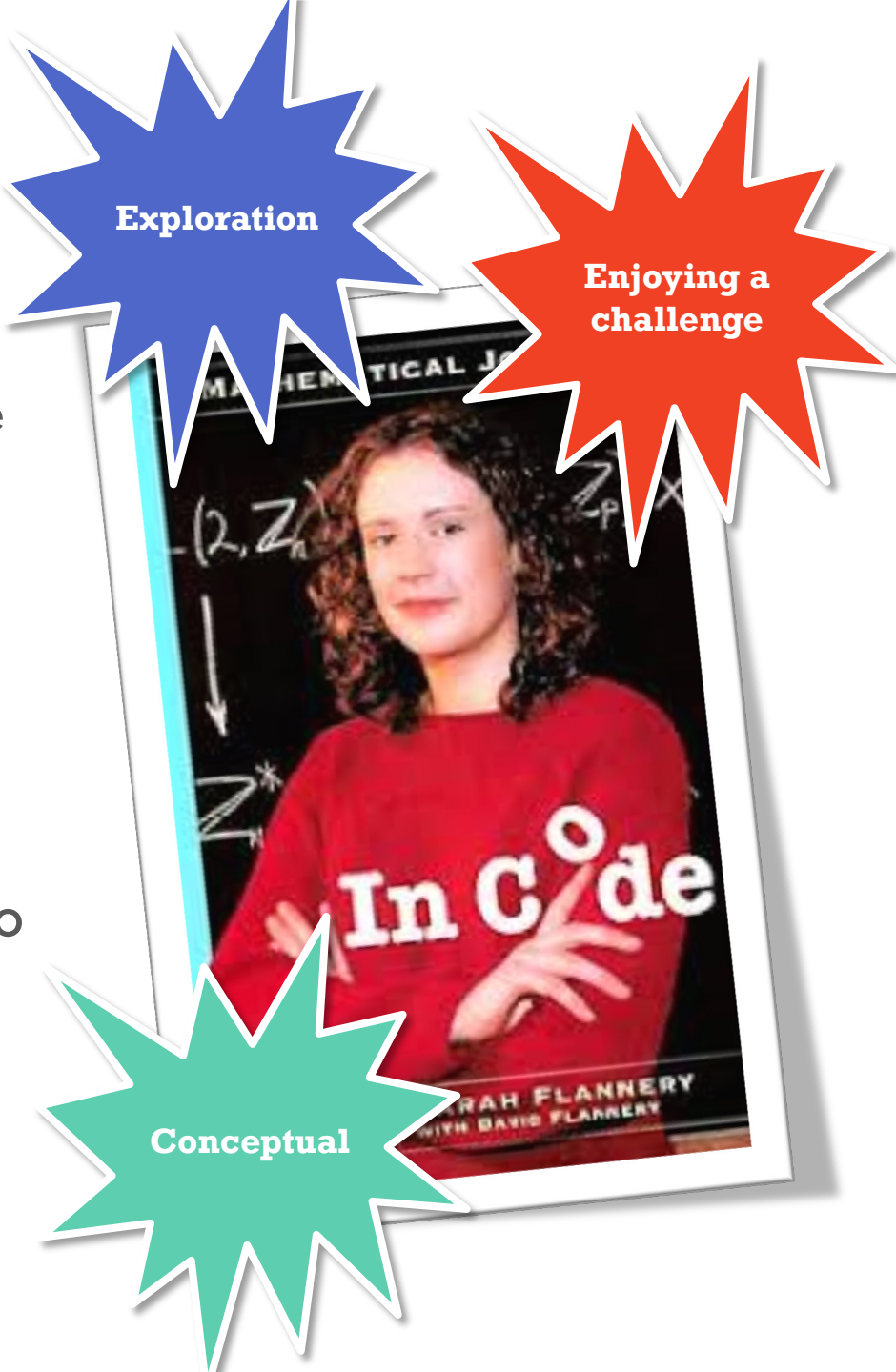
Doodling with maths

Sarah Flannery

- In 1999, at the age of 16, she won the Irish Young Scientist of the Year award with a highly innovative, speedy and secure system of encoding data on the Internet.

- She attributes her success to the enjoyment that she got, as a child and throughout her life, from **solving mathematical puzzles**.

- Her father's puzzle-solving approach to math cultivated encouraged **exploration**, an adventurous attitude, attention to **concepts** more than calculations and **sheer enjoyment of taking on a challenge**.



+ HOLIDAY ACTIVITIES FOR YOUR LEARNERS...

HOLIDAY FUN BOOKLET

PUZZLES, PUZZLES and MORE PUZZLES

GROW YOUR MATHS BRAIN DURING THE HOLIDAYS!

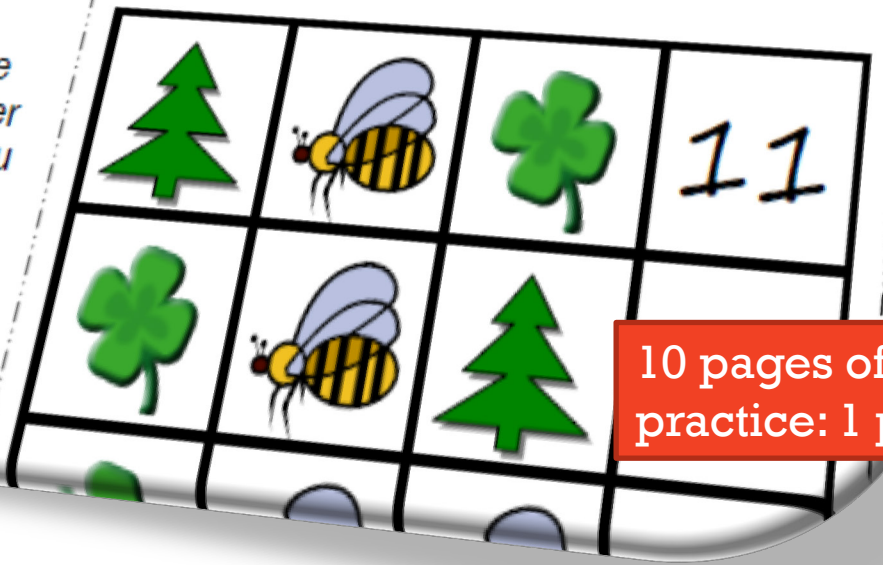
Welcome to your very own Holiday Fun Booklet. There are 12 pages of fun puzzles and activities to do with maths to keep your maths brain growing during the summer holidays.

Do a little every day and you will be ready to go back to school in 2014.

Take your book back to school at the beginning of the term and your teacher will give you solutions for the things you were unsure of.

WHAT DOES THE SHAPE STAND FOR?

In this grid each shape stands for a number. The numbers shown are the totals of a row or column. Work out what each shape stands for and find the other totals.

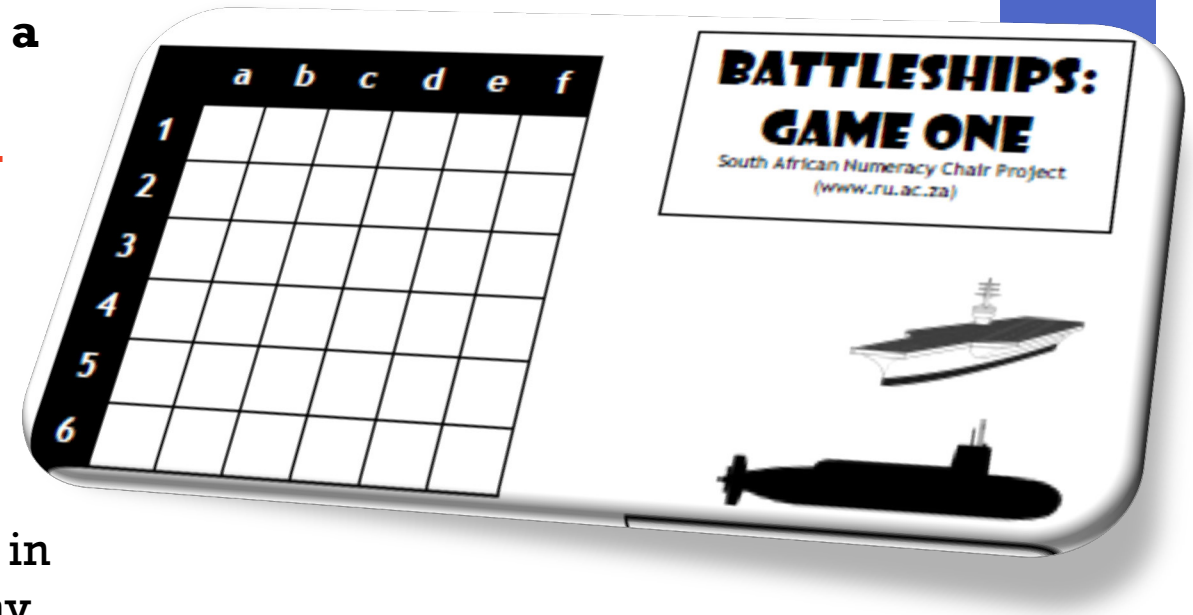


10 pages of puzzles and practice: 1 per learner

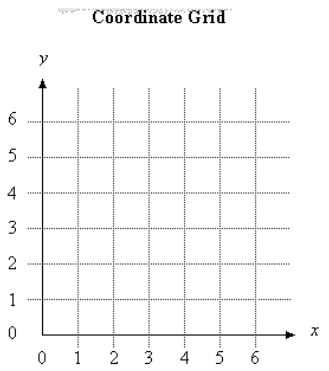
+ HOLIDAY ACTIVITIES FOR YOUR LEARNERS...

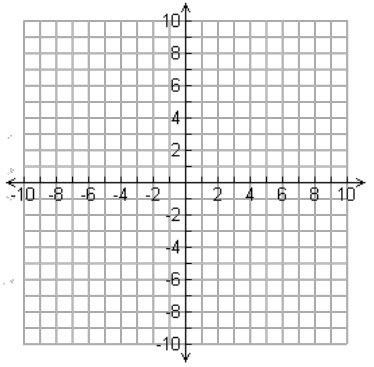
2 games and instructions: 1 per learner

Battleship is a fun game but **it is also a great learning tool**. It's a fun way to improve learners' **graphing**, **critical thinking** and spatial literacy skills. Battleships is a game of **strategy, memory and logic.**



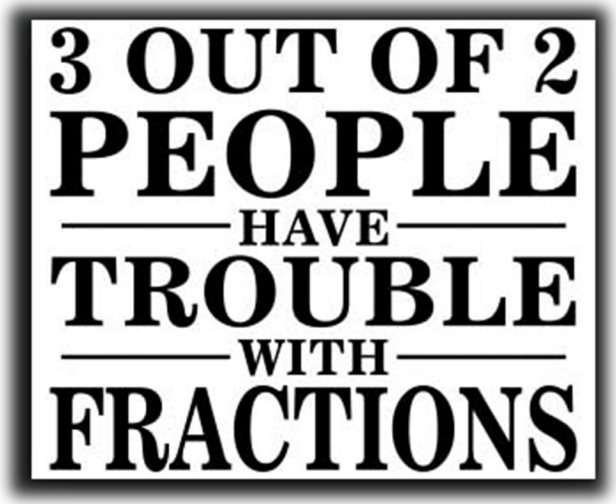
Grids and coordinates can be intimidating when they are first introduced but are key for later work in algebra and graphs and in Geography on Latitude and Longitude, map work in general and for using spreadsheet software.



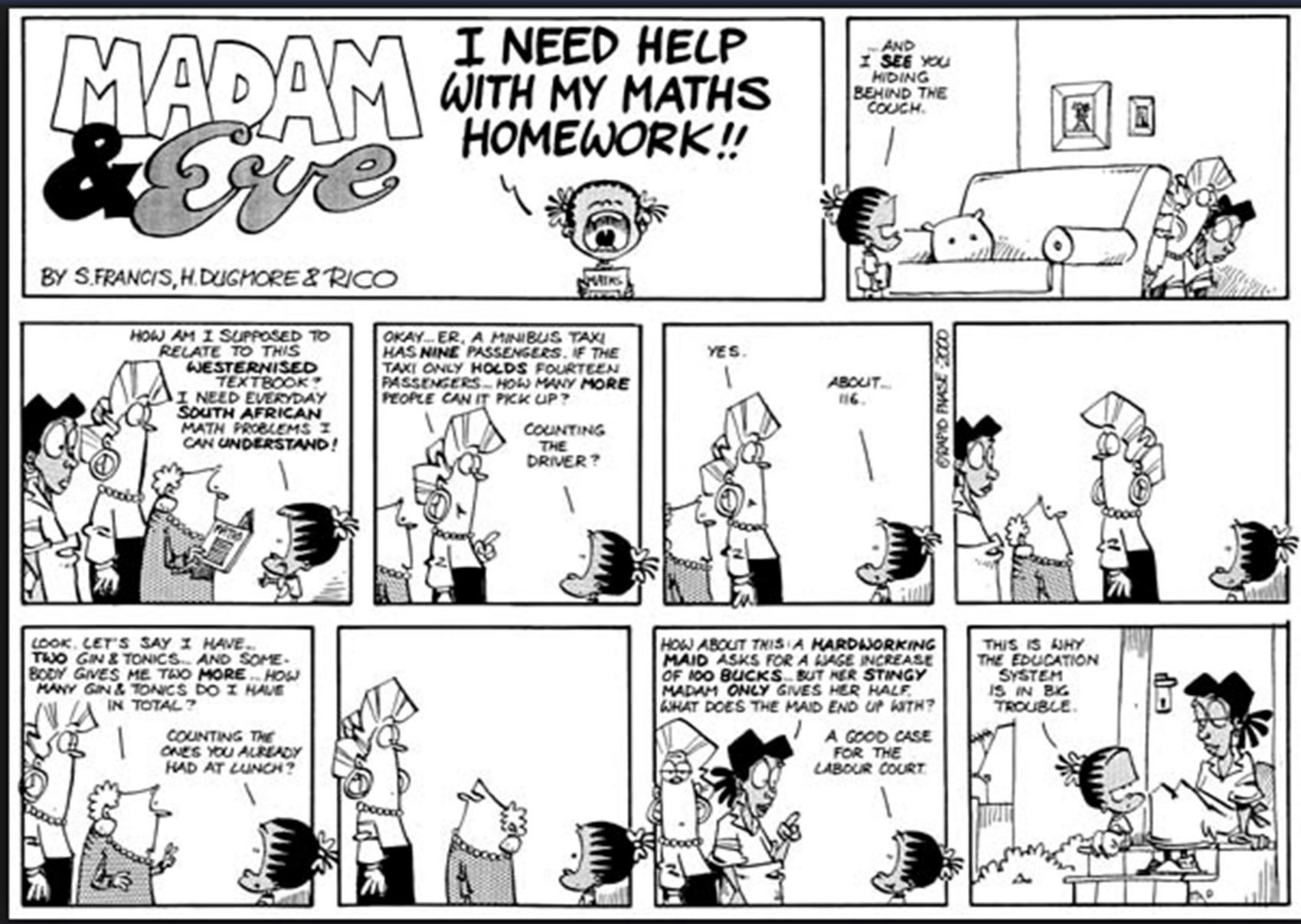


Afternoon session

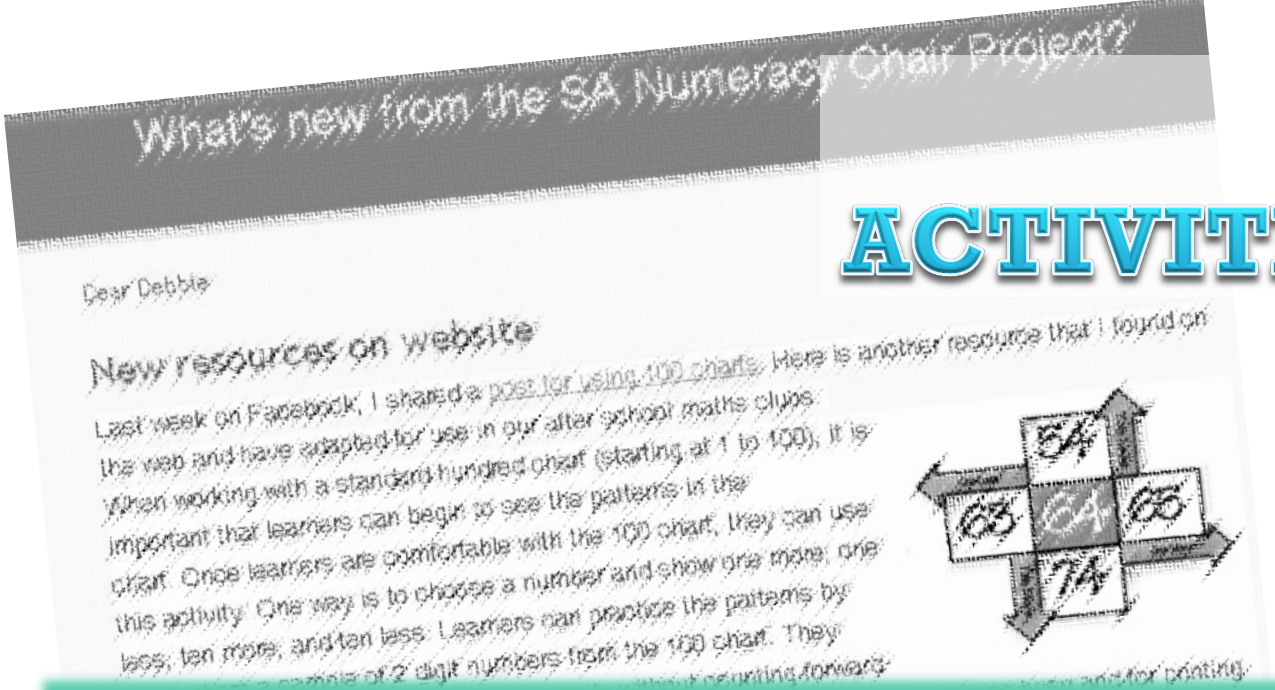
HOLIDAY ACTIVITIES FOR YOU…



Fun challenge in your bags


MADAM & Eve
BY S.FRANCIS, H.DUGMORE & RICO
I NEED HELP WITH MY MATHS HOMEWORK!!
MATHS
...AND I SEE YOU HIDING BEHIND THE COUCH.
HOW AM I SUPPOSED TO RELATE TO THIS WESTERNISED TEXTBOOK? I NEED EVERYDAY SOUTH AFRICAN MATH PROBLEMS I CAN UNDERSTAND!
OKAY... ER, A MINIBUS TAXI HAS NINE PASSENGERS. IF THE TAXI ONLY HOLDS FOURTEEN PASSENGERS... HOW MANY MORE PEOPLE CAN IT PICK UP?
COUNTING THE DRIVER?
YES.
ABOUT... 116.
©ANTO FAASE 2000
LOOK. LET'S SAY I HAVE.. TWO GIN & TONICS... AND SOMEBODY GIVES ME TWO MORE.. HOW MANY GIN & TONICS DO I HAVE IN TOTAL?
COUNTING THE ONES YOU ALREADY HAD AT LUNCH?
HOW ABOUT THIS: A HARDWORKING MAID ASKS FOR A WAGE INCREASE OF 100 BUCKS.. BUT HER STINGY MADAM ONLY GIVES HER HALF. WHAT DOES THE MAID END UP WITH?
A GOOD CASE FOR THE LABOUR COURT.
THIS IS WHY THE EDUCATION SYSTEM IS IN BIG TROUBLE.

HOLIDAY ACTIVITIES FOR YOU…



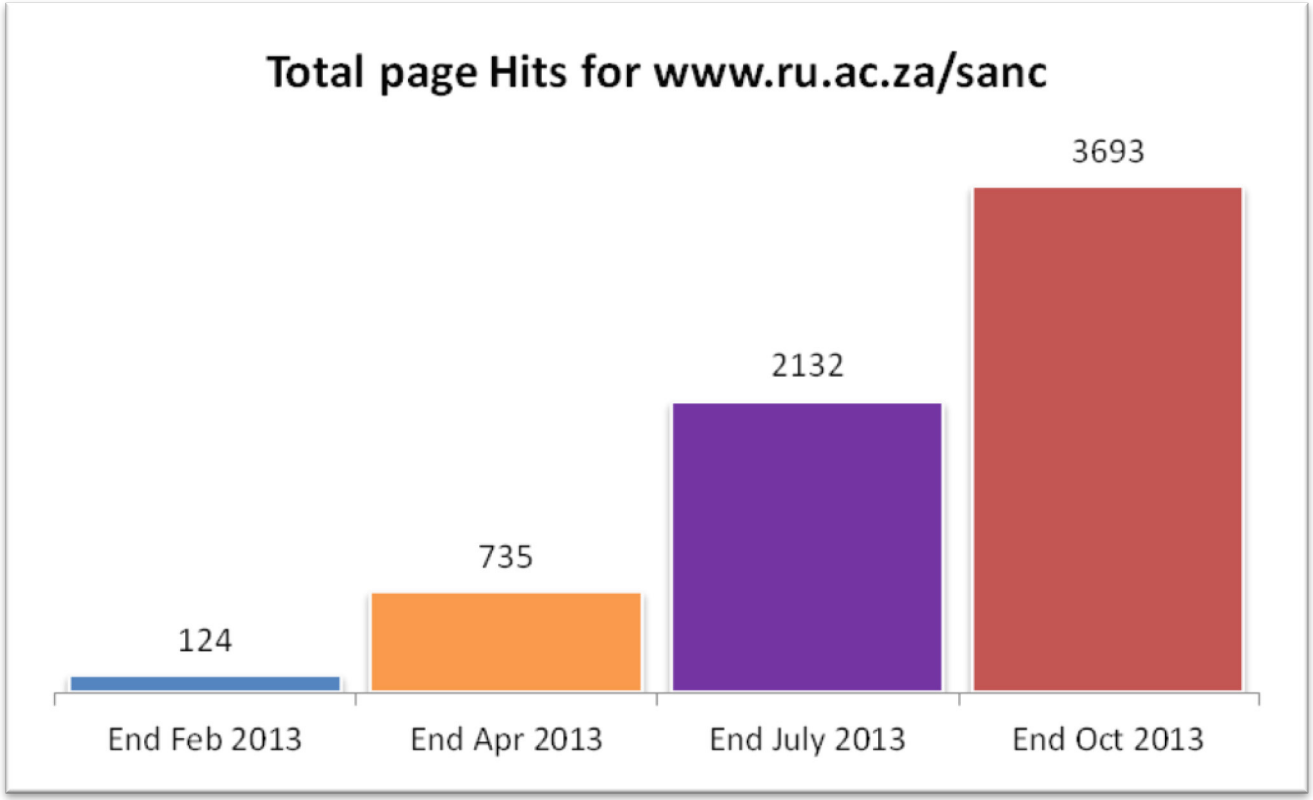
Signup for a weekly update via email

If you are **NOT** on Facebook but would like to receive updates from us, you can signup here: http://eepurl.com/G9X7T

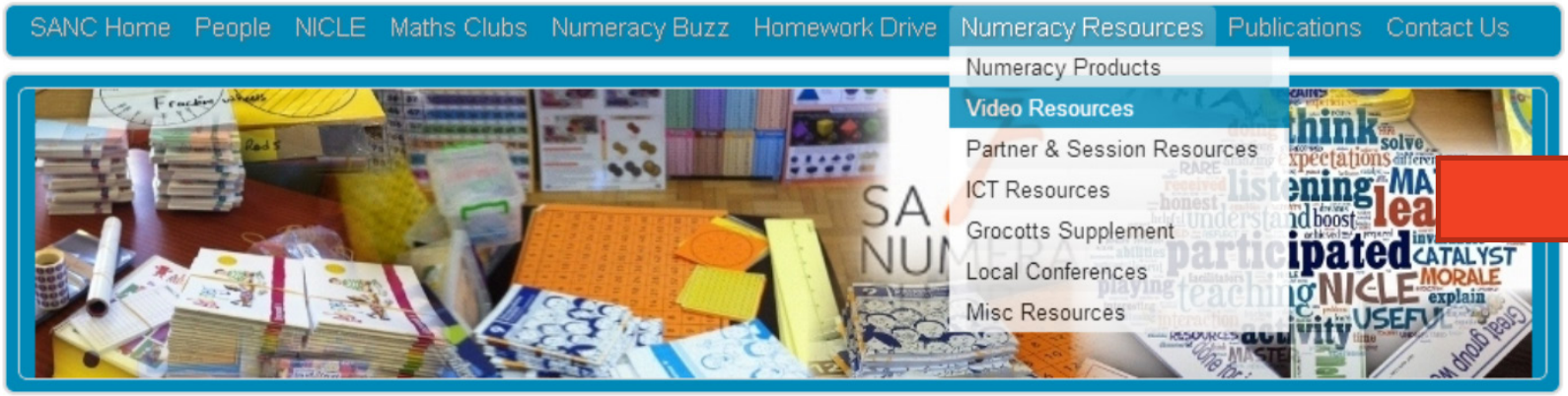
Or access from our website

HOLIDAY ACTIVITIES FOR YOU…

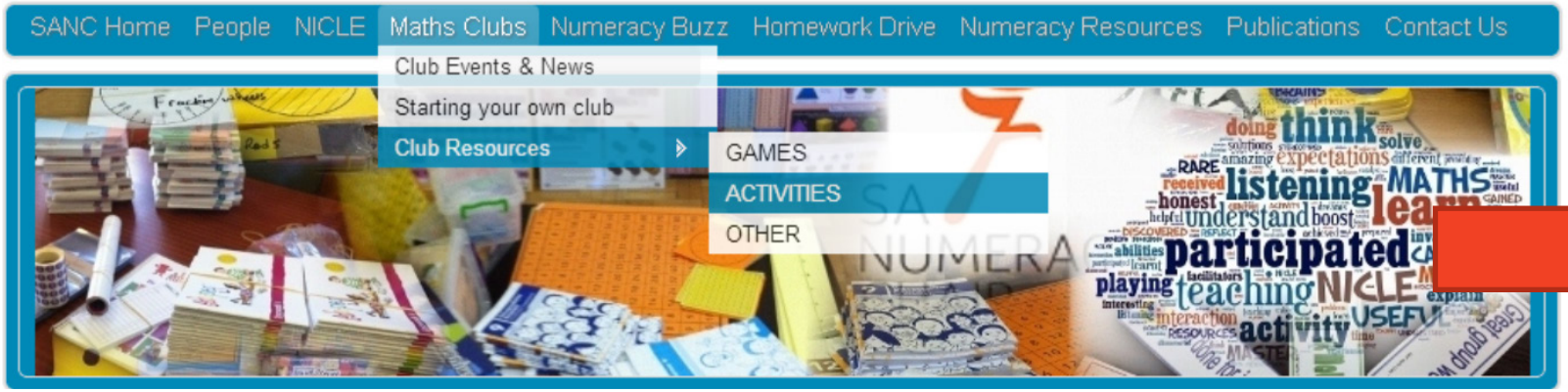
Visit the SANC project website …



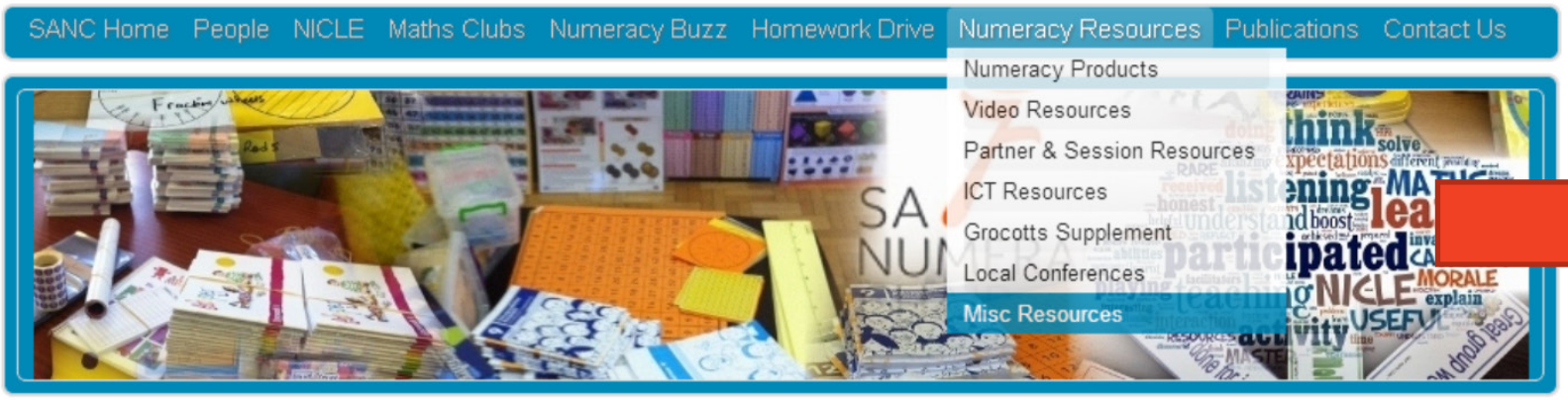
Places to explore



- Teacher Development
- Classroom use



- Games
- Activities
- Other



- Maths articles
- Maths website