

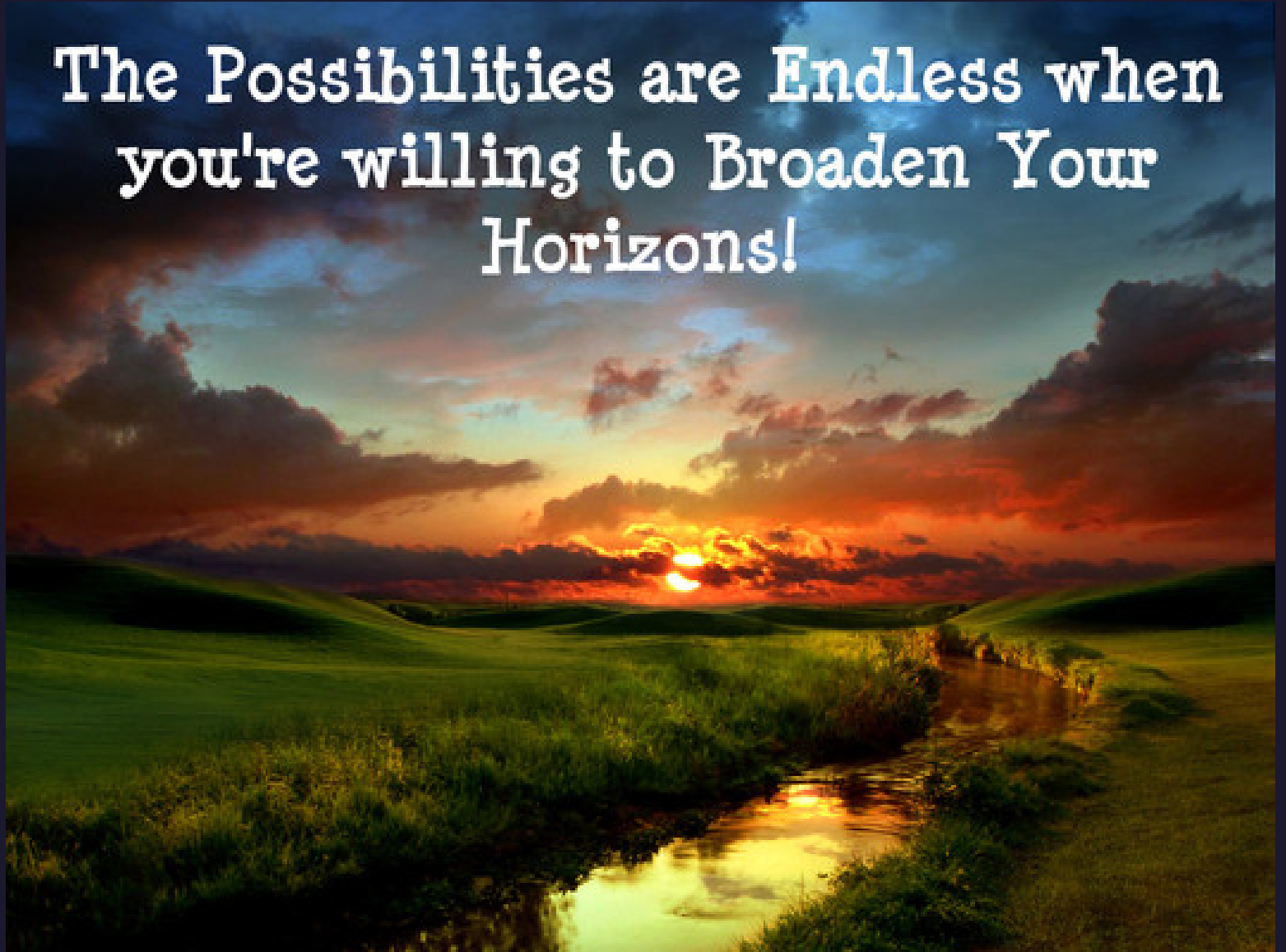
Broadening Horizons:
How my experience
with Classroom
Based Assessment
has influenced my
design of
investigative tasks in
first year.



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**The Possibilities are Endless when
you're willing to Broaden Your
Horizons!**



Introduction

- Outline of what CBA involves
- Reflection on experiences with last year's 2nd years and the CBA
- Introducing investigations with this year's 1st years

What is Classroom Based Assessment?

- Two types CBA1: Mathematical Investigation and CBA2: Statistical Investigation.
- A moment of summative assessment supported by formative feedback.
- Viewed as part of Teaching and Learning and not just assessment.
- Students take part in practical and authentic learning experiences.
- Intended to take place during a three week period.
- Graded by the teacher and becomes part of the Junior Cycle Profile of Achievement (JCPA).

Example of CBA1 investigations that were completed

- Costs of a bedroom makeover.
- Cheaper to make or buy a cake?
- Costs of a family dream holiday to Orlando, Florida.
- Is it cheaper to build a home gym or purchase gym membership?
- The costs and distances involved in travelling to Paris, France.
- The costs of running a Friday night underage disco in Mallow.
- Which is cheaper - flying or driving to Moscow?
- Can I afford to get a pet? (Fish<Dog<Horse)
- Costs of going to 3rd level in the UK compared to Ireland.

Reflection on my experience with CBA1

Strengths:

- Students' experience
- Online
- Brings maths to their interests

Challenges:

- Fixed view of subject
- Finding an idea
- Reluctance to edit
- Need to generalise

My Mathematical Investigations with 1st Years

- Work given on Google Classroom, flexible format for response.
- Adapted from assignments at the end of textbook chapters.
- Offered to all 1st year maths teachers, three have bought in and offering insights from their classes.
- Scaffolding: Mixture of open and closed tasks
- History-Culture dimension (Usiskin, 2012; O'Sullivan 2017, 2019)
- Methodology: Two things that were interesting, one thing that could be improved.
- Promotes mathematical discussion. They learn from each other.
- Students provide material that can be explored further and often find things that you wouldn't expect.

Maths Investigation

We have now finished our first section looking at number systems. Below you are given a table that shows the numbers from 1 to 10 in Arabic, Roman and Mayan number systems. The first question is to see if you can write the numbers 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 in Roman and Mayan number systems. You might have to google the answers.

Can you find another number system that was used in the past or is used in another part of the world? You will have to use Google to help you find this information. I want the name and at least four sentences on what you found out about this number system.

Find out why we use the Arabic system today using Google. Give as many reasons as you can find.

Assignment 1

Looking back through history, many different number systems were used in different cultures. Our present-day system has its origin in Arabia. The chart below compares our system with the Roman and Mayan (from Central America) cultures.







































1	2	3	4	5	6	7	8	9	10	<i>Arabic</i>
I	II	III	IV	V	VI	VII	VIII	IX	X	<i>Roman</i>
.	—	—.	—..	—...	—....	=====	<i>Mayan</i>

- › Investigate this chart and extend it to count up to 20
- › Research one other number system
- › Write 36 in Roman and Mayan number systems
- › State some reasons why the *Arabic* system is used today.

The unexpected! Number of angles = value



Egyptian hieratic numerals (mathematical papyrus, c. 1600 BC)

	1	2	3	4	5	6	7	8	9
units									
tens									
hundreds									
thousands									
tens of thousands									
hundreds of thousands									

Investigation 2

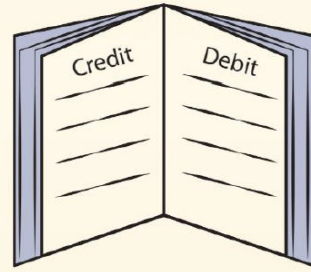
Assignment 1

In banking, the terms “in the black” and “in the red” are often used.

Investigate the historical significance of these terms and explain how they are connected to integer numbers.

In bank accounts today find out what the term “overdrawn” refers to?

How is a negative number recorded in a bank statement?



Investigating the properties of zero

It is important to know how zero acts in general. Look at the following and see what you conclude.

$$0 + \text{any integer} = ??$$

$$\text{Any integer} + 0 = ??$$

$$0 - \text{any integer} = ??$$

$$\text{Any integer} - 0 = ??$$

$$0 \times \text{any integer} = ??$$

$$\text{Any integer} \times 0 = ??$$

$$0 \div \text{any integer} = ??$$

$$\text{Any integer} \div 0 = ??$$