NELSON MANDELA UNIVERSITY

STEAM *and the MathArt project*

GMMDC
Govan Mbeki Mathematics Development Centre
empowering young minds

STEAM?

S SCIENCE

T TECHNOLOGY

E ENGINEERING

M MATHEMATICS

\+ A ART = STEAM

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What is STEAM?

STEAM is an educational approach to learning that uses Science, Technology, Engineering, Art and Mathematics as access points for guiding student inquiry, *dialogue and critical thinking*

Susan Riley

Art brings in more the Human element into STEM

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I hear and I forget
I see and I remember
I do and I understand
I experience and I know

- **Connections with the “Real World”**
- **Problem Solving in Real Life**
- **Design and Problem-Solving Processes**
- **Opportunities for Expression of Creativity**
- **Learn value of Making Mistakes**
- **Improved Attitudes toward Mathematics**
- **Guides toward Further Studies and STEM Careers**

https://www.envisionexperience.com/blog/the-benefits-of-experiential-learning

Learners develop knowledge, skills, and values from experiences outside of traditional classroom.

Learner is active

What problem are we dealing with in our school community?

What possible solutions can we find?

Which solution seems the best? Let’s try it

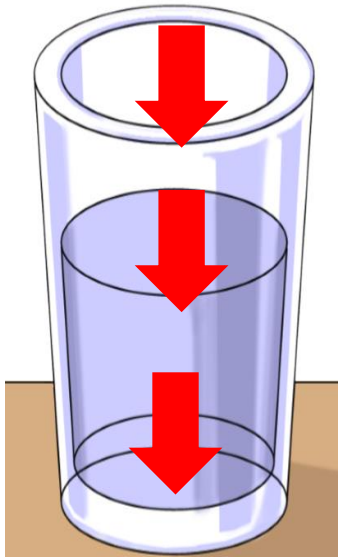
Did the solution solve our problem?

Learners develop knowledge, skills, and values from experiences outside of traditional classroom.

Learner is active

Integrated in the classroom environment

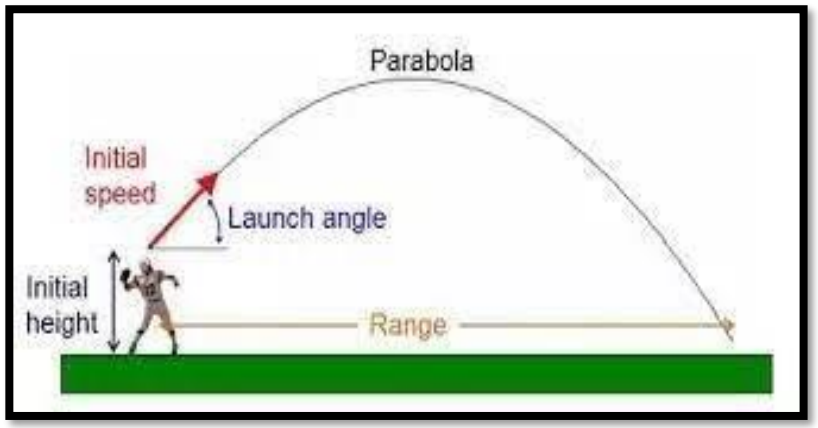
Different models of integration:



- In a classroom
- In a grade
- Whole school

Quadratic functions

Real life examples as gateway to teaching a lesson

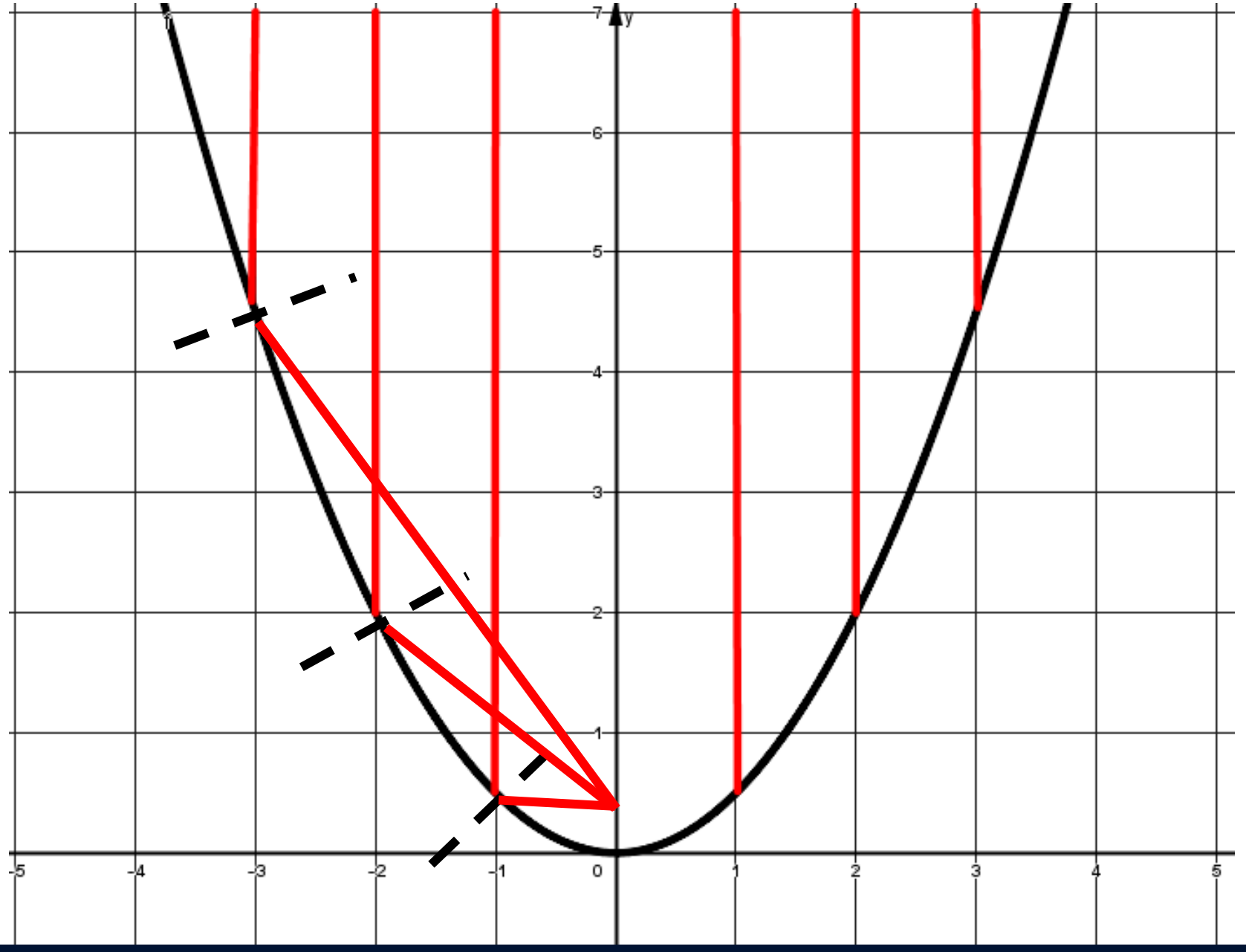


What does the path look like when you throw an object or jump with a bike?

Quadratic functions
Real life examples

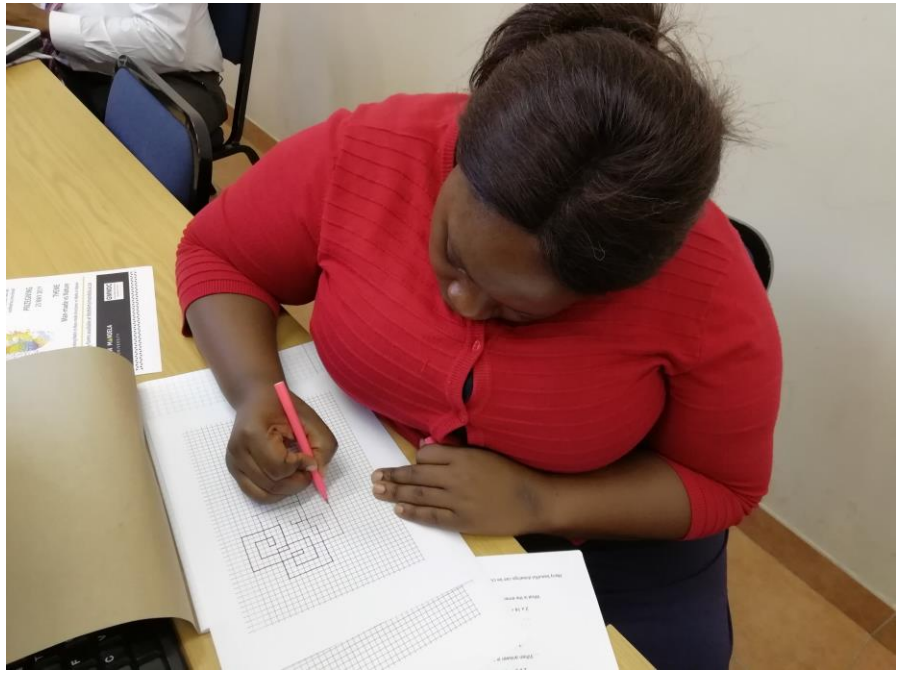
Parabolic reflectors

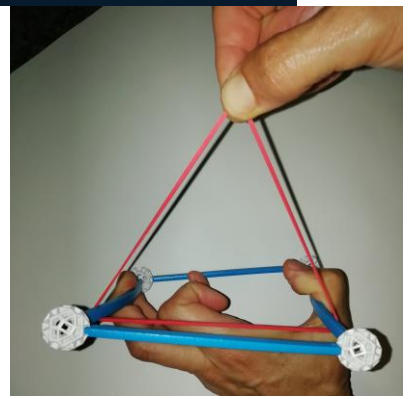
Mirrors

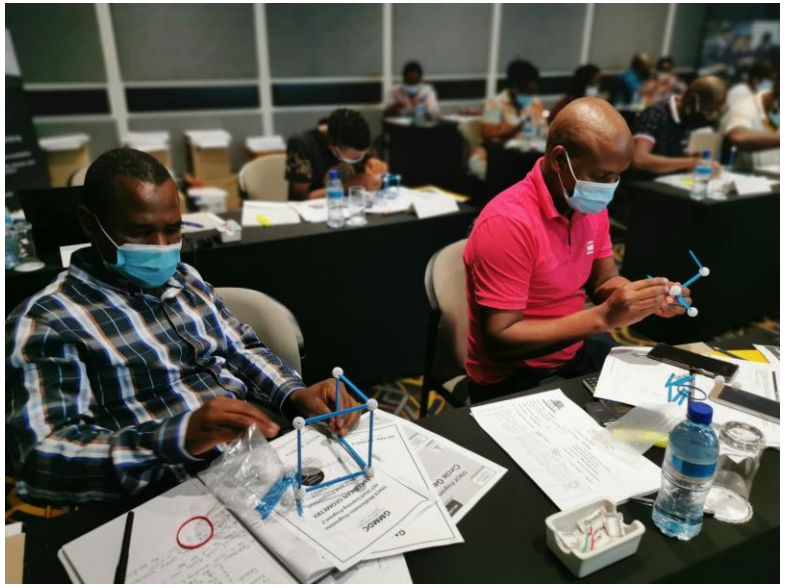


$$y = \frac{1}{2}x^2$$

STEAM @ Teachers PLN







Activities that can be used in classrooms

GeoGebra Applets for Mobile Phones

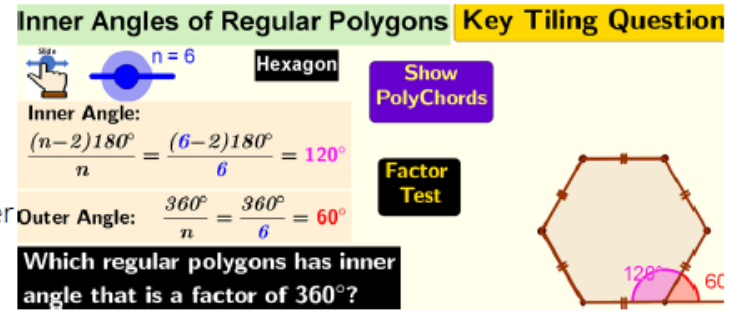
The applets that form part of this hand-out were specially designed for interactive use by teachers and learners during classroom lessons or over distance after school for self-directed learning. These applets are accessible via the QR codes or URL links that are provided and can be shared freely via social media or any other educational platforms to support the teaching and learning of mathematics.

Exploring Inner Angles of Regular Polygons

01.

Keywords:

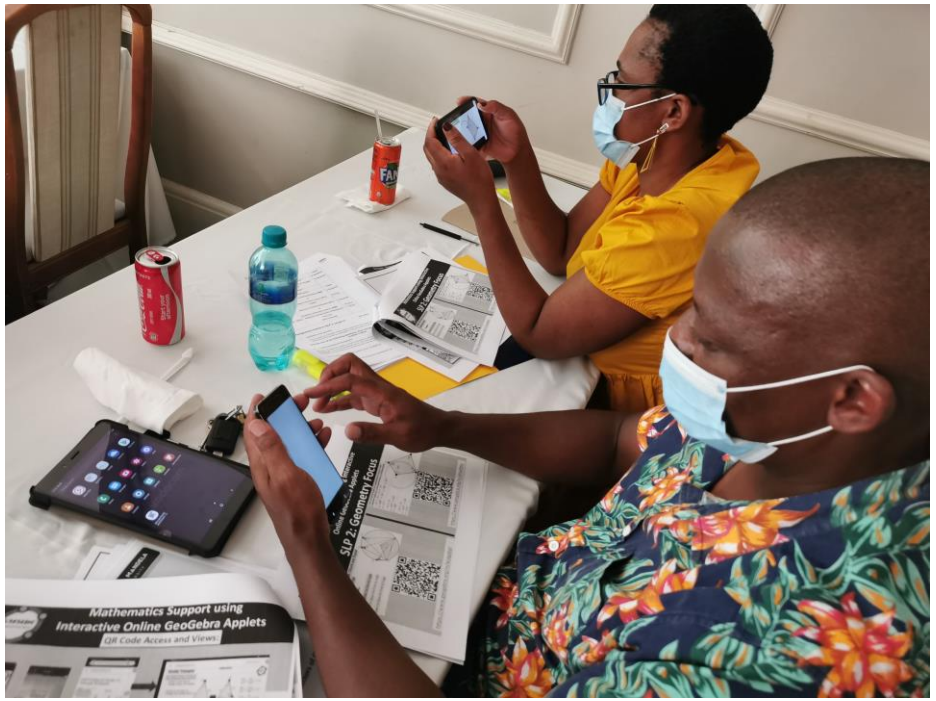
Regular Polygon, Inner Angle, Outer angle, Polylines , Triangles



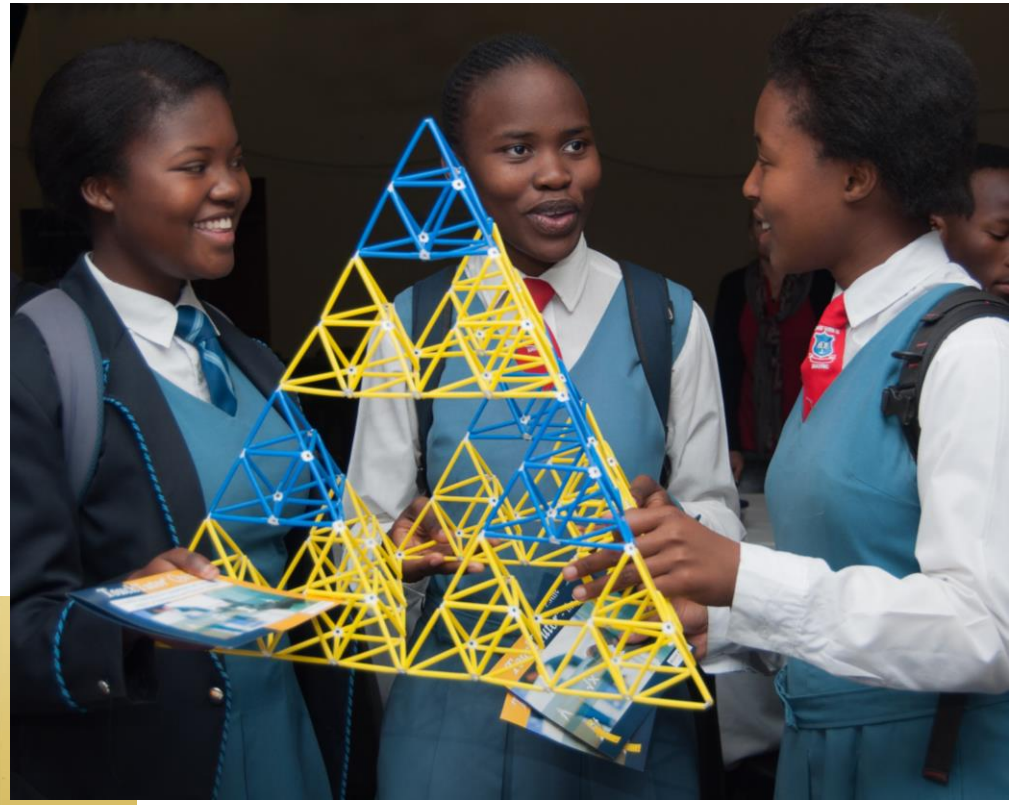
Description:

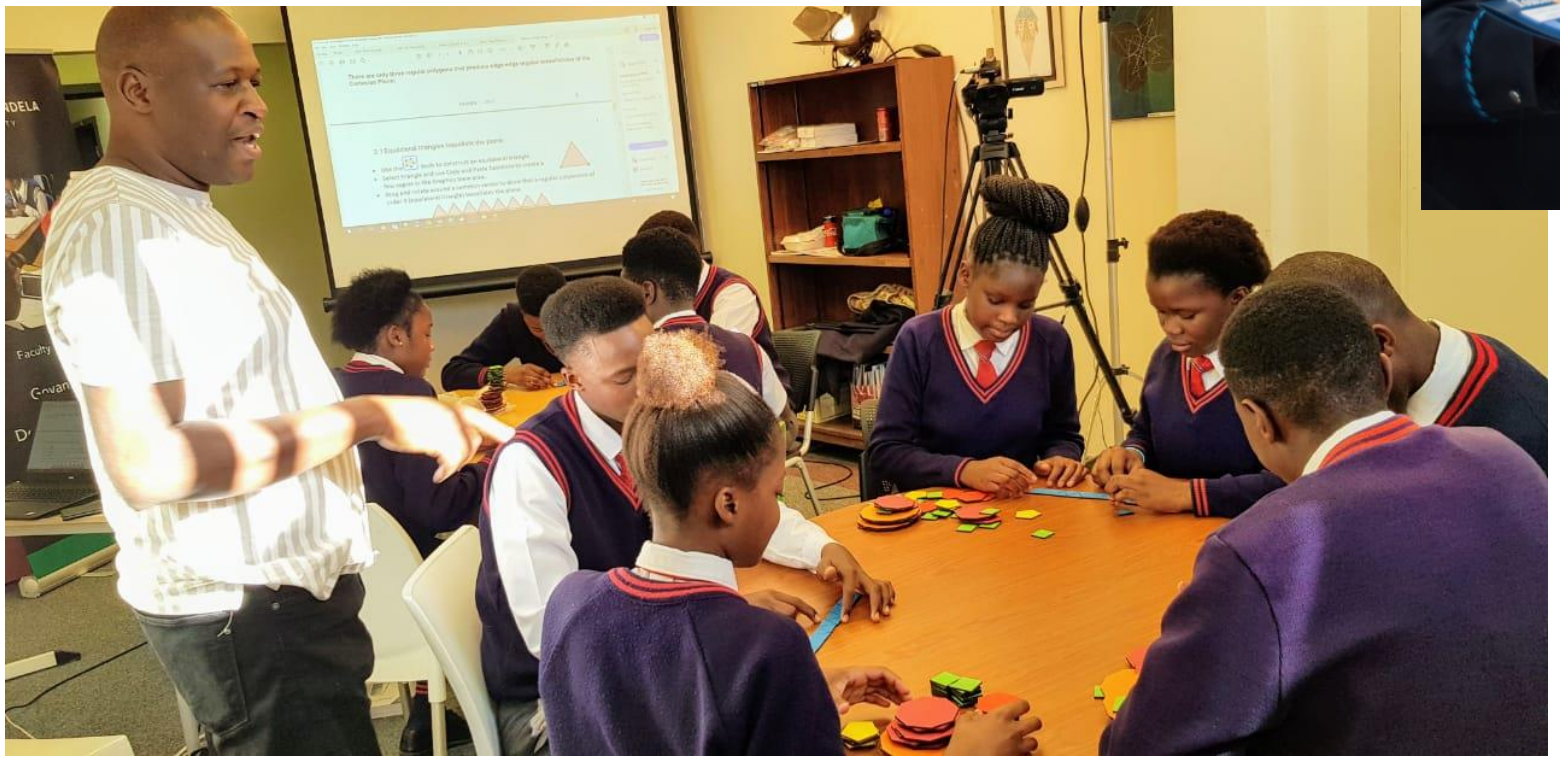
This applet inductively demonstrates the formula for the internal angle of regular polygons and its property of being a factor of 360 degrees or not.

https://www.geogebra.org/m/wu7kbasd



STEAM @ Learner projects



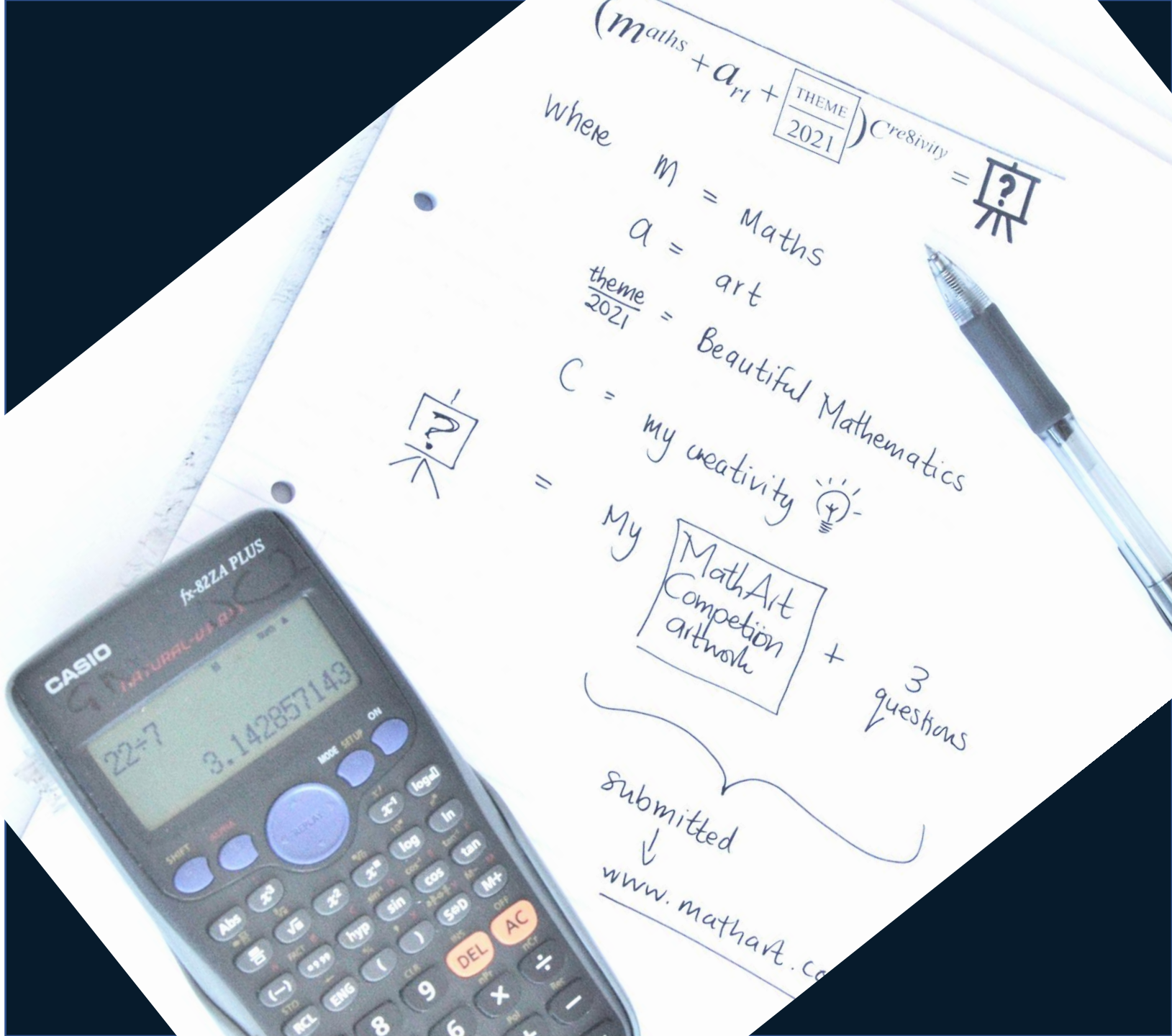


Fun
Collaborative
Creative
Learning


sas

Have you heard about the

It is not just Maths

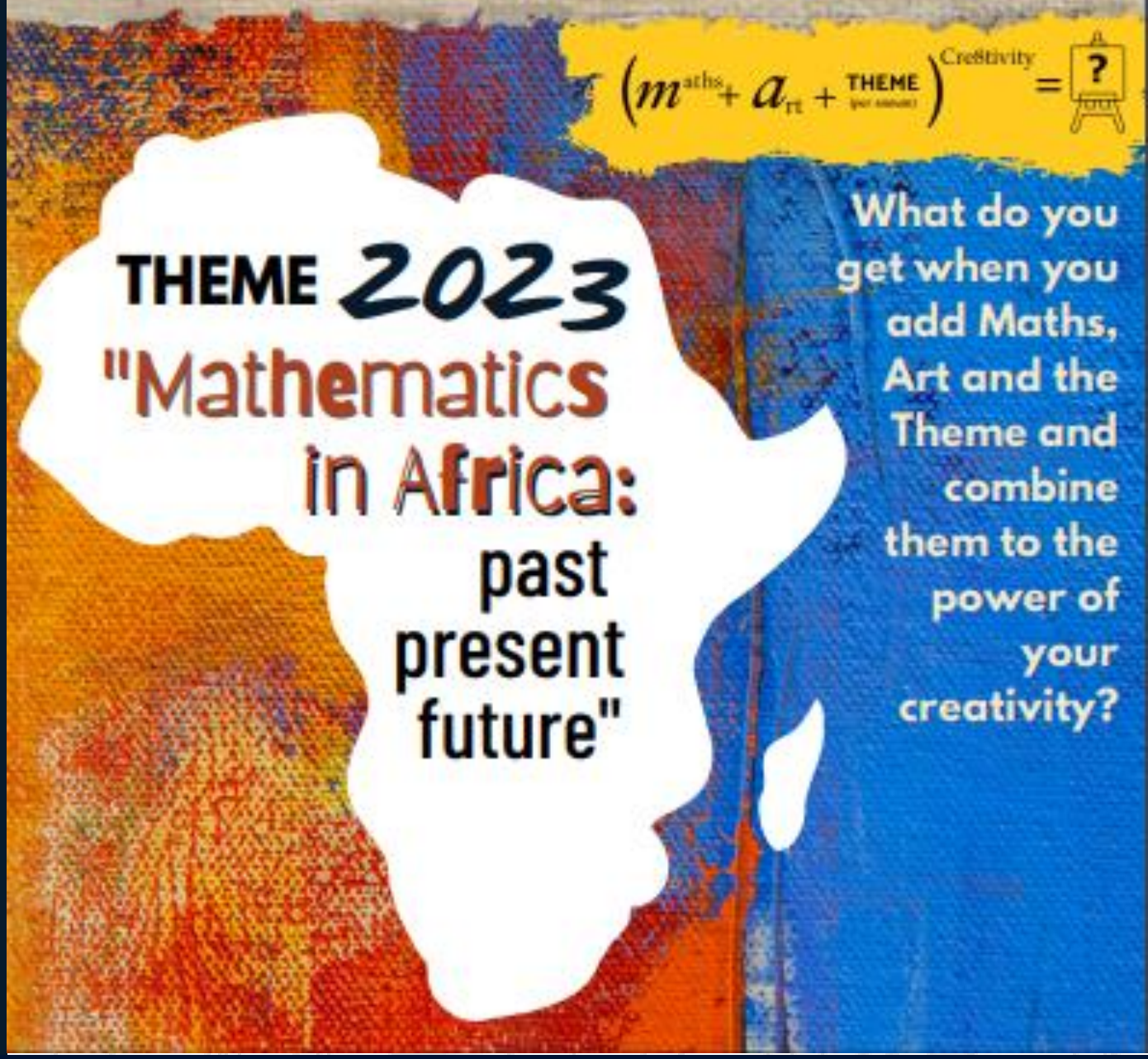


And is its also not just

ART


It is both!
And the
THEME
For learners
from
Grade
7 to 12

2023 Theme

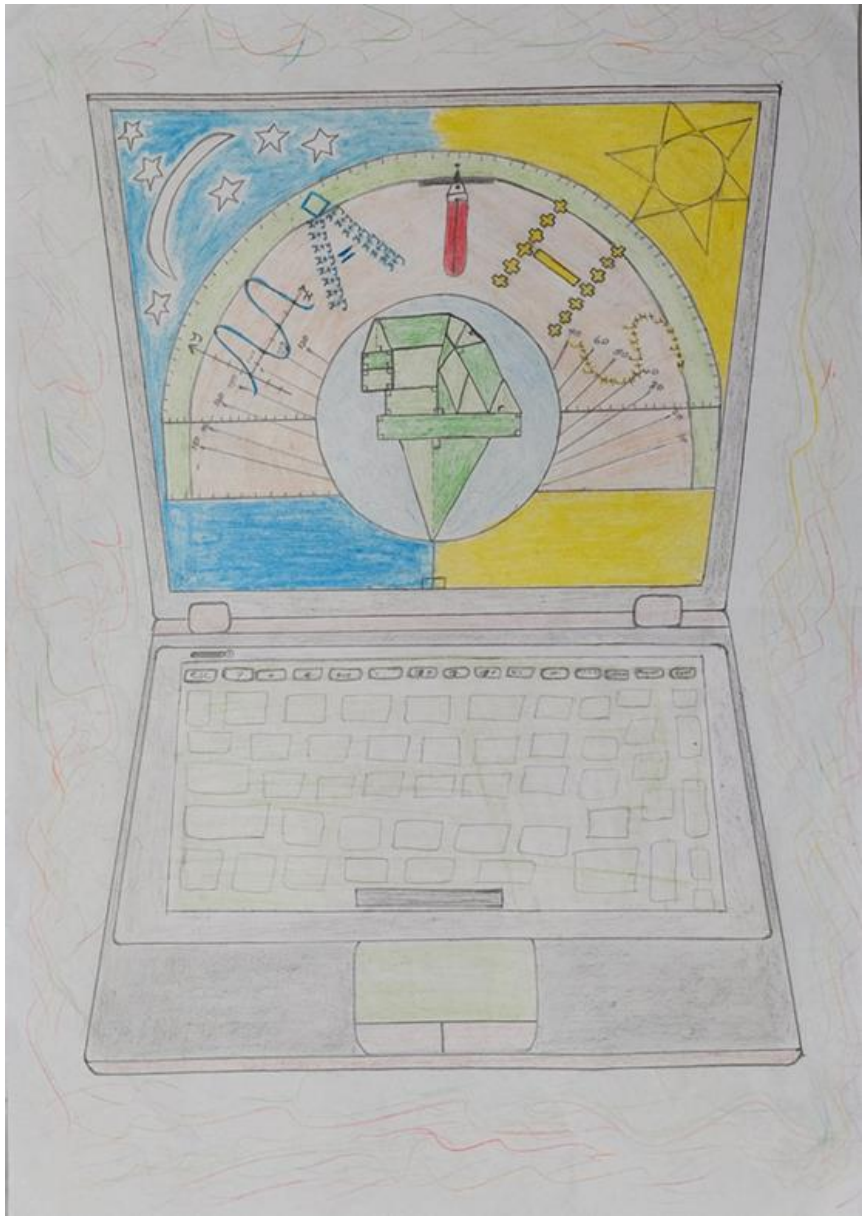

$\left(m^{aths} + a_{rt} + \text{THEME}\right)^{Cre8tivity} = ?$
THEME 2023
"Mathematics in Africa: past present future"
What do you get when you add Maths, Art and the Theme and combine them to the power of your creativity?

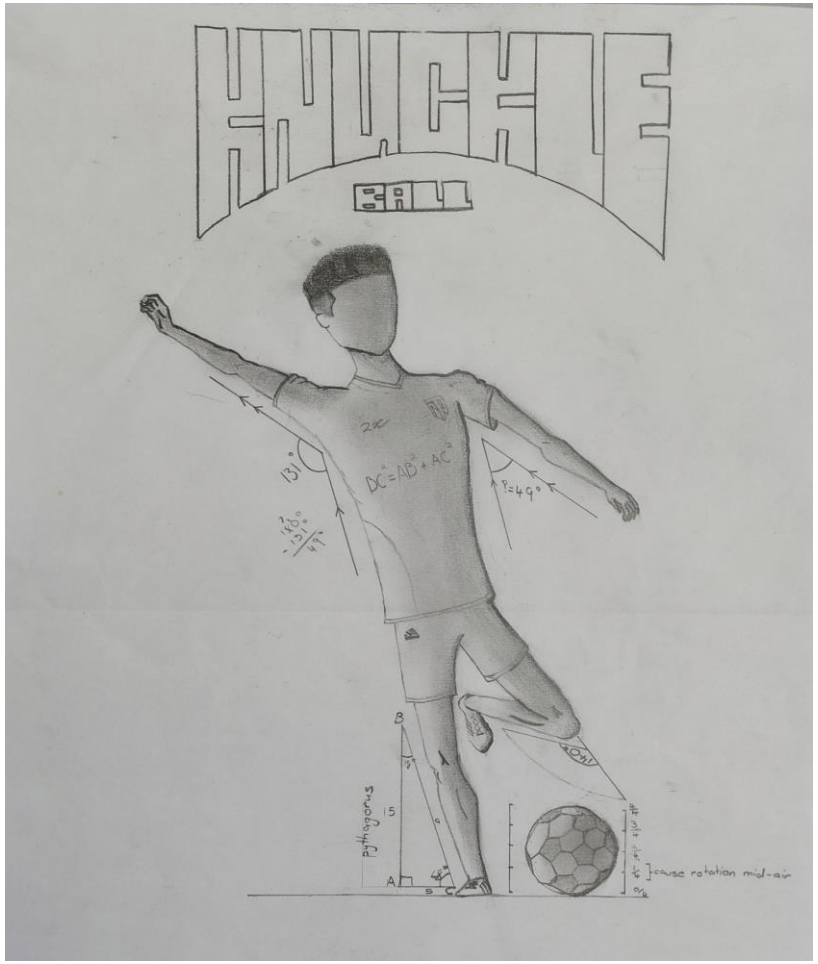
•Africa is home to the world’s earliest known use of measuring and calculation, confirming the continent as the birthplace of both basic and advanced mathematics.

•The oldest mathematical instrument is the Lebombo bone, a baboon fibula used as a measuring device and so named for its location of discovery in the Lebombo mountains of Swaziland.

A famous example of a mathematical and astronomical manuscript from medieval Timbuktu

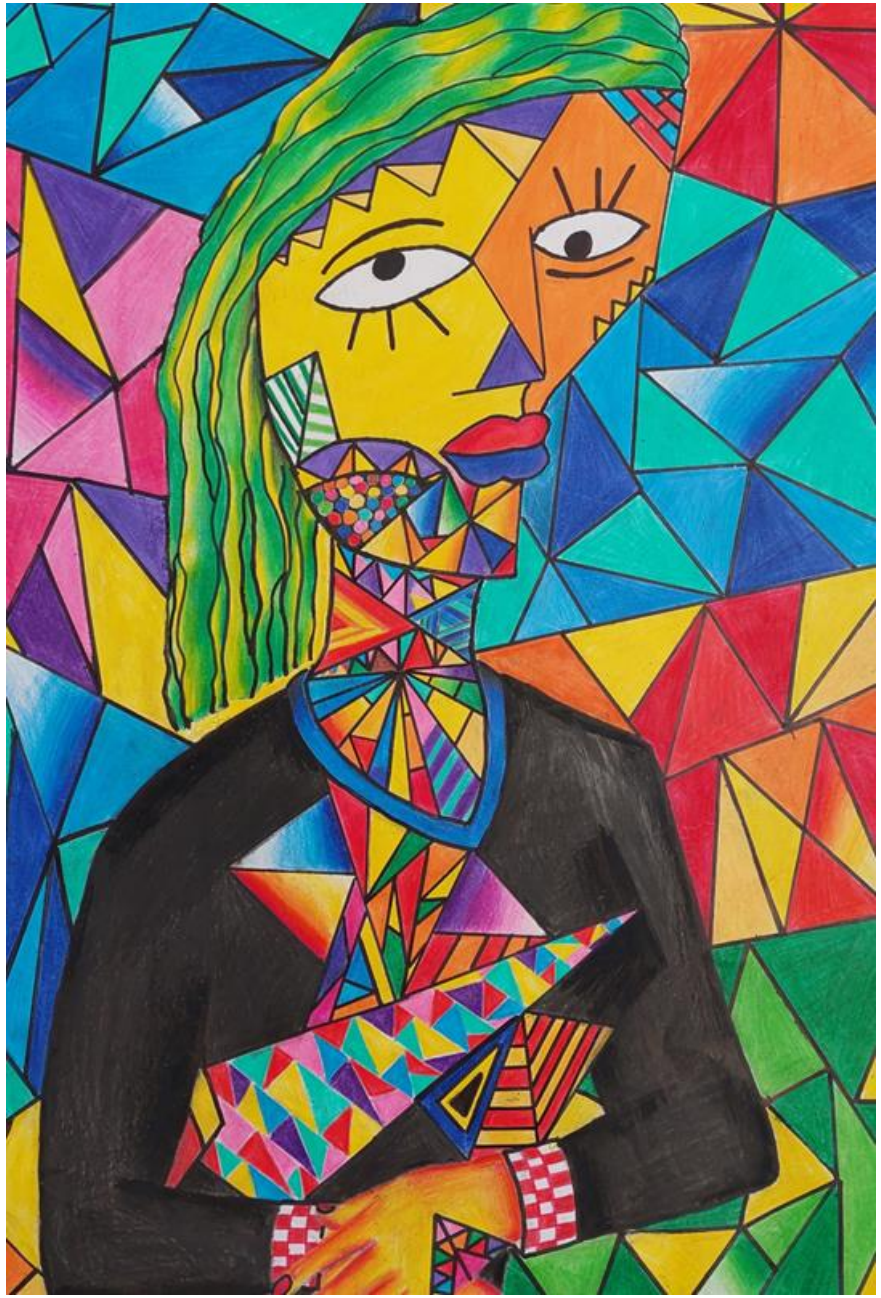
Mathematics is all around us



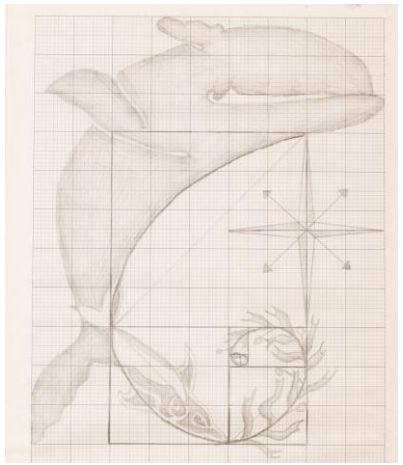


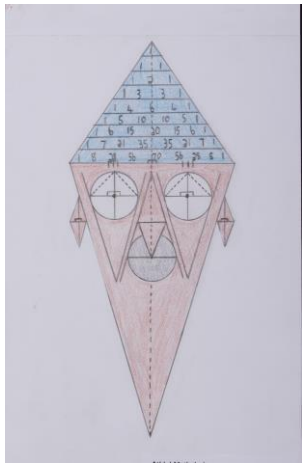
Mathematics is all around us

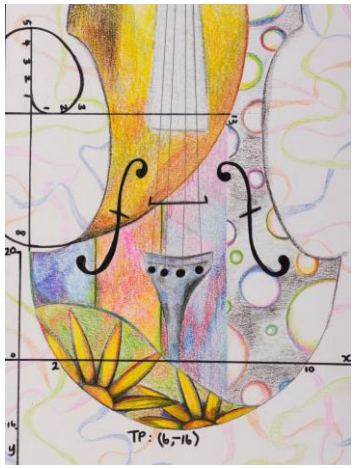

Math = Art

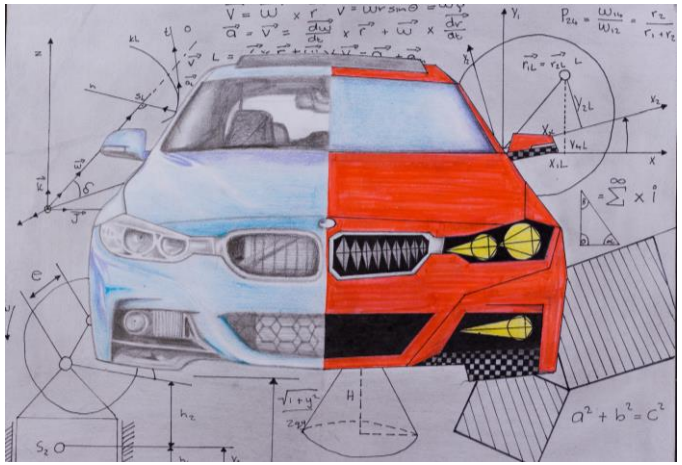


“Learners with a more creative way of learning struggle in class, because the way mathematics is being taught is rigid and set in the past.” *Gr 12 Learner from Eastern Cape*

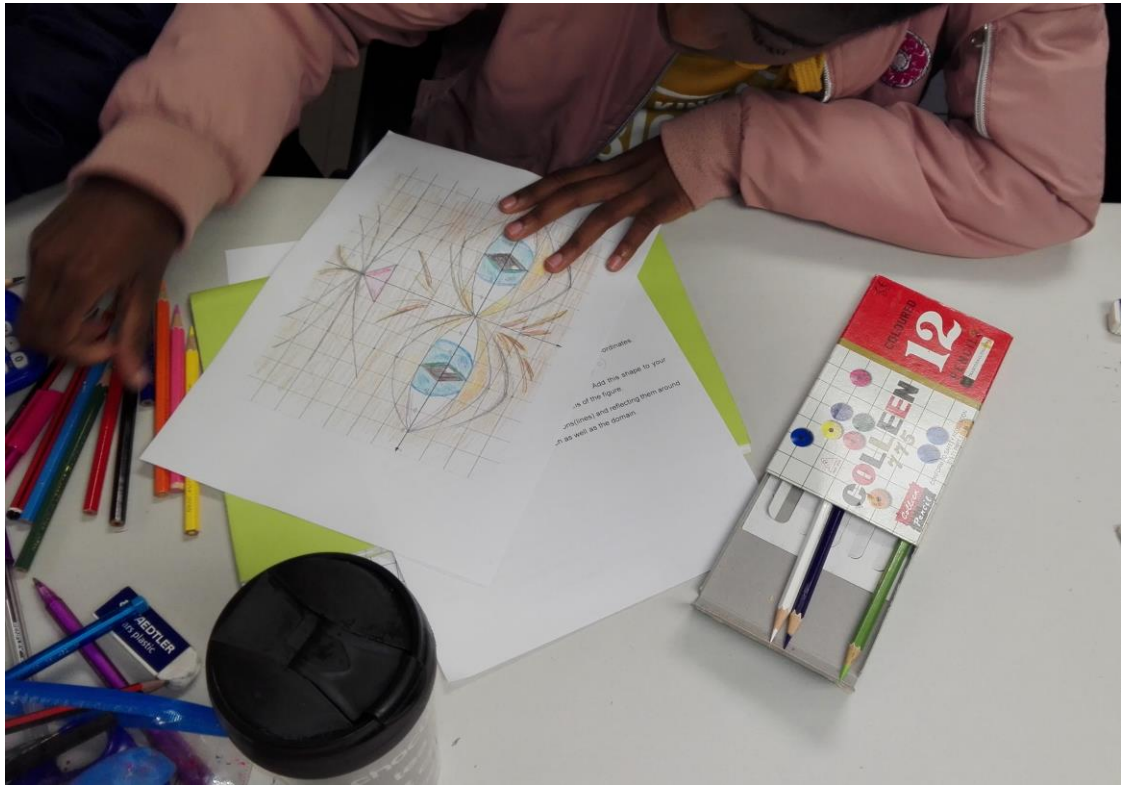








“At my school we do not have the opportunity to nurture our skill in the arts, design or mechanics/engineering. A lack of resources and interest shown by our government deprives learners, like myself an opportunity to get a head start, to get the necessary foundation that would prepare one for such a career.” *Gr 12 Learner from Eastern Cape*



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Everyone enjoys creating with Maths and Art

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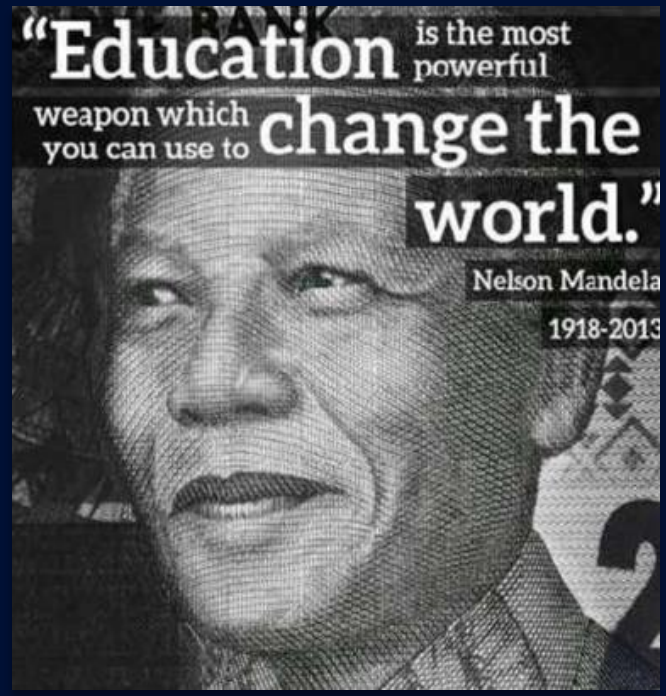
Invest in our youth

Through STEAM activities

Thank You
Dankie
Enkosi



"It always seems impossible until it's done."

Nelson Mandela

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