CURRICULUM, PEDAGOGY AND BEYOND

Paul Bowyer

THE MATHEMATICAL ASSOCIATION OF VICTORIA

MAV24 CONFERENCE

Teaching Maths like the Language of the Universe!

Paul Bowyer

MAV 2024

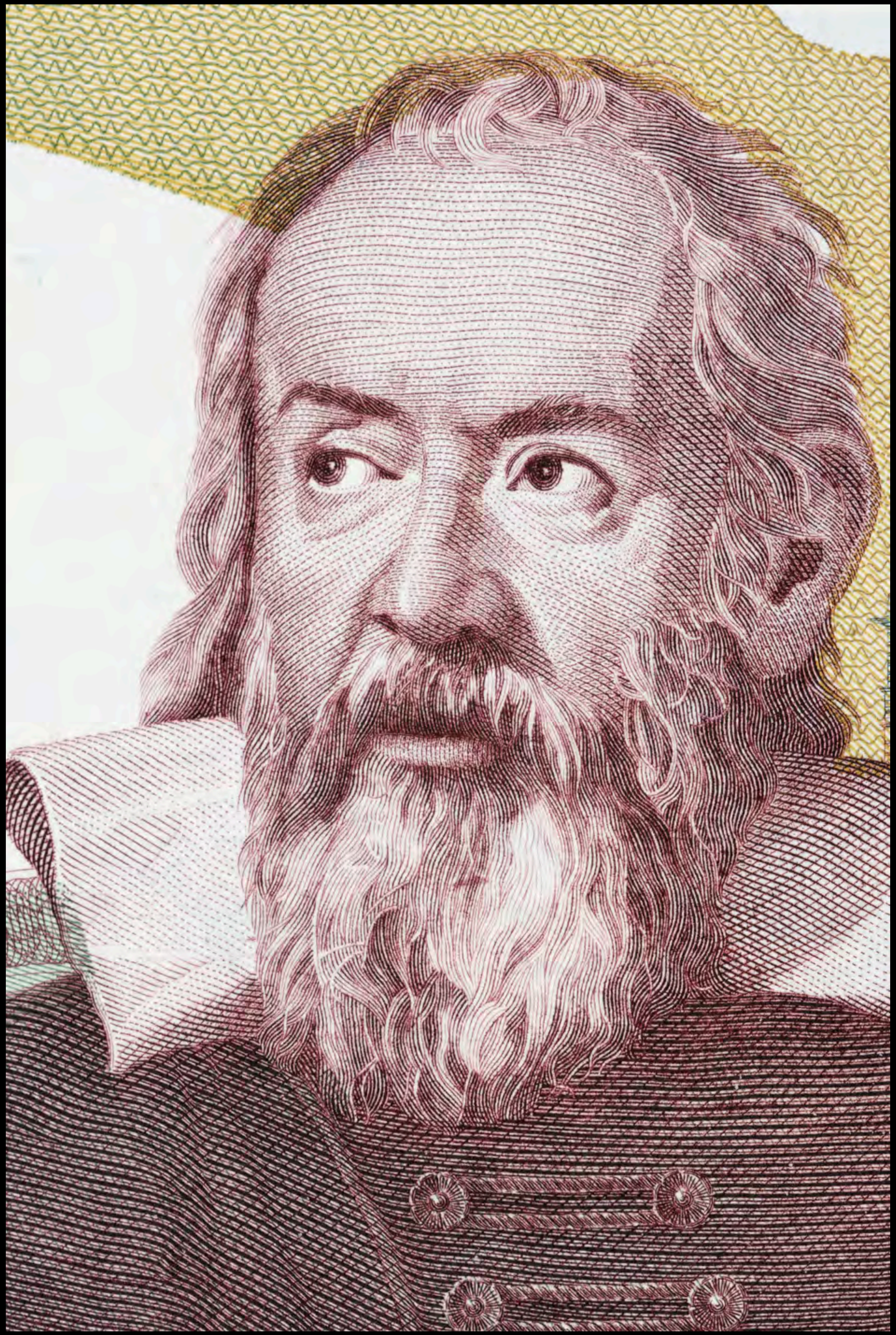
5/12/24

Introduction

Paul Bowyer
Language teacher

Galileo

Mathematician, astronomer



Galileo

Mathematician, astronomer

Mathematics is the language with which God has written the Universe.

Galileo Galilei

Maths

is the

Language of the Universe!

Maths

is the

Language of the Universe!

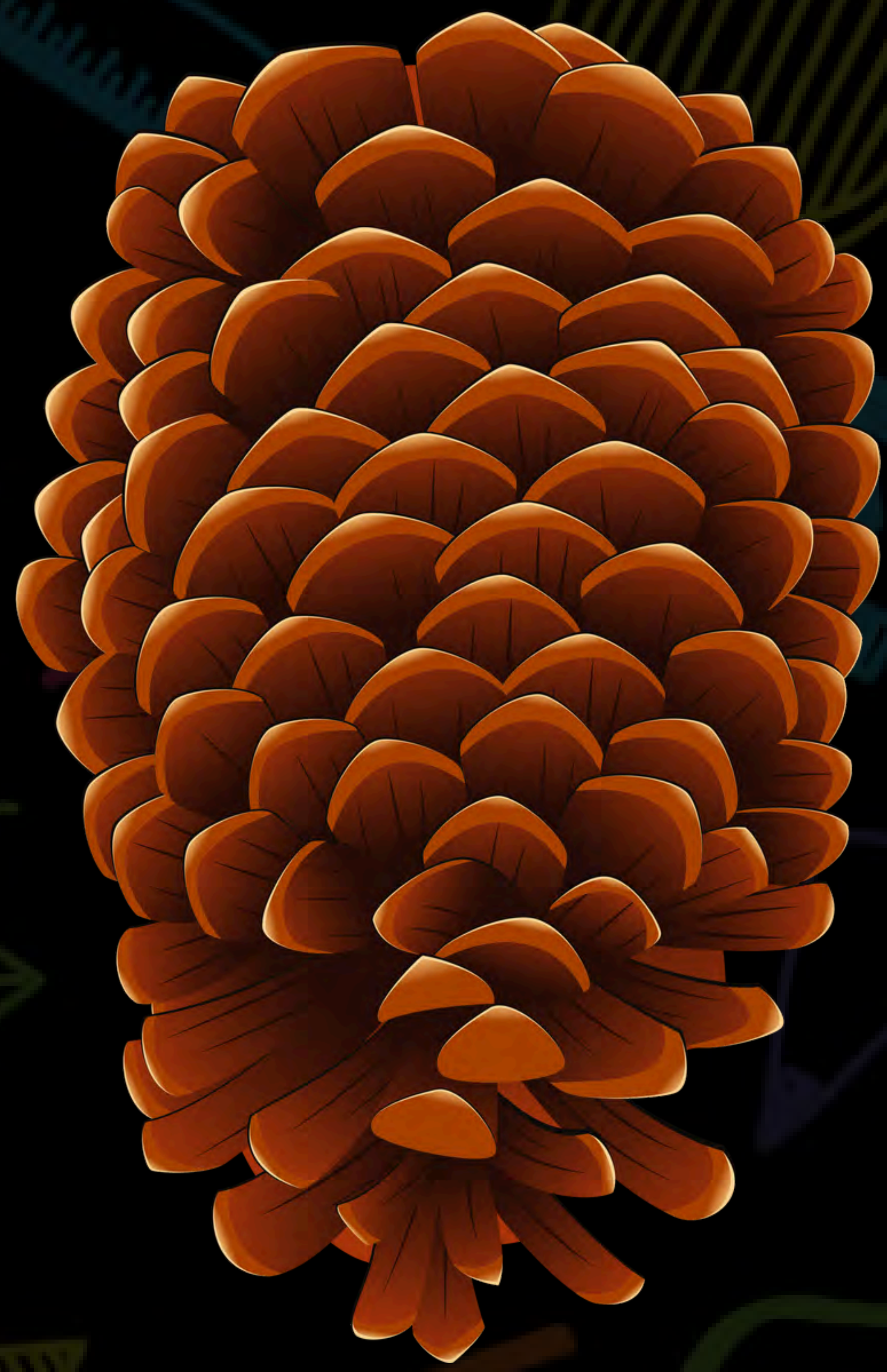
Because it’s everywhere!

Maths is everywhere!

Maths is everywhere!

Flowers

Maths is everywhere!



Pine cones

Maths is everywhere!

Buildings

Maths is everywhere!

Bridges

Maths is everywhere!

Computers

Maths is everywhere!

Phones

Maths is everywhere!

Shadows

Maths is everywhere!

In space

Maths is everywhere!

In every other school subject

Maths is everywhere!

Even English

Maths is everywhere!

Macbeth

Maths is everywhere!

$$\frac{\text{Macbeth}}{\text{cbe}}$$

Maths is everywhere!

$$\frac{\text{Macbeth}}{\text{cbe}}$$

Maths is everywhere!

Hamlet

Maths is everywhere!

Ham t

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Maths is everywhere!

Ha   t

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Maths is everywhere!

H t

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Maths is everywhere!

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Maths is everywhere!

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MATHS
IS IN EVERYTHING!

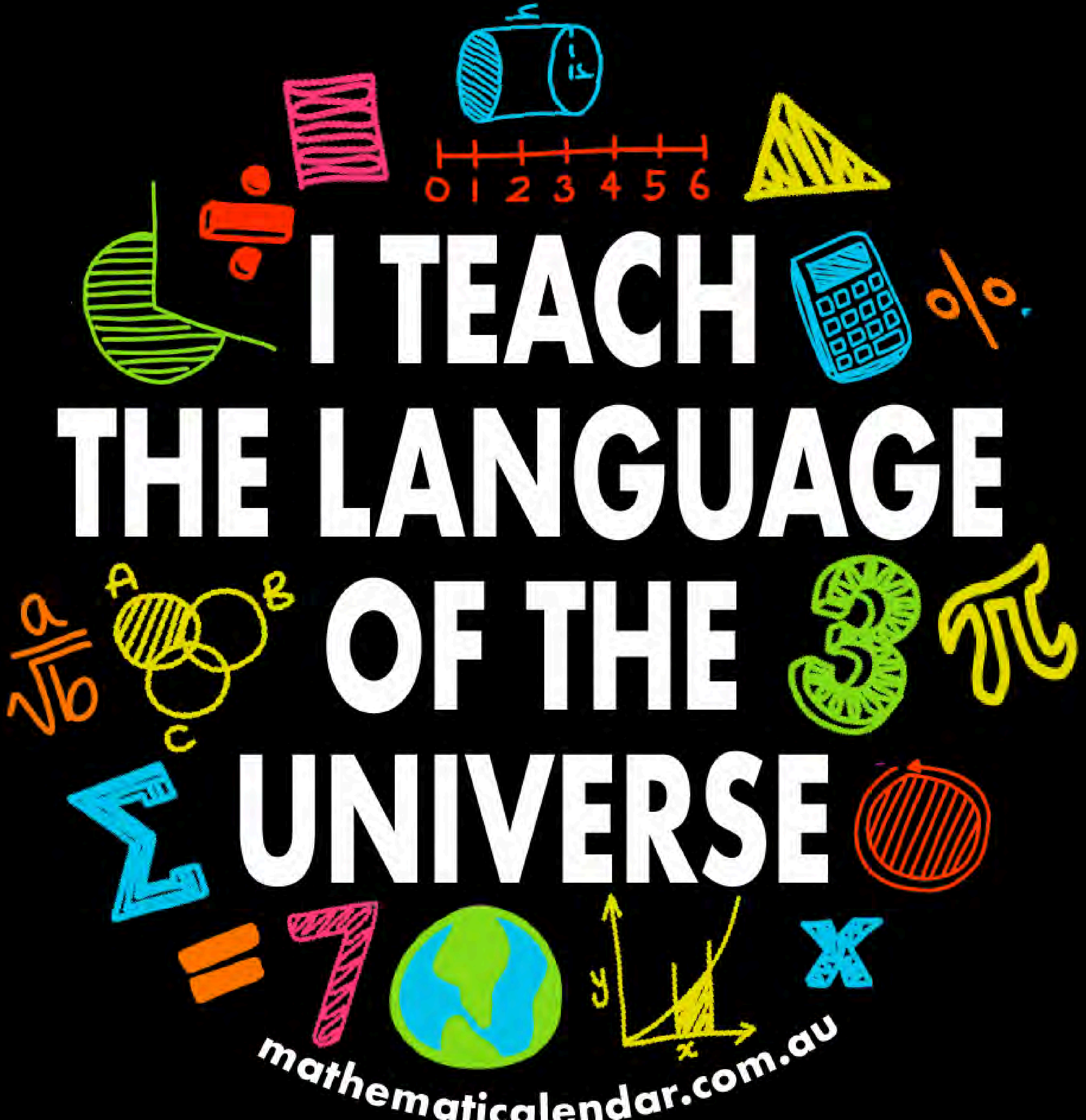
That's why it's the
Language of the Universe!

And you

are teachers

of that Language!

We're all Language teachers!!!


I TEACH
THE LANGUAGE
OF THE
UNIVERSE
mathematicalendar.com.au

When your students

are doing Maths

they're speaking

that Language!

I SPEAK
THE LANGUAGE
OF THE
UNIVERSE
0 1 2 3 4 5 6
A
B
C
%
=7
y
x
mathematicalendar.com.au

What a powerful thing

for them to be able to say!

AGENDA

AGENDA

1. Blow their Minds!
2. Bring the universe to the classroom
3. Go into the Universe
4. Get Personal
5. A prism to view the world
6. Celebrate!


1. Blow their minds!

Mathematics has an extraordinary way of leading us to enlightenment by subverting our intuitions.

Eugene Wigner

The maths syllabus is full of MBM….

Mind-Blowing Maths

Mind-Blowing Maths

Often hidden in plain sight!

Mind-Blowing Maths

Once you start looking for it, you see it everywhere!

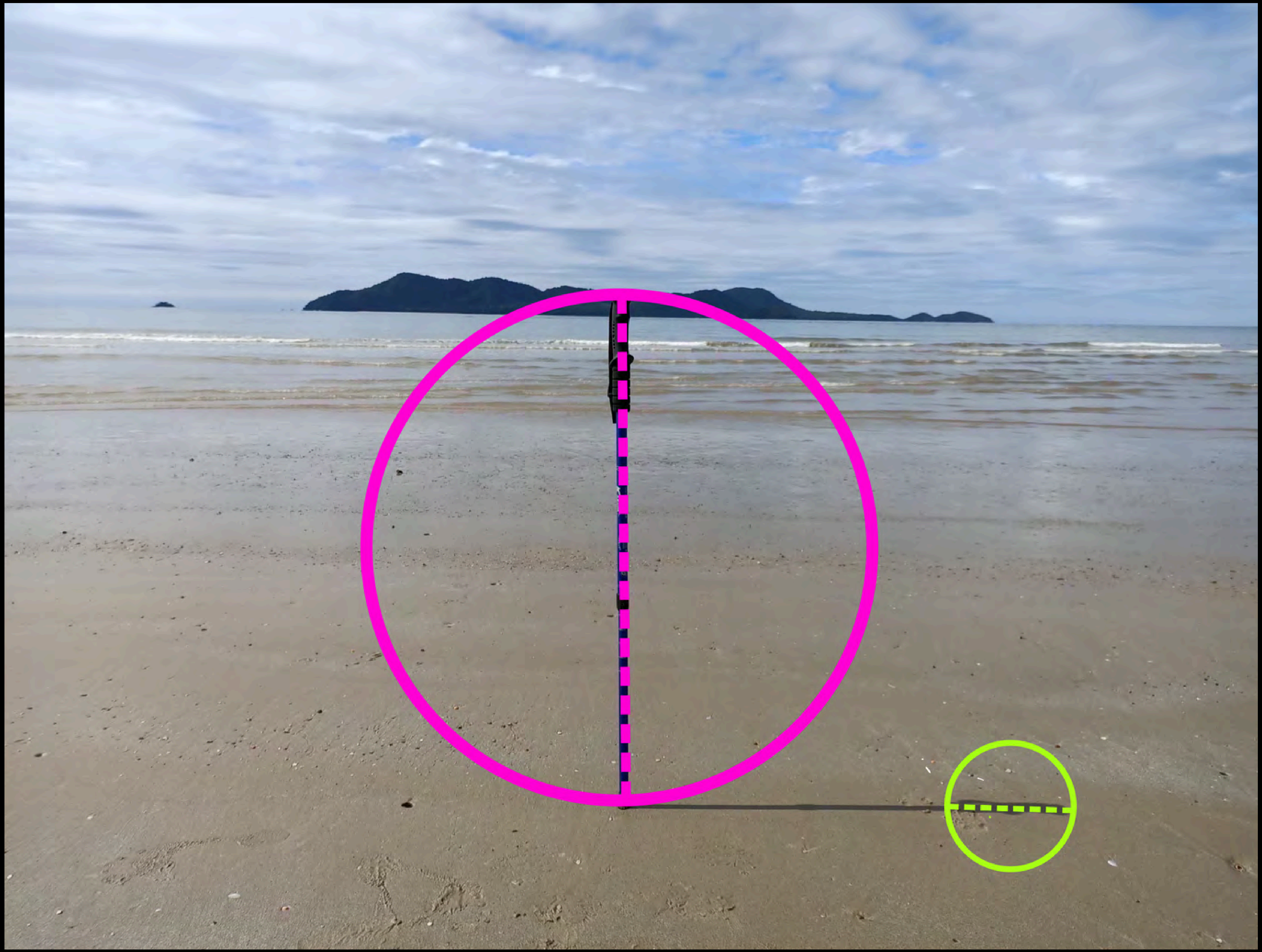
Mind-Blowing Maths

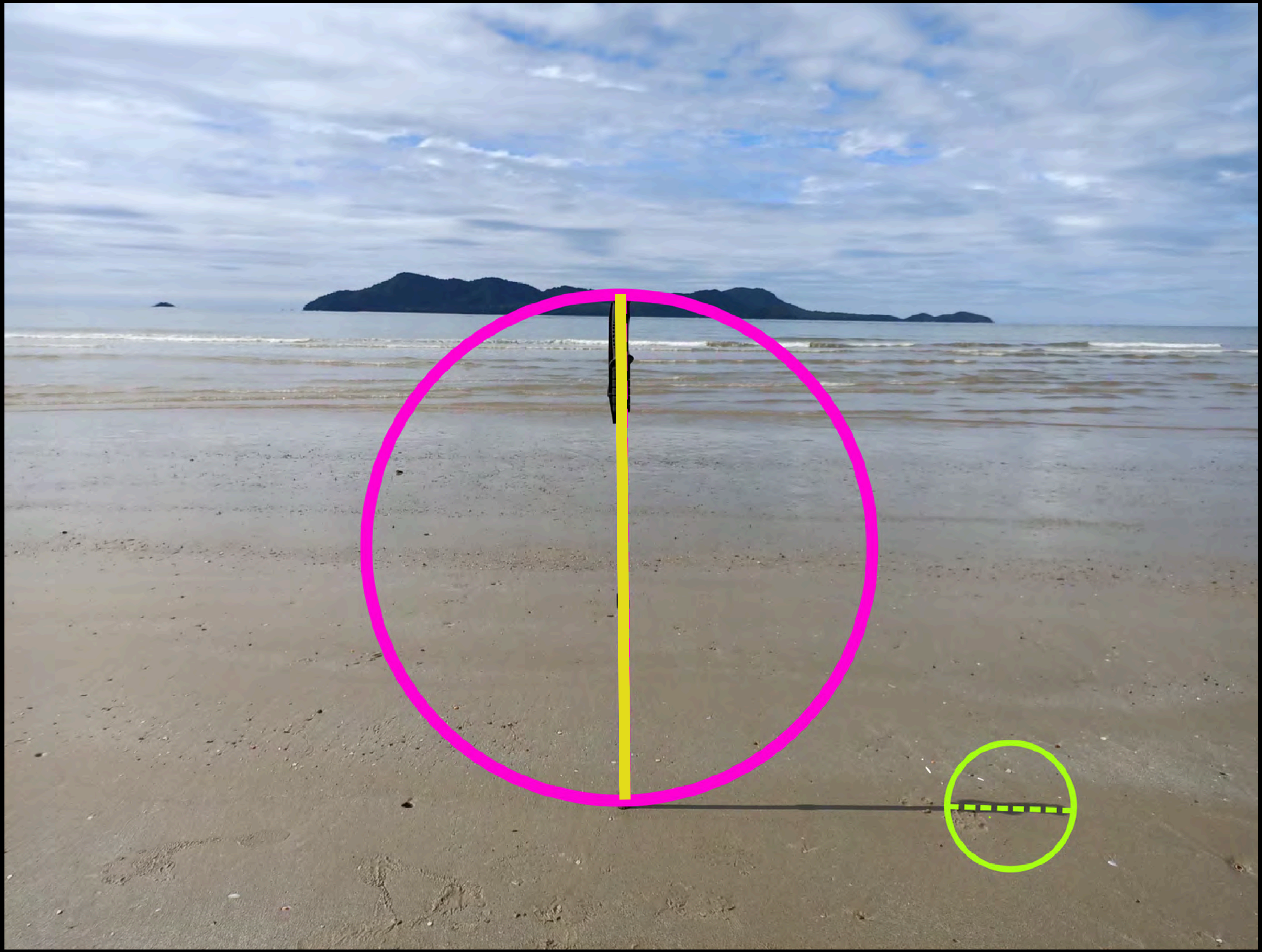
Get your beanie out!

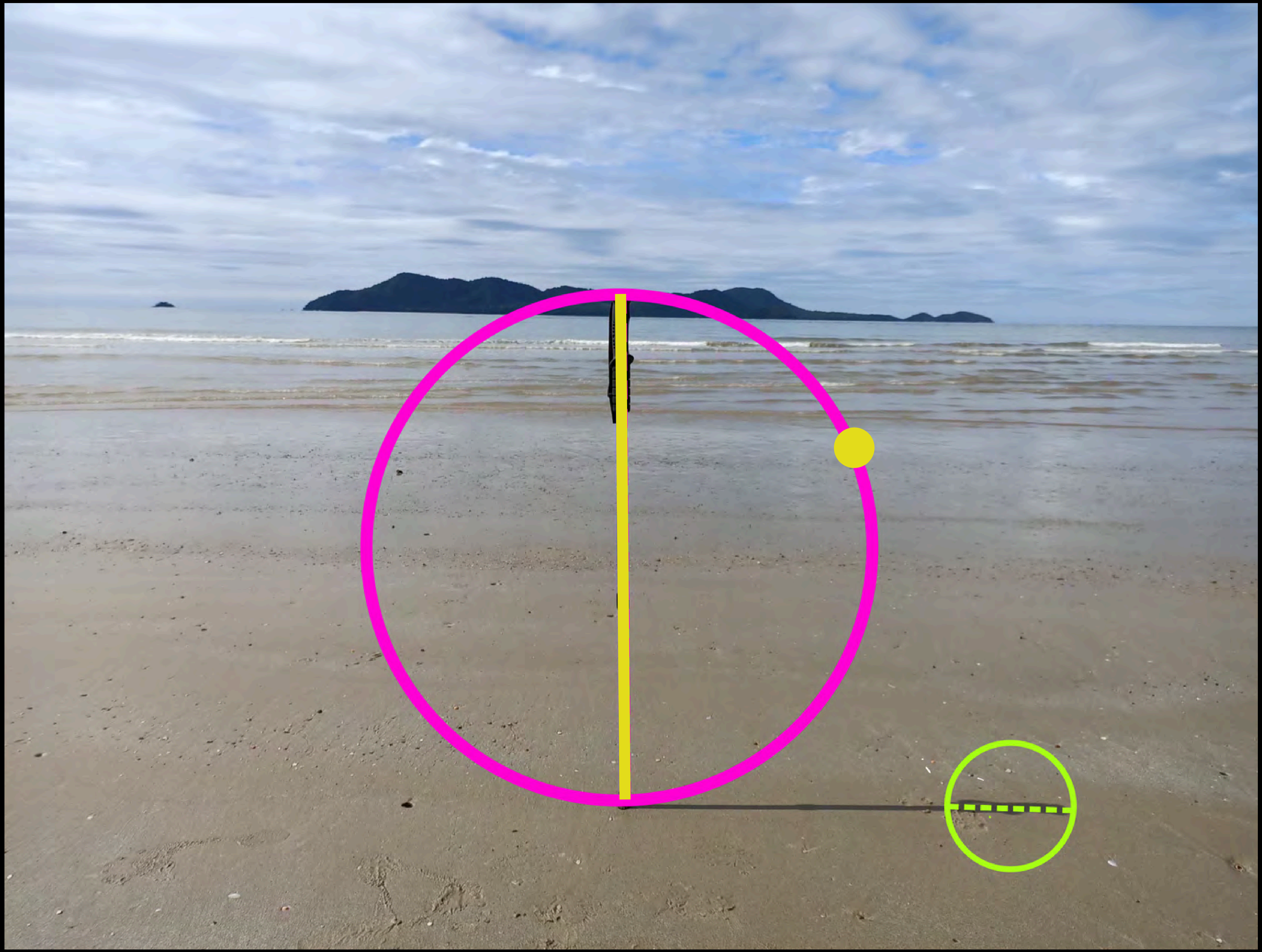
Once you start looking for it, you see it everywhere!

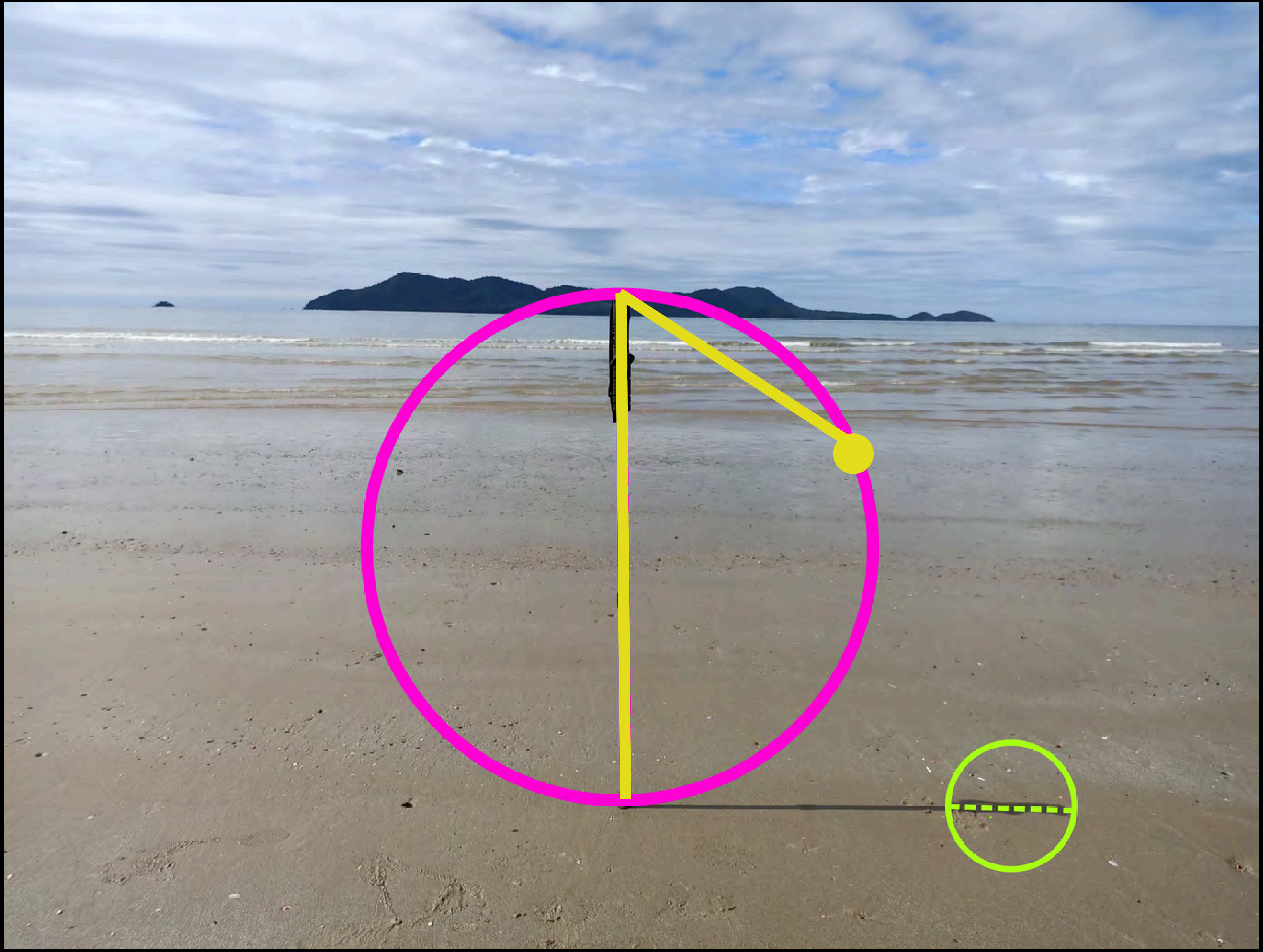
Galileo

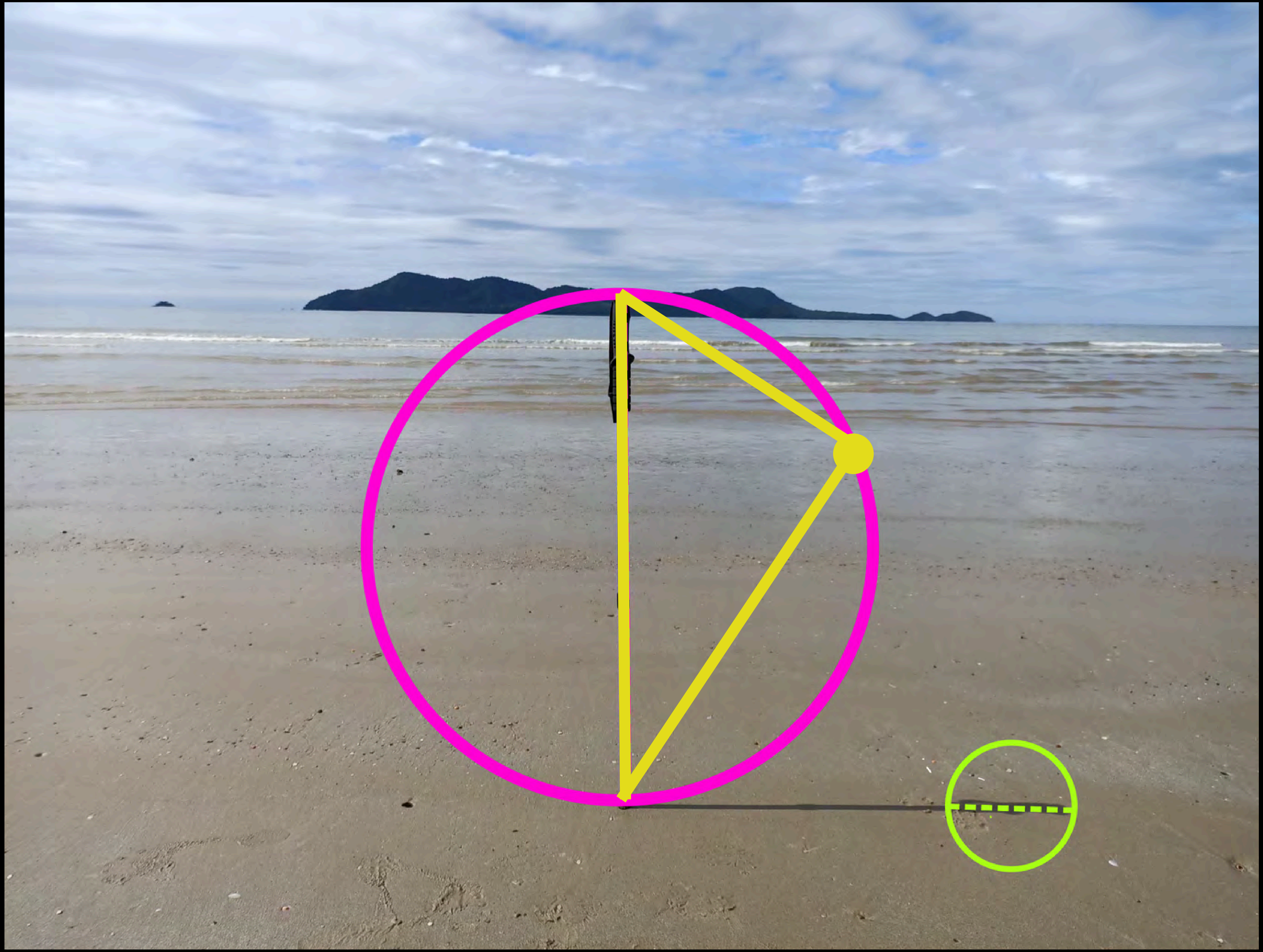
π

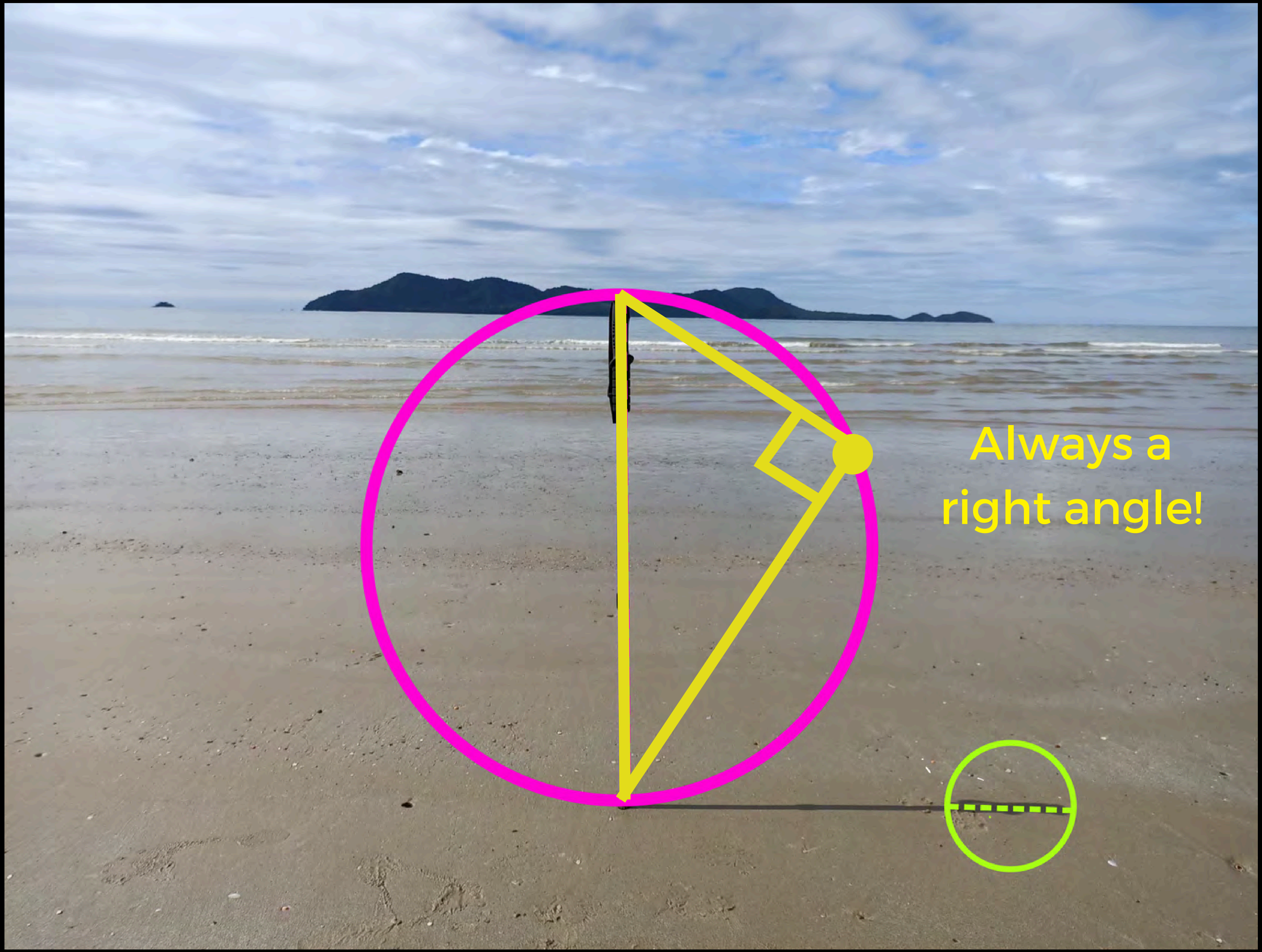


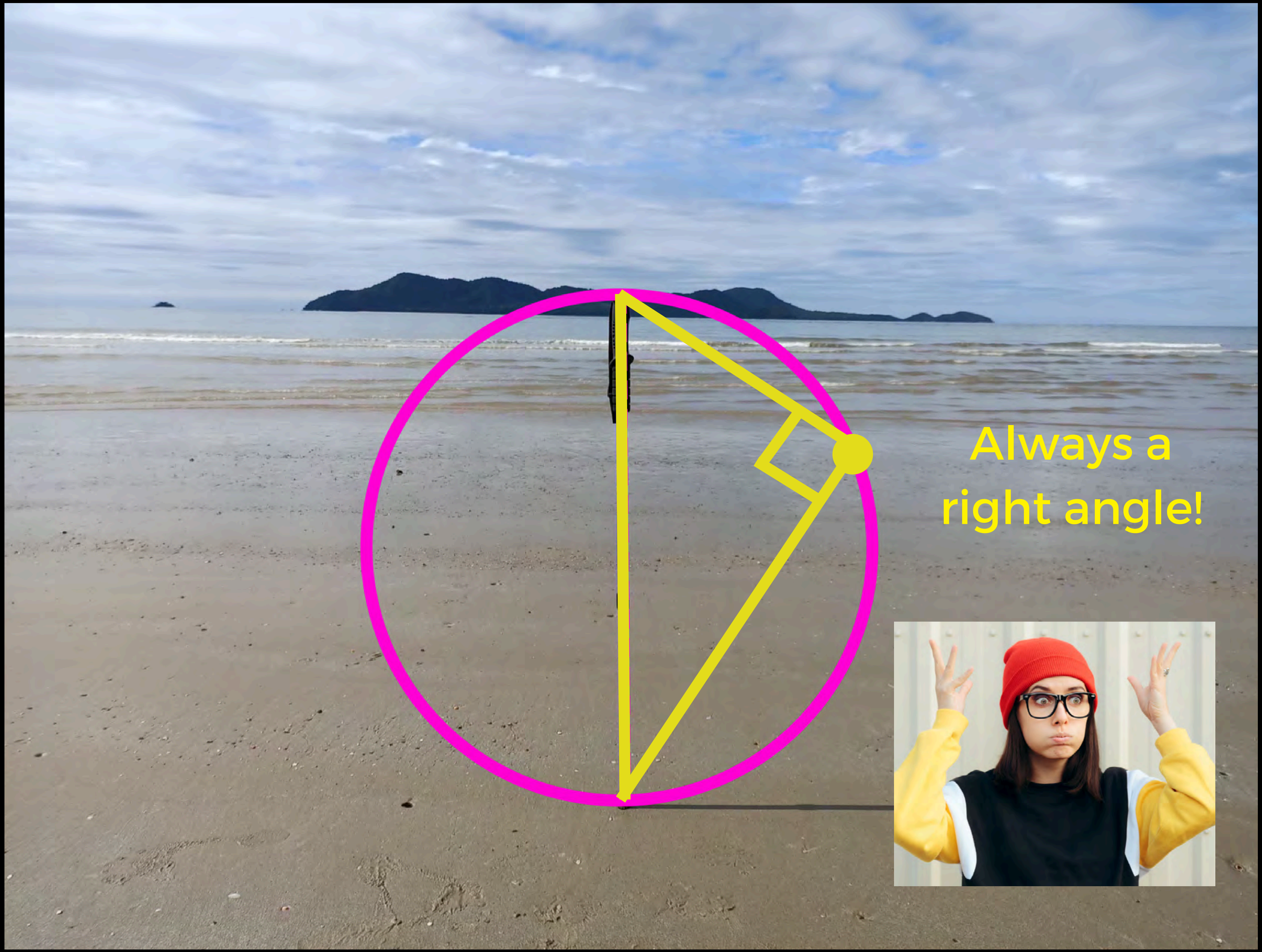









Always a
right angle!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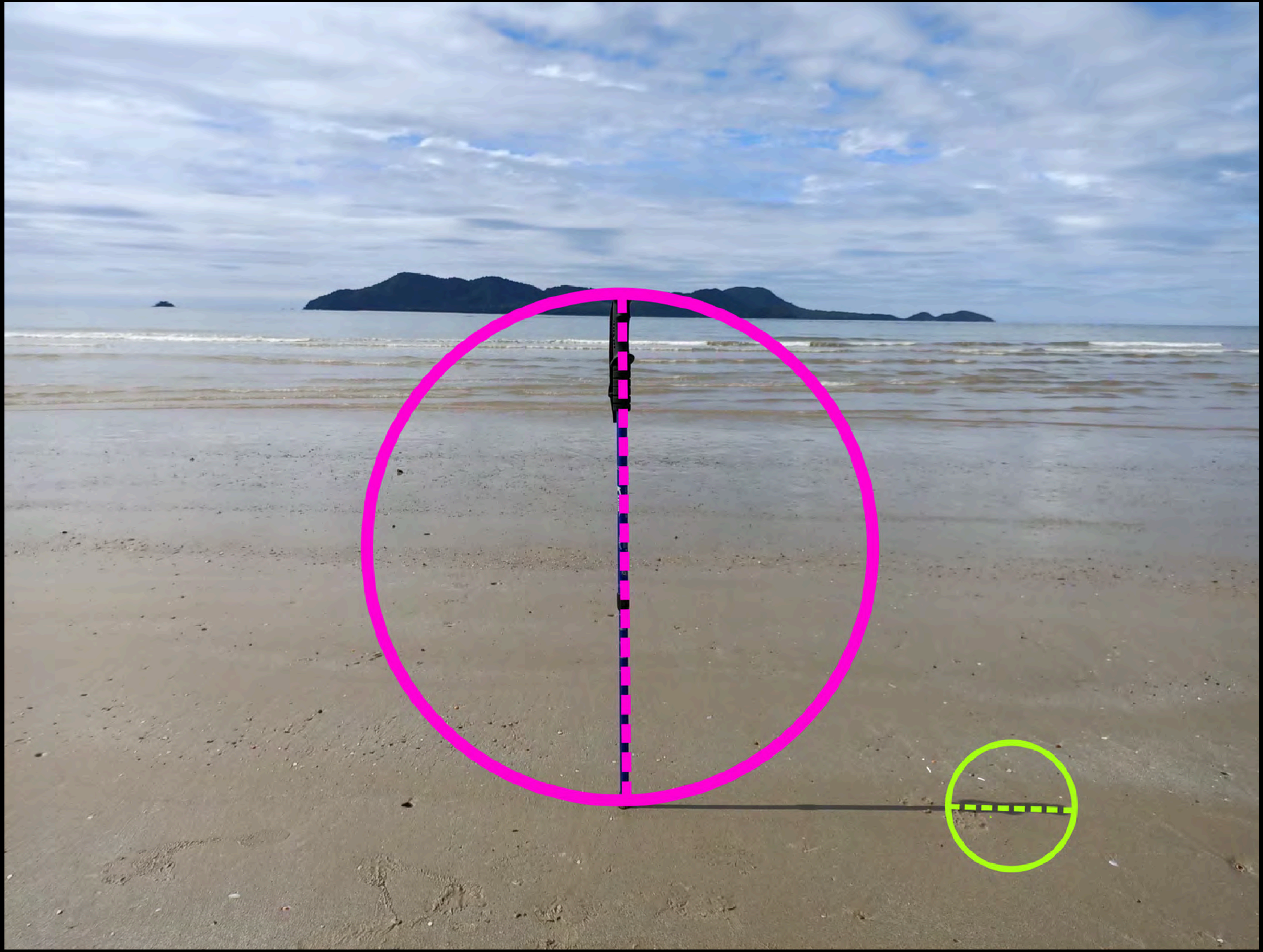
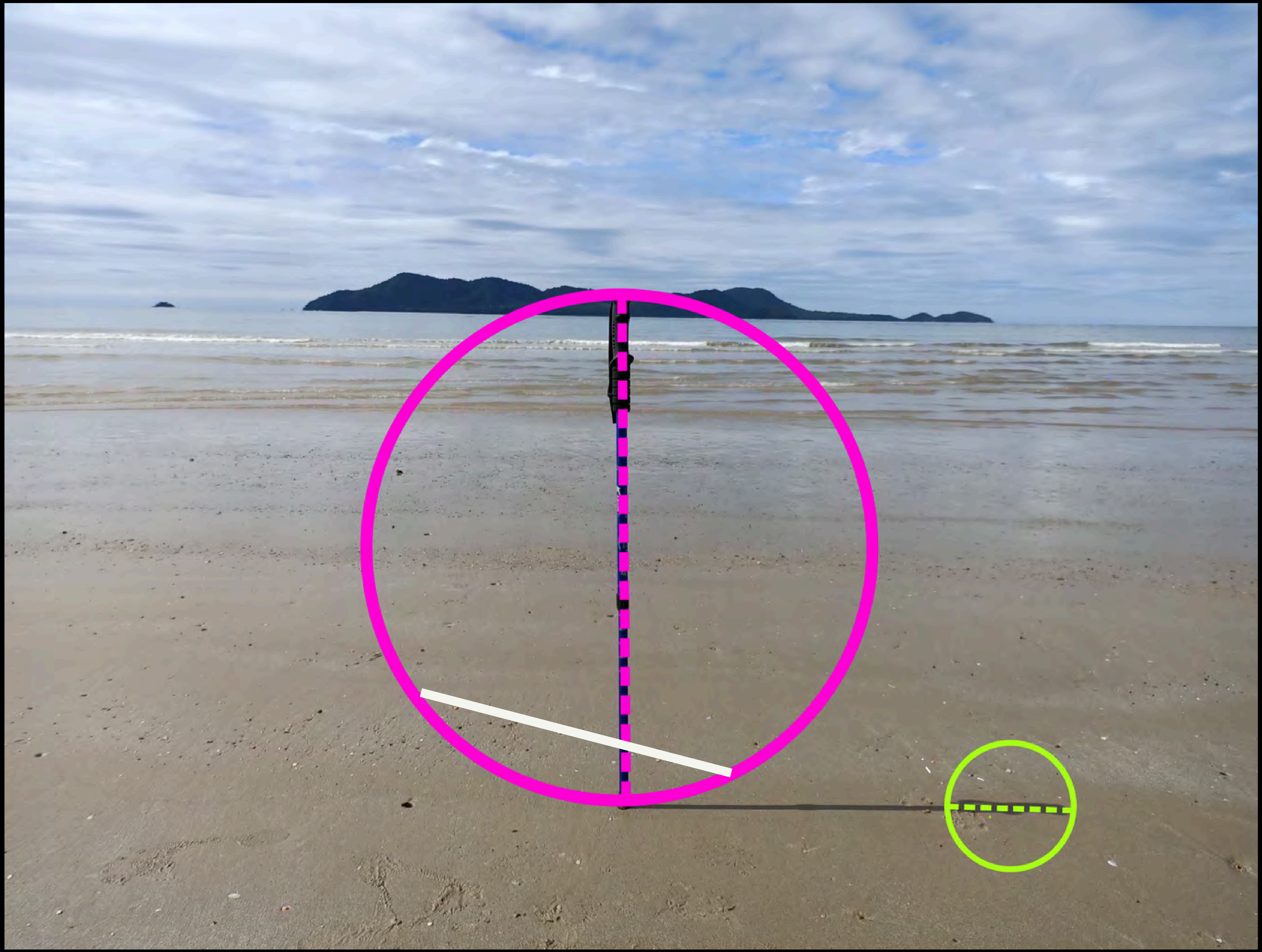
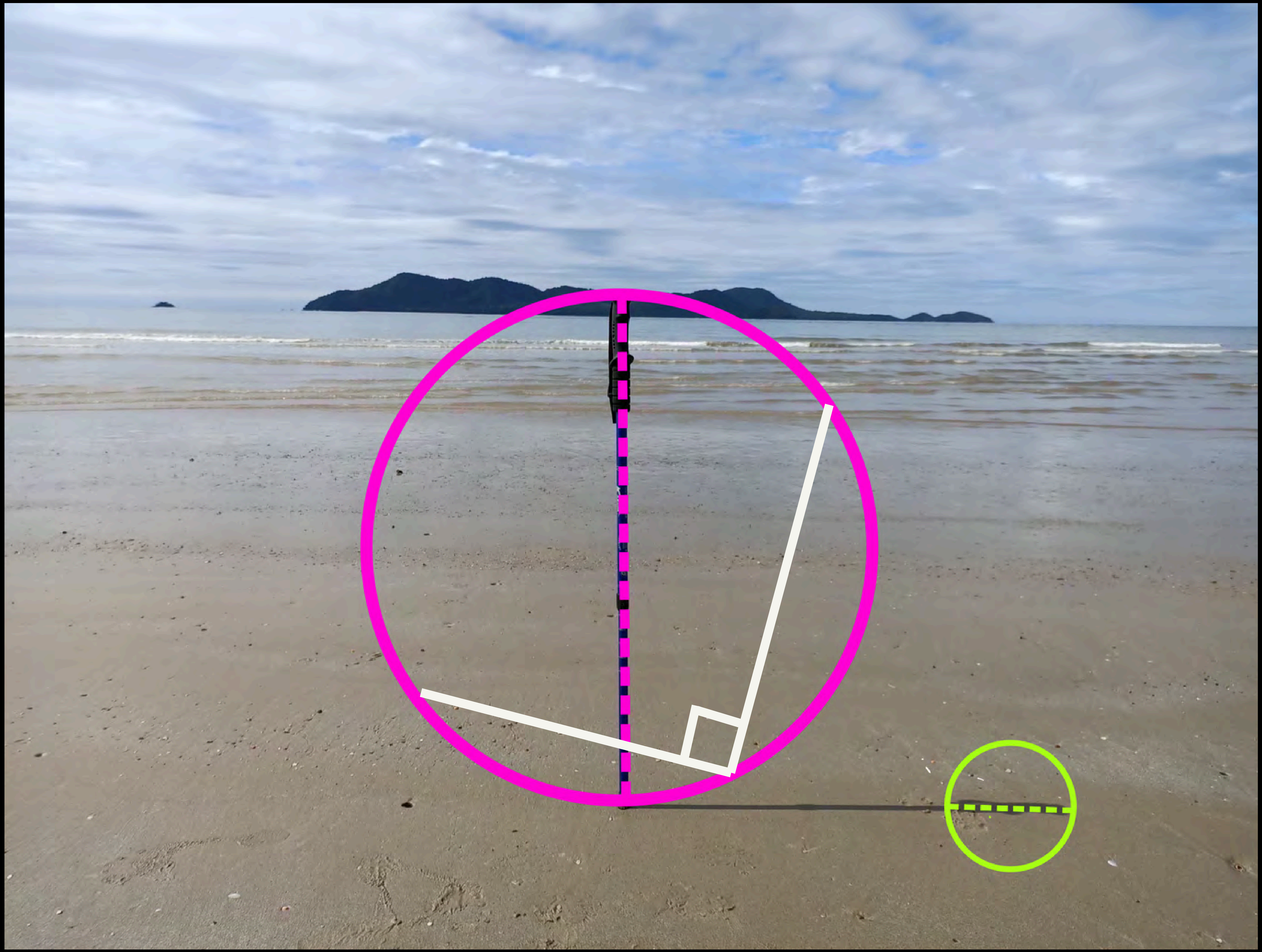
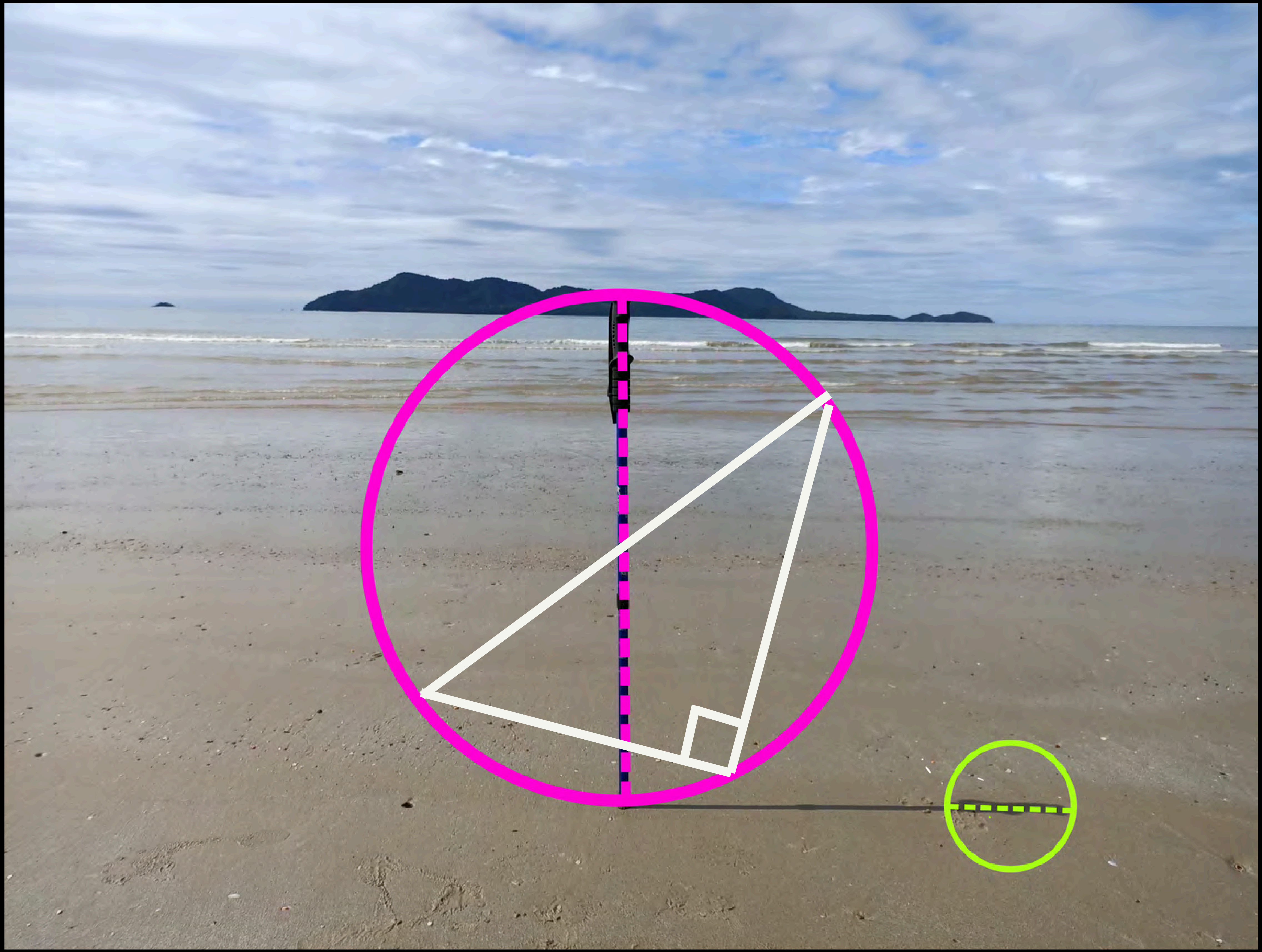
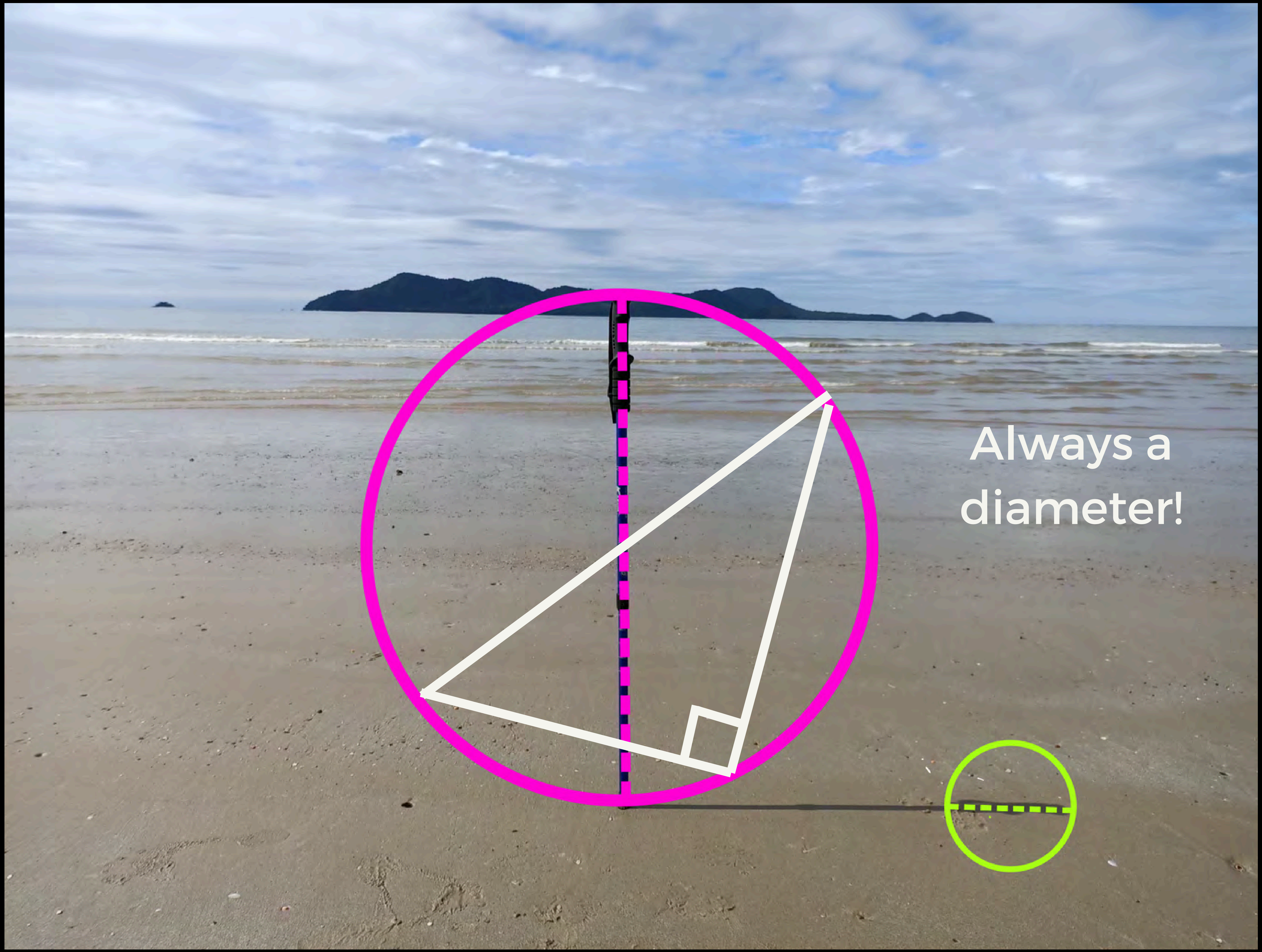
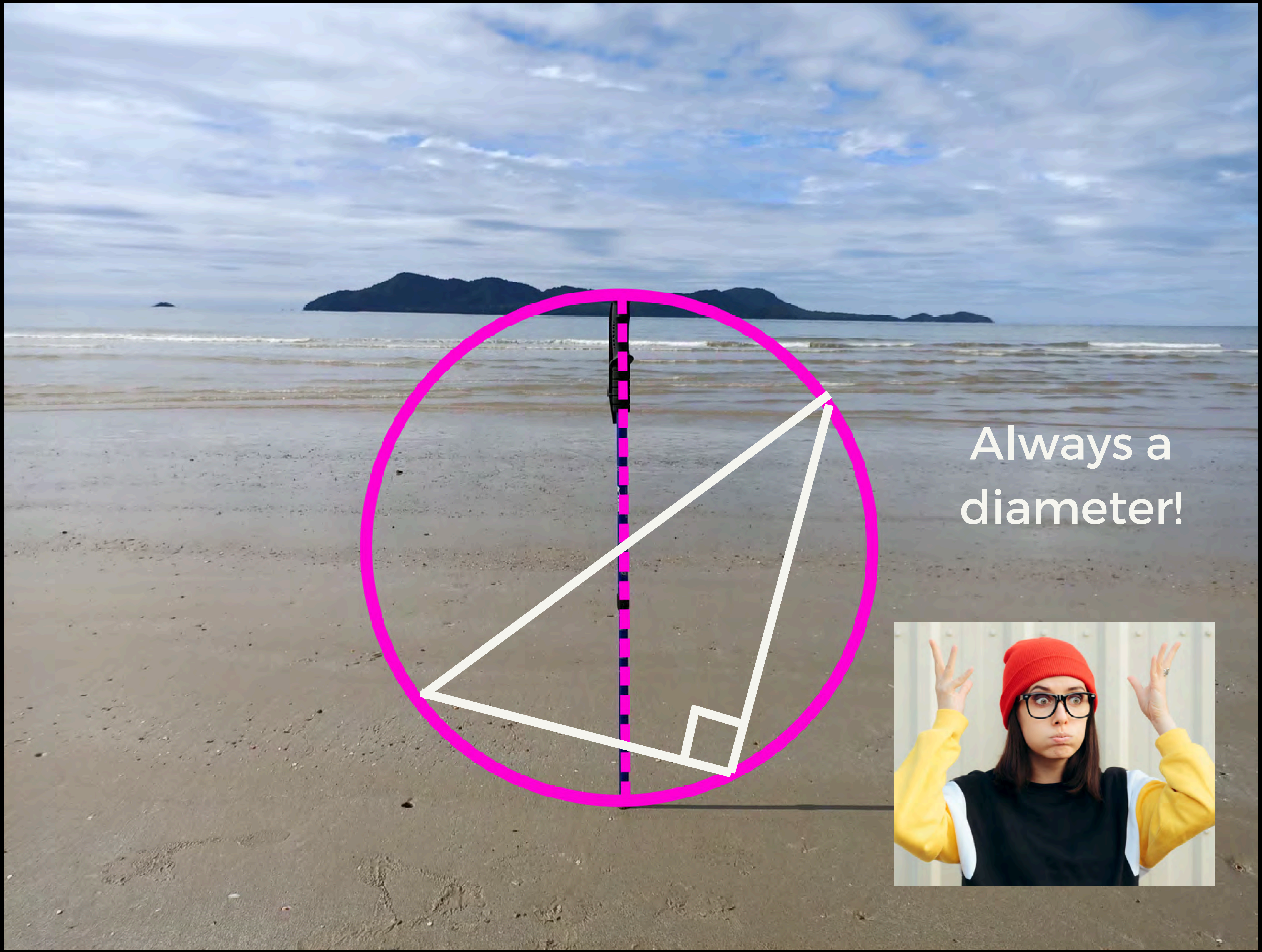




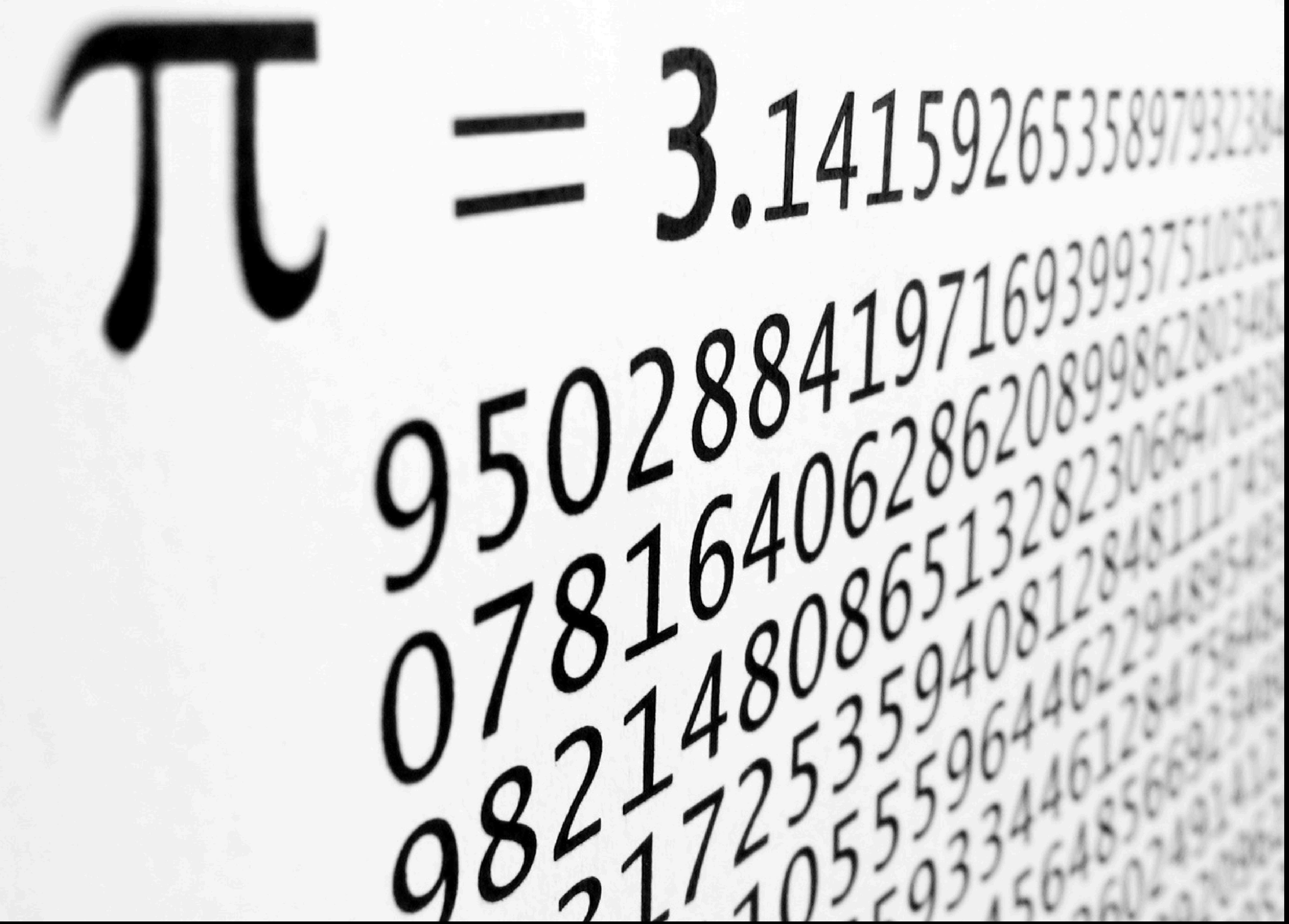





Always a
diameter!


Always a
diameter!

Pi has an infinite number of decimal places



Pi has an infinite number of decimal places

So you can find most numbers somewhere in pi

Pi has an infinite number of decimal places

So you can find most numbers somewhere in pi

For example, today is 5/12/24

Pi has an infinite number of decimal places

So you can find most numbers somewhere in pi

For example, today is 5/12/24

And the number 51224 first begins at the

Pi has an infinite number of decimal places

So you can find most numbers somewhere in pi

For example, today is 5/12/24

And the number 51224 first begins at the

194,233rd decimal place!

Pi has an infinite number of decimal places

So you can find most numbers somewhere in pi

For example, today is 5/12/24

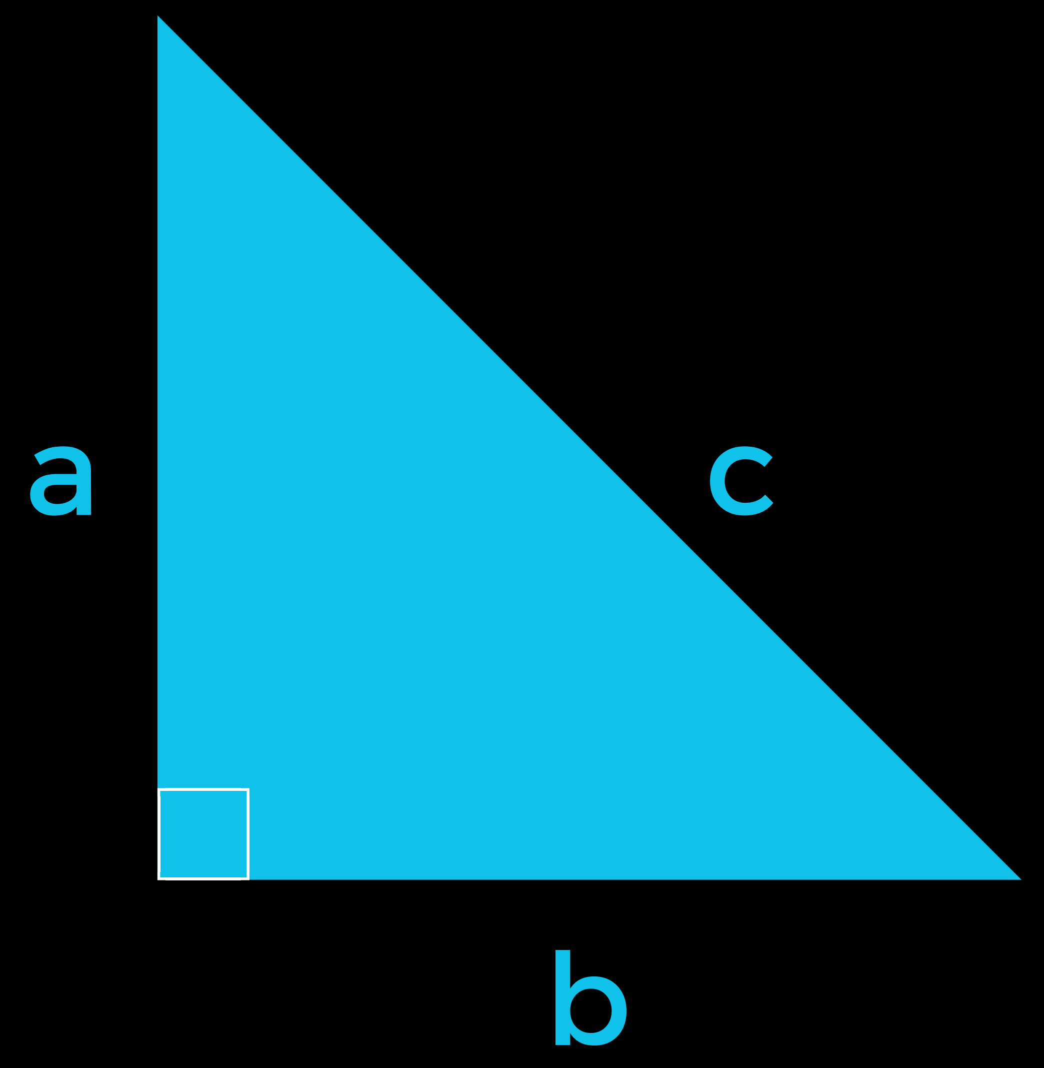
And the number 51224 first begins at the

194,233rd decimal place!

And it will occur an infinite number of times!

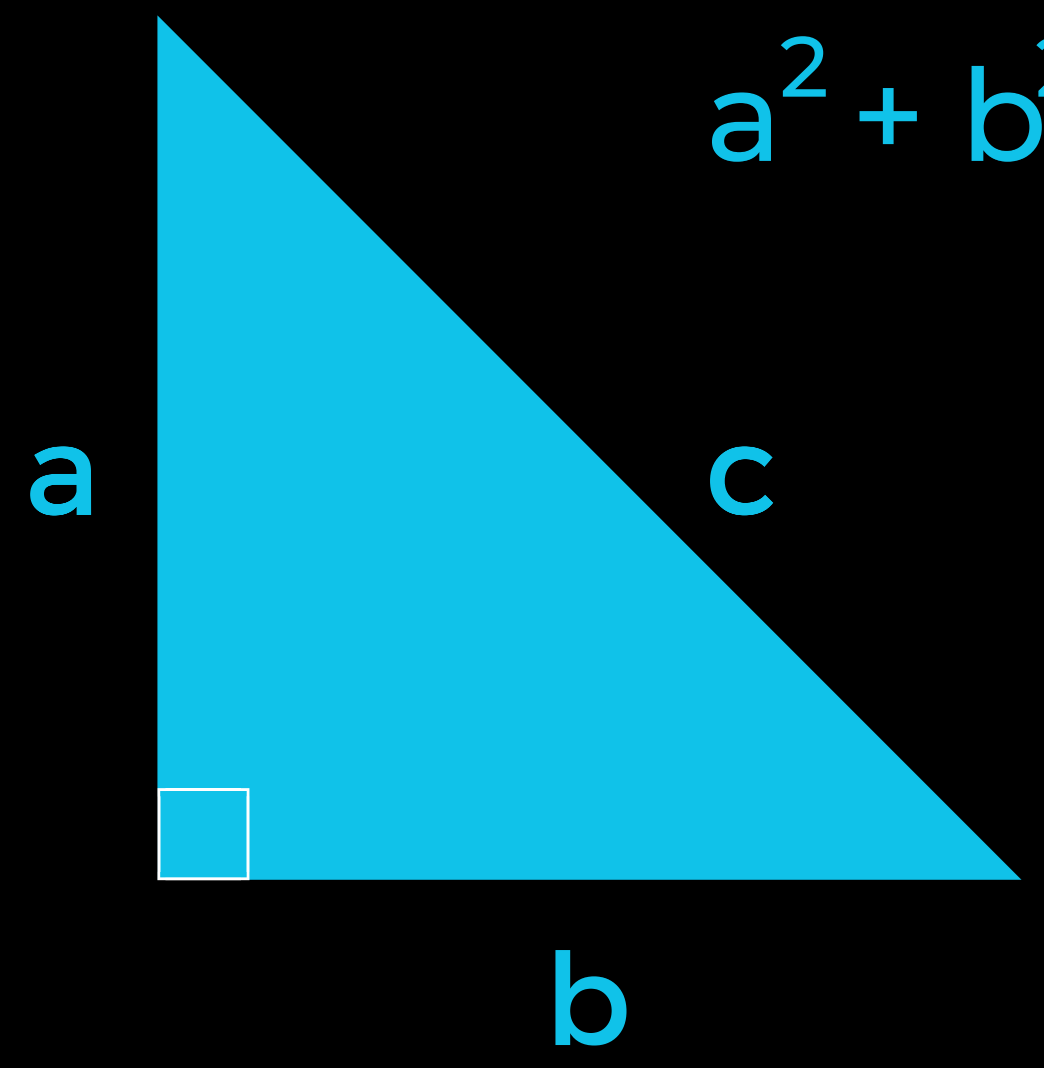
Pythagoras

Pythagoras

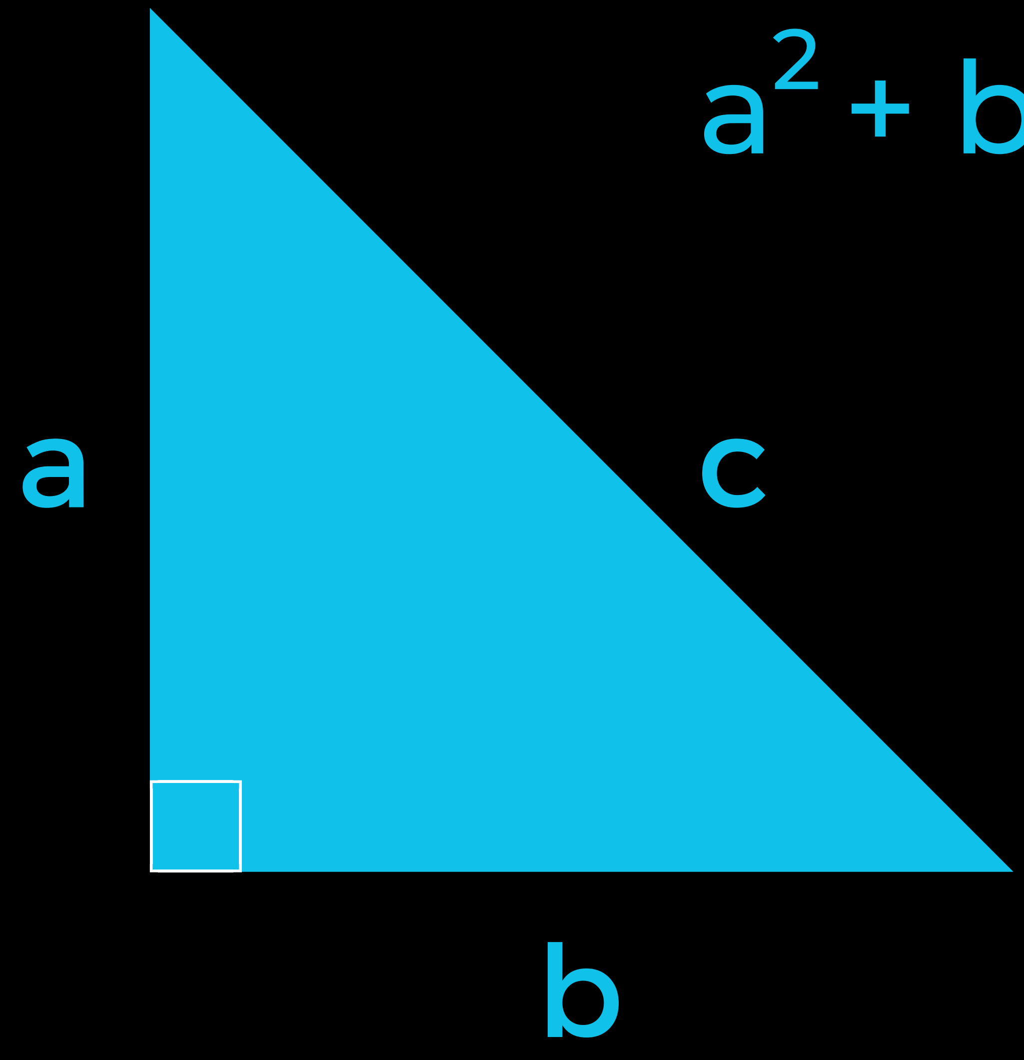


Pythagoras

$$a^2 + b^2 = c^2 \quad !$$



Pythagoras



$a^2 + b^2 = c^2$!

THE MATHEMATICS OF

YOUR SHADOW

You and your shadow
form 2 sides of perhaps the only triangle
with a truly missing side!

THE MATHEMATICS OF

YOUR SHADOW

You and your shadow
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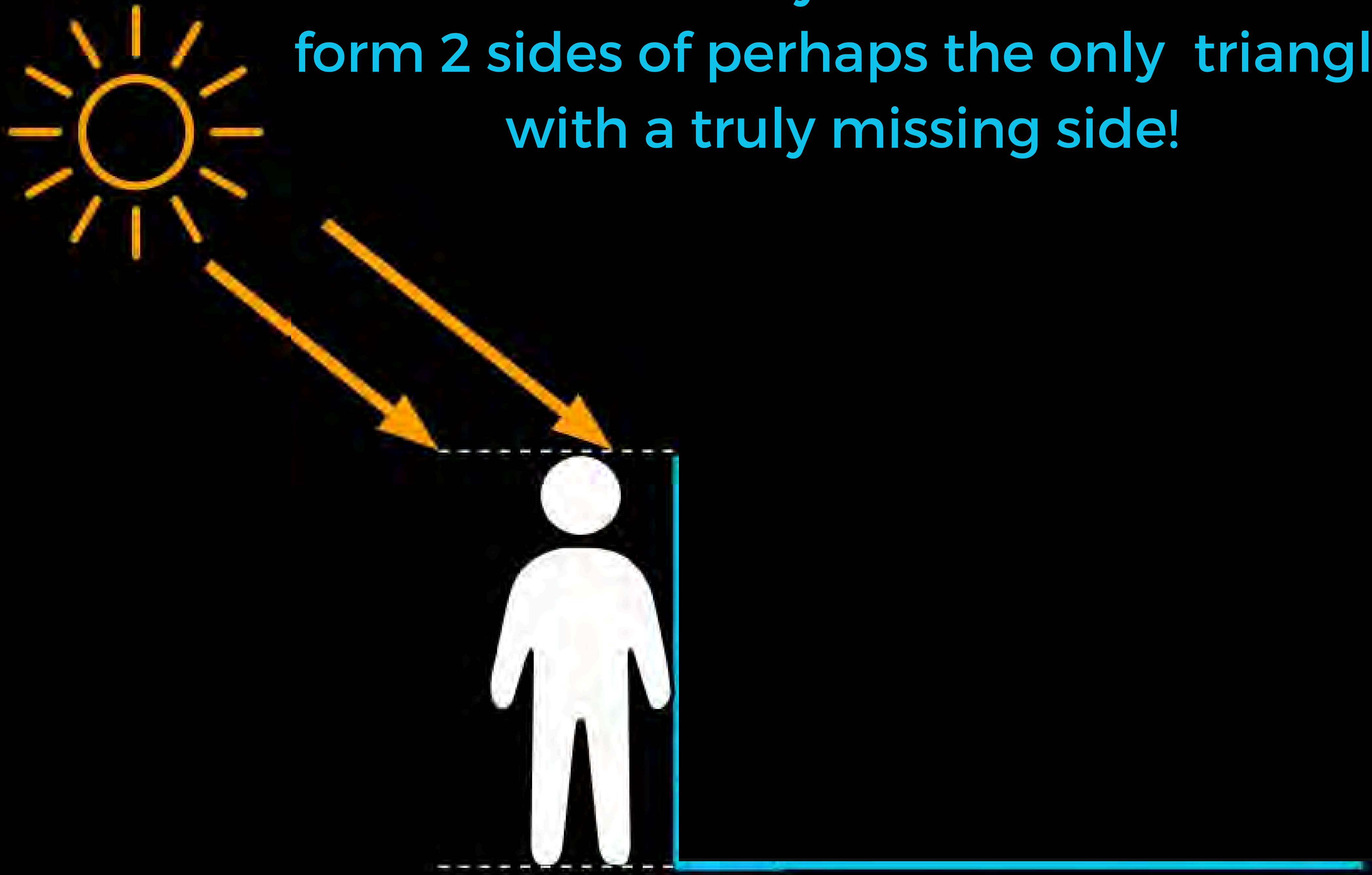
with a truly missing side!



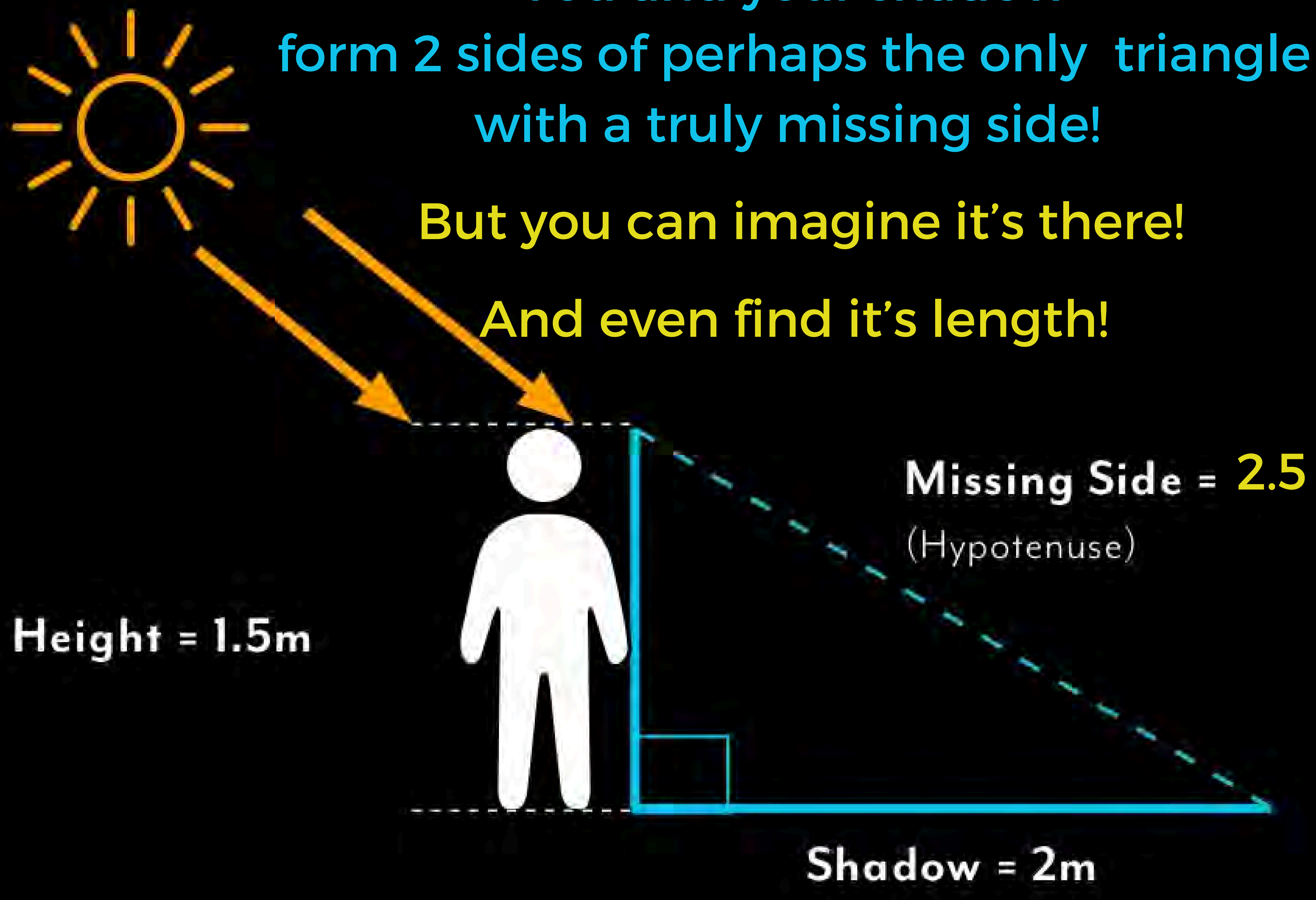
THE MATHEMATICS OF

YOUR SHADOW

You and your shadow
form 2 sides of perhaps the only triangle
with a truly missing side!

But you can imagine it's there!

And even find it's length!



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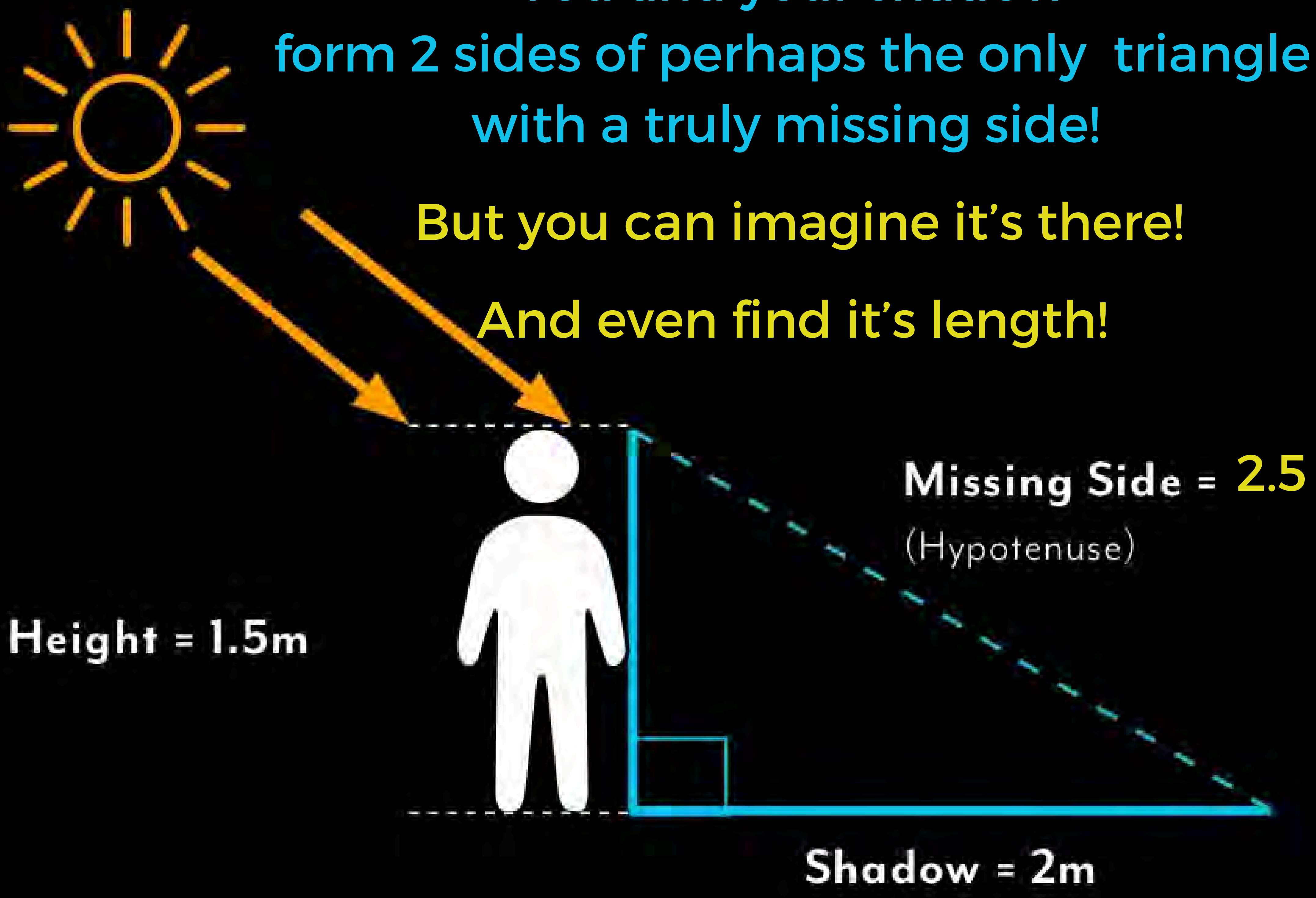
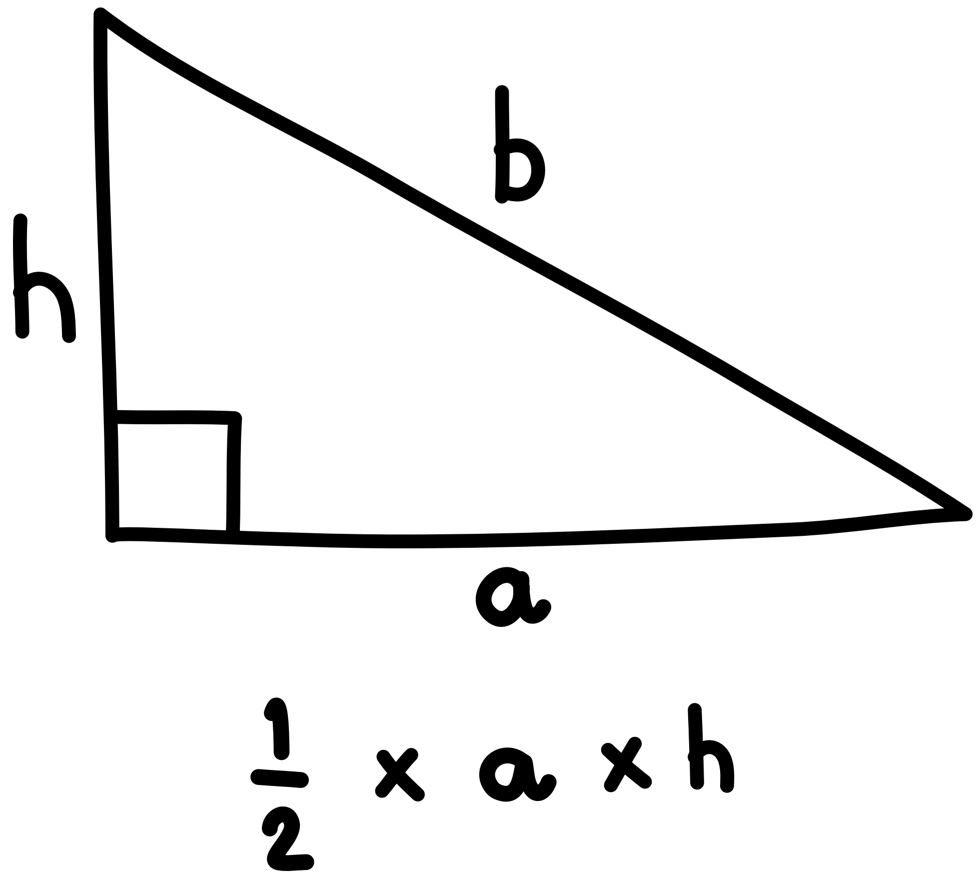
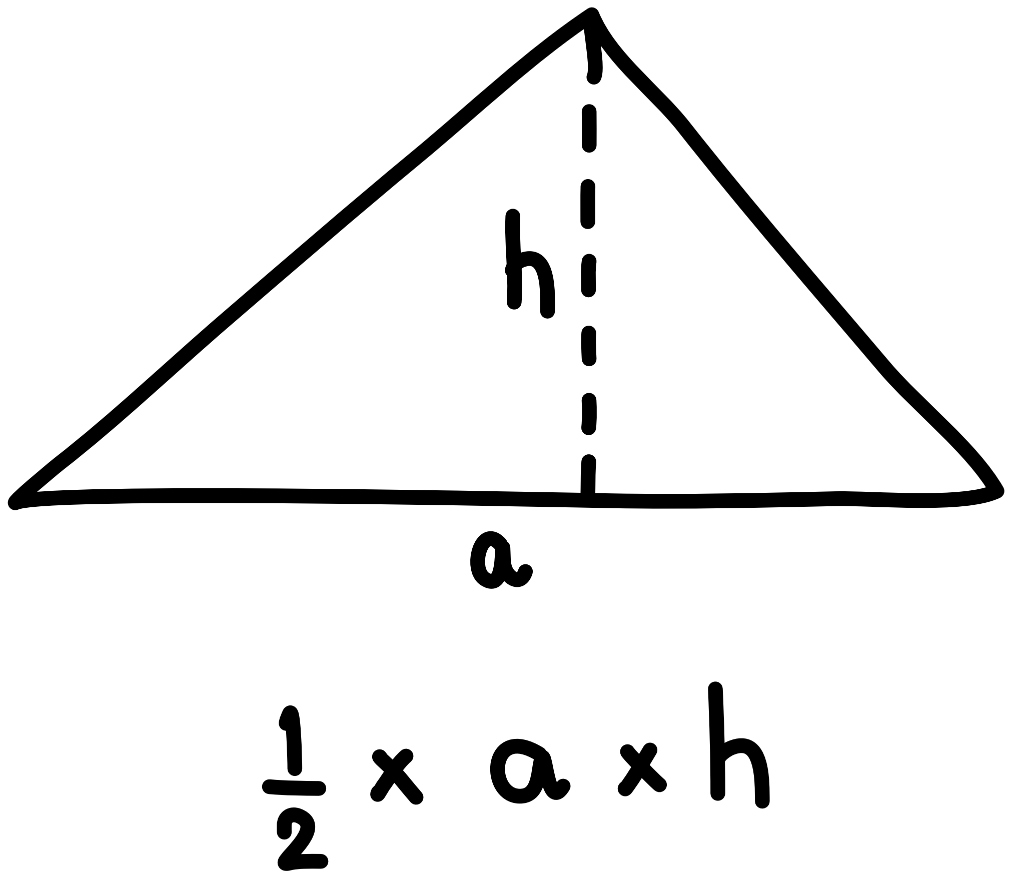
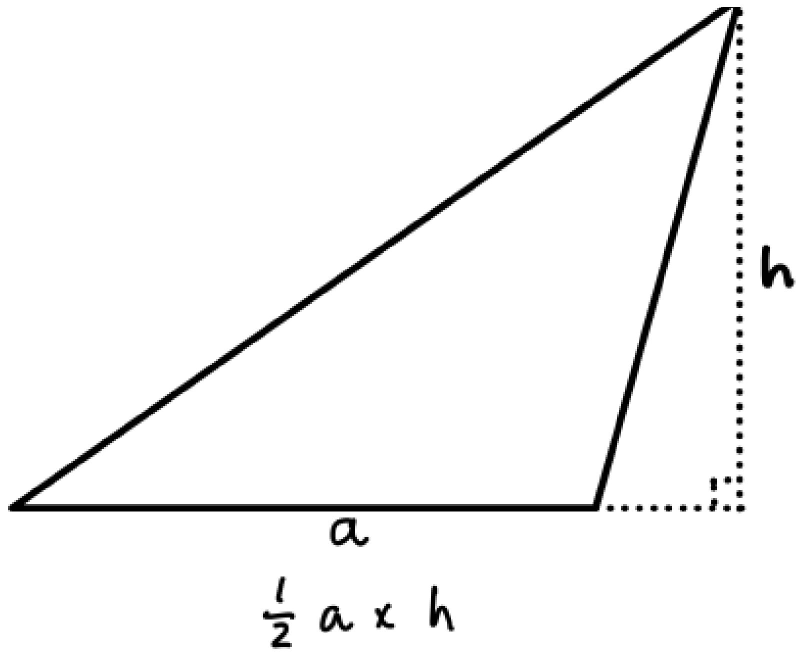


Area of a triangle on a whiteboard

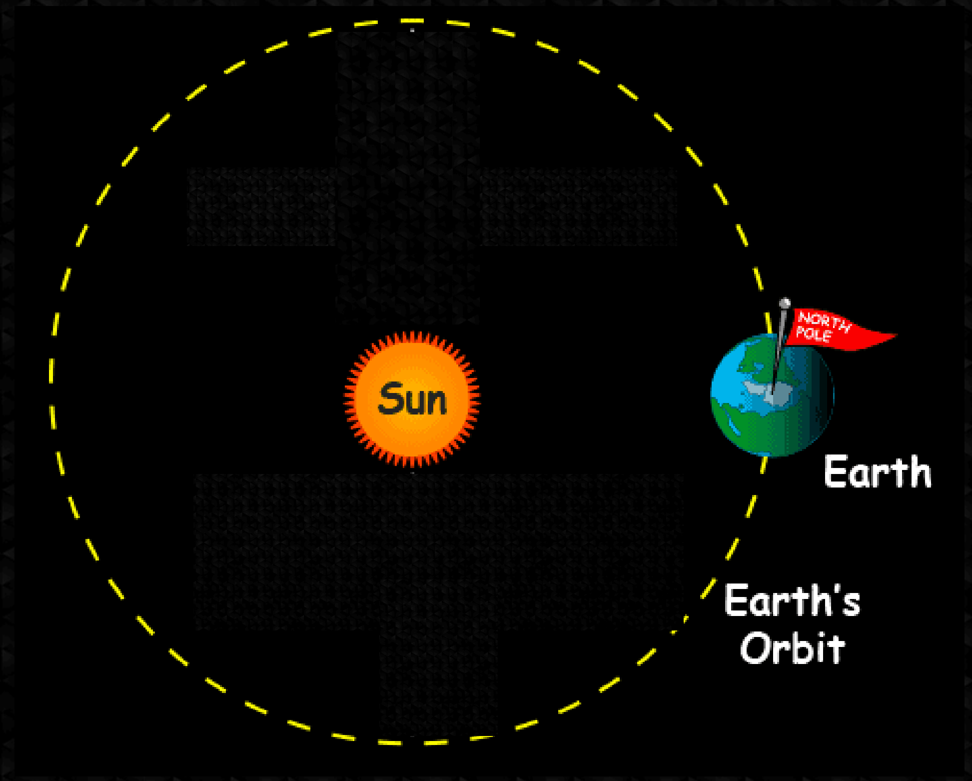




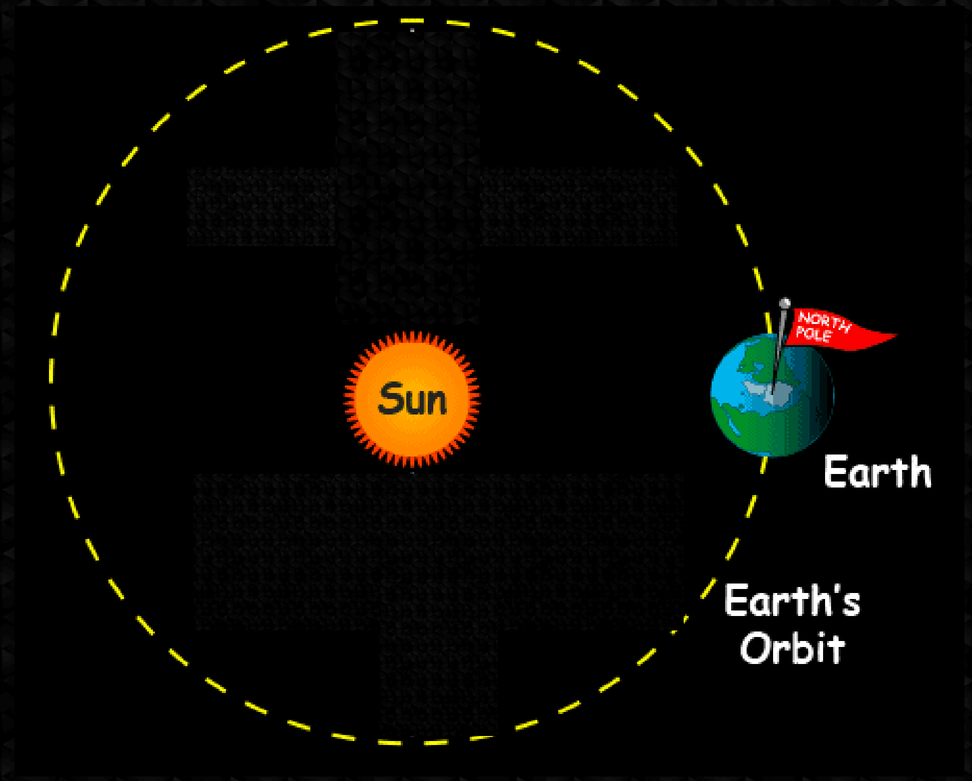


Area of a triangle on a footpath.........

2. Bring the Universe to your classroom!



Do you know how fast we're travelling around the sun?



Do you know how fast we're travelling around the sun?

Radius = 150,000,000 km

The distance is around 950,000,000 kilometres

That’s 950,000,000 km / year

The distance is around 950,000,000 kilometres

That’s 950,000,000 km / year

How far in a second?

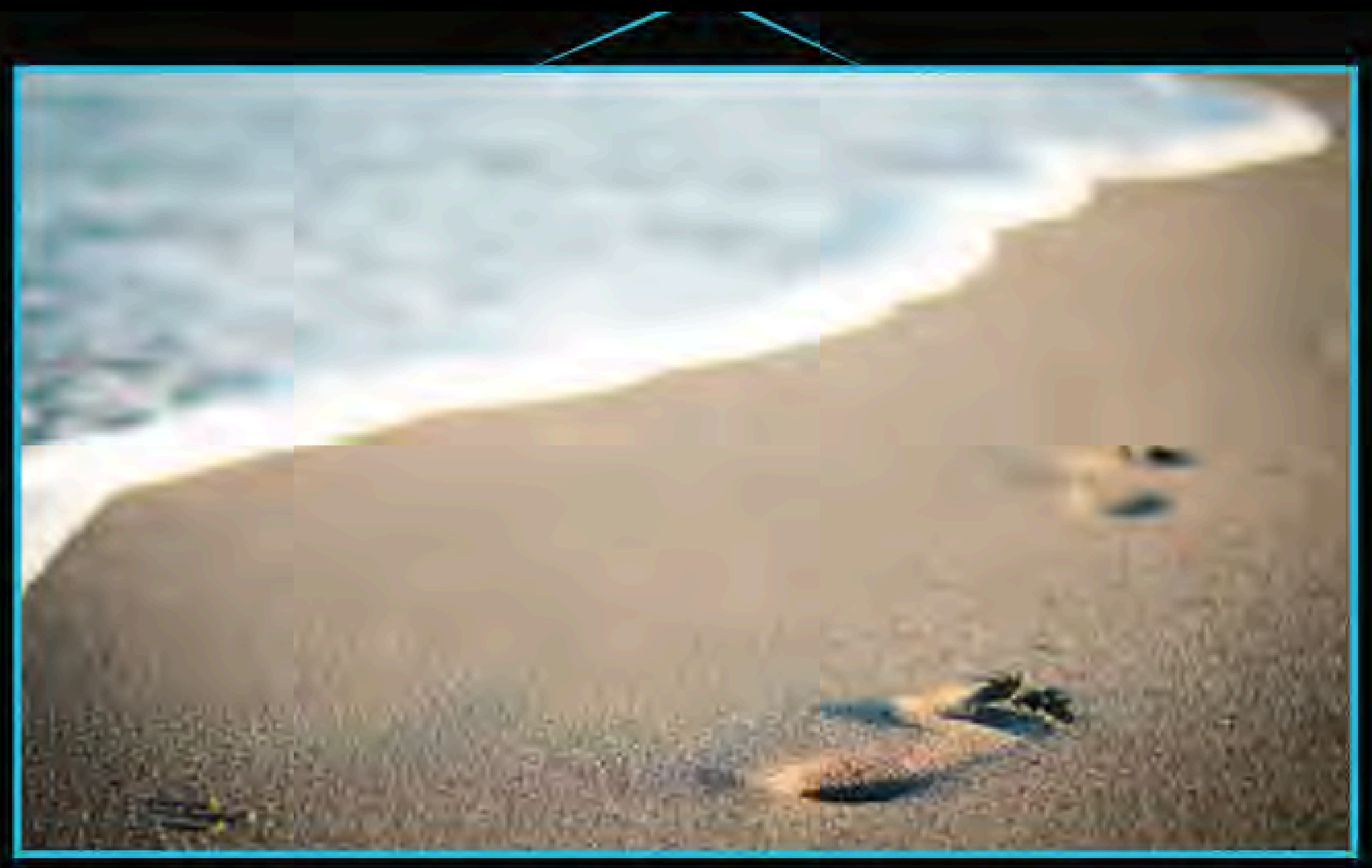
The distance is around 950,000,000 kilometres

That's 950,000,000 km / year

How far in a second? 30km/second!!

During this presentation,
we'll travel 110,000km!

THE MATHEMATICS OF
THE BEACH



THE MATHEMATICS OF THE BEACH

Have you ever wondered
how many grains of sand
there are on a beach?

Could you count them?

How much sand could you count if you
spent your life doing it?

If you counted sand at 1 grain per second for 80 years....

THE MATHEMATICS OF THE BEACH

Counting sand at 1 grain per second

Time	Calculation	Grains counted	% of 1m^3
1 second	1 x 1	1	< 0.0001%
1 minute	1 x 60	60	< 0.0001%
1 hour	60 x 60	3,600	< 0.0001%
1 day	3,600 x 24	86,400	0.0006%
1 year	86,400 x 365.25	31,557,600	0.2%
80 years	31,557,600 x 80	2,524,608,000	16.2%

After 80 years,
you would have counted
less than 20% of 1 cubic metre!.

Counting sand at 1 grain per second

Time	Calculation	Grains counted	% of $1m^3$
1 second	1 x 1	1	< 0.0001%
1 minute	1 x 60	60	< 0.0001%
1 hour	60 x 60	3,600	< 0.0001%
1 day	3,600 x 24	86,400	0.0006%

And you'd also be
more than 2.5 billion seconds old!

And while we’re talking about your age…

When do you turn

1 billion seconds old?

When do you turn

1 billion seconds old?

114 days before your 32nd birthday

Other big birthdays:

Other big birthdays:

Age (billion seconds)	When it occurs
1/4	29 days before 8th birthday
1/2	57 days before 16th birthday
1	114 days before 32nd birthday
1.5	194 days after 47th birthday
2	137 days after 63rd birthday
3	23 days after 95th birthday

Don’t miss them!

Other big birthdays:

Age (billion seconds)	When it occurs
1/4	29 days before 8th birthday
1/2	57 days before 16th birthday
1	114 days before 32nd birthday
1.5	194 days after 47th birthday
2	137 days after 63rd birthday
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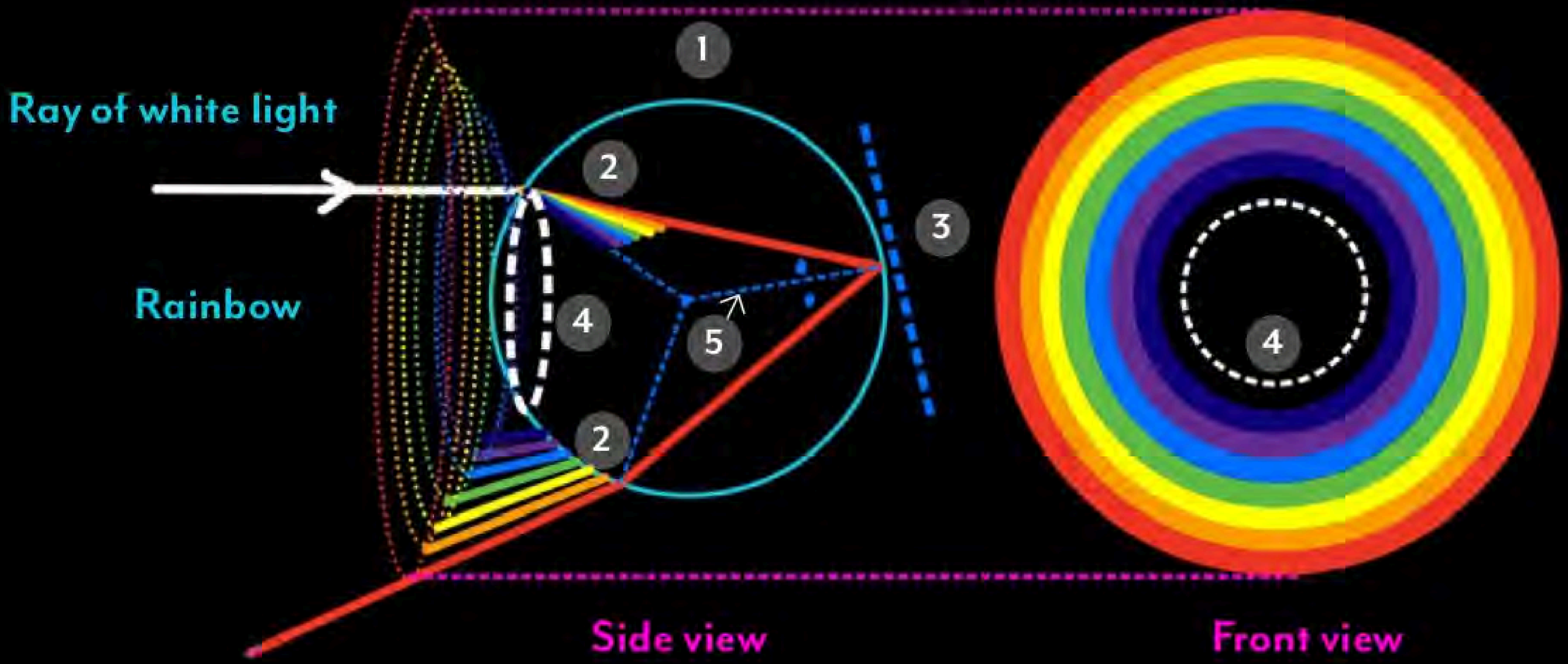
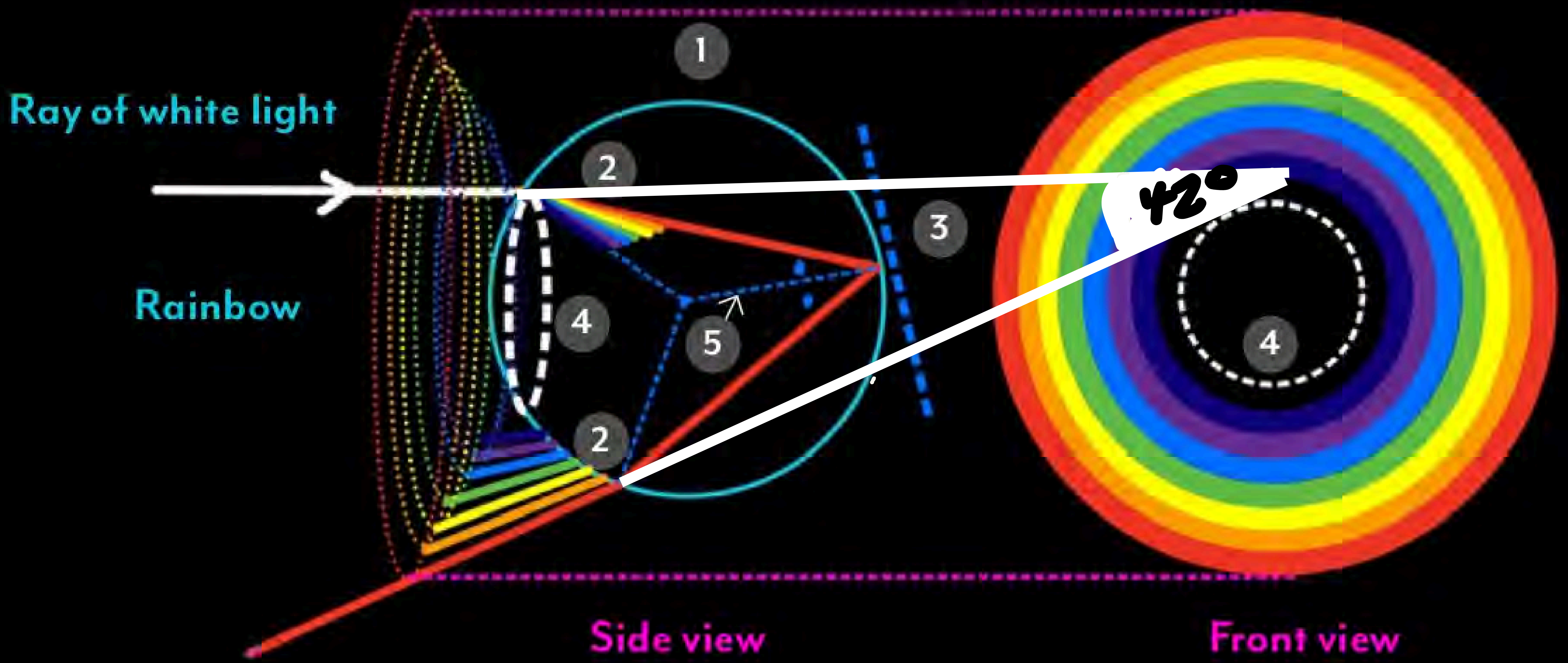
THE MATHEMATICS OF
THE RAINBOW



Angles, speed, waves, reflection, circles



What is this angle? 42°

THE MATHEMATICS OF PAPER

This is a sheet of A4 paper.

Why A4?

THE MATHEMATICS OF PAPER

This is a sheet of A4 paper.

Why A4?

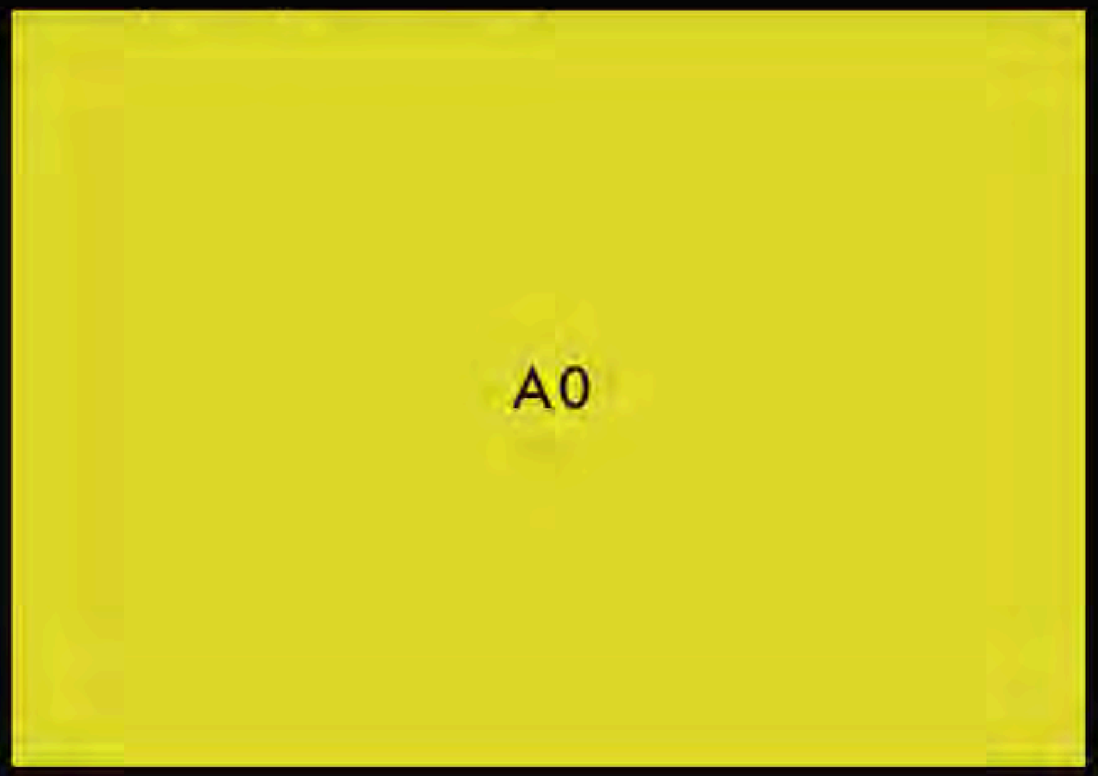
Because you fold A0 4 times to get A4, and....

because its area is 2^{-4} m^2

Meet the A4 family

A4 family

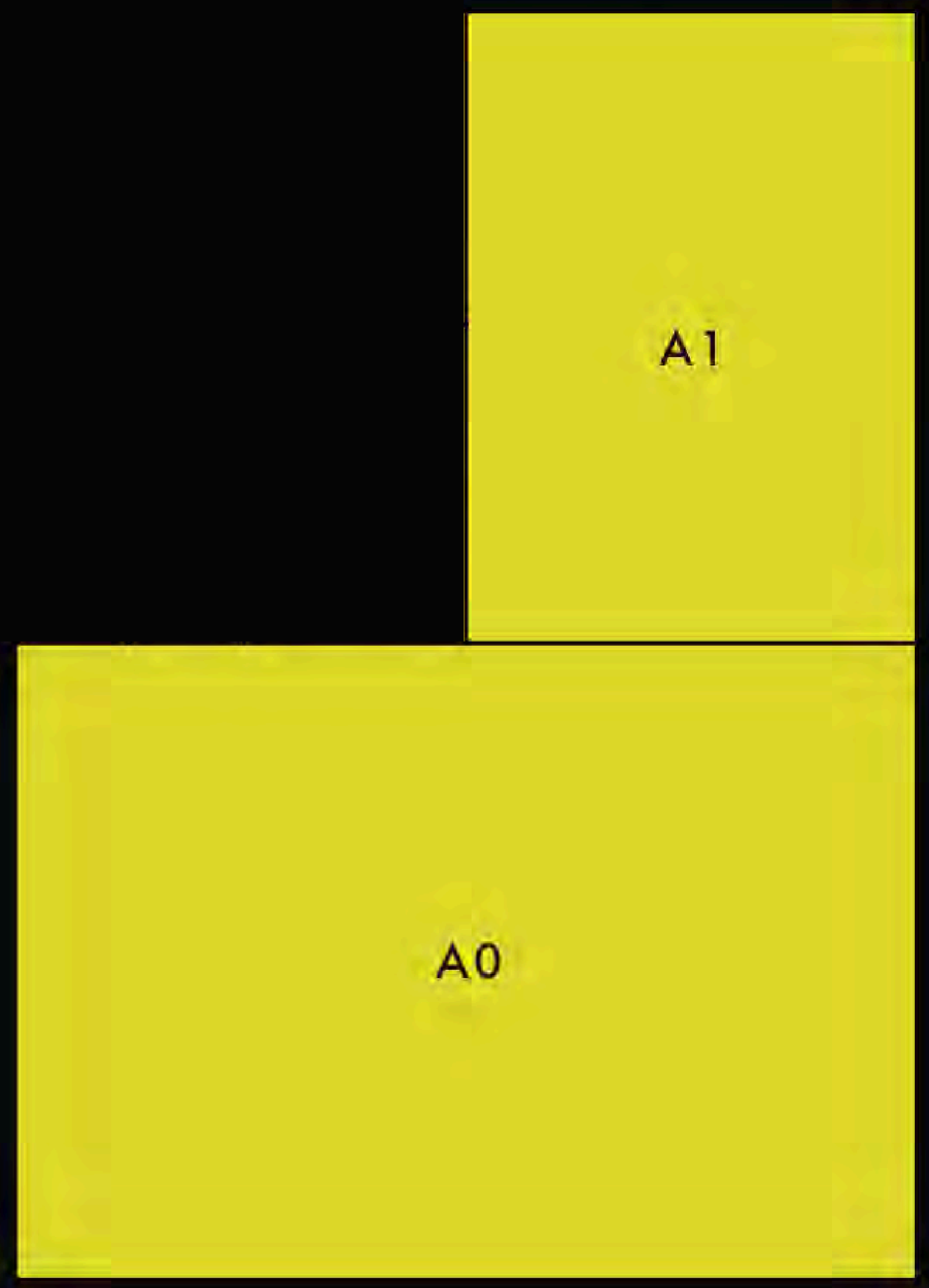
A0 is the largest. Area is $1m^2$. And it weighs 80g (if it's 80gsm)



A4 family

A0 is the largest. Area is $1m^2$

Fold A0 once to get A1 $= 1/2\ m^2 = 2^{-1}$



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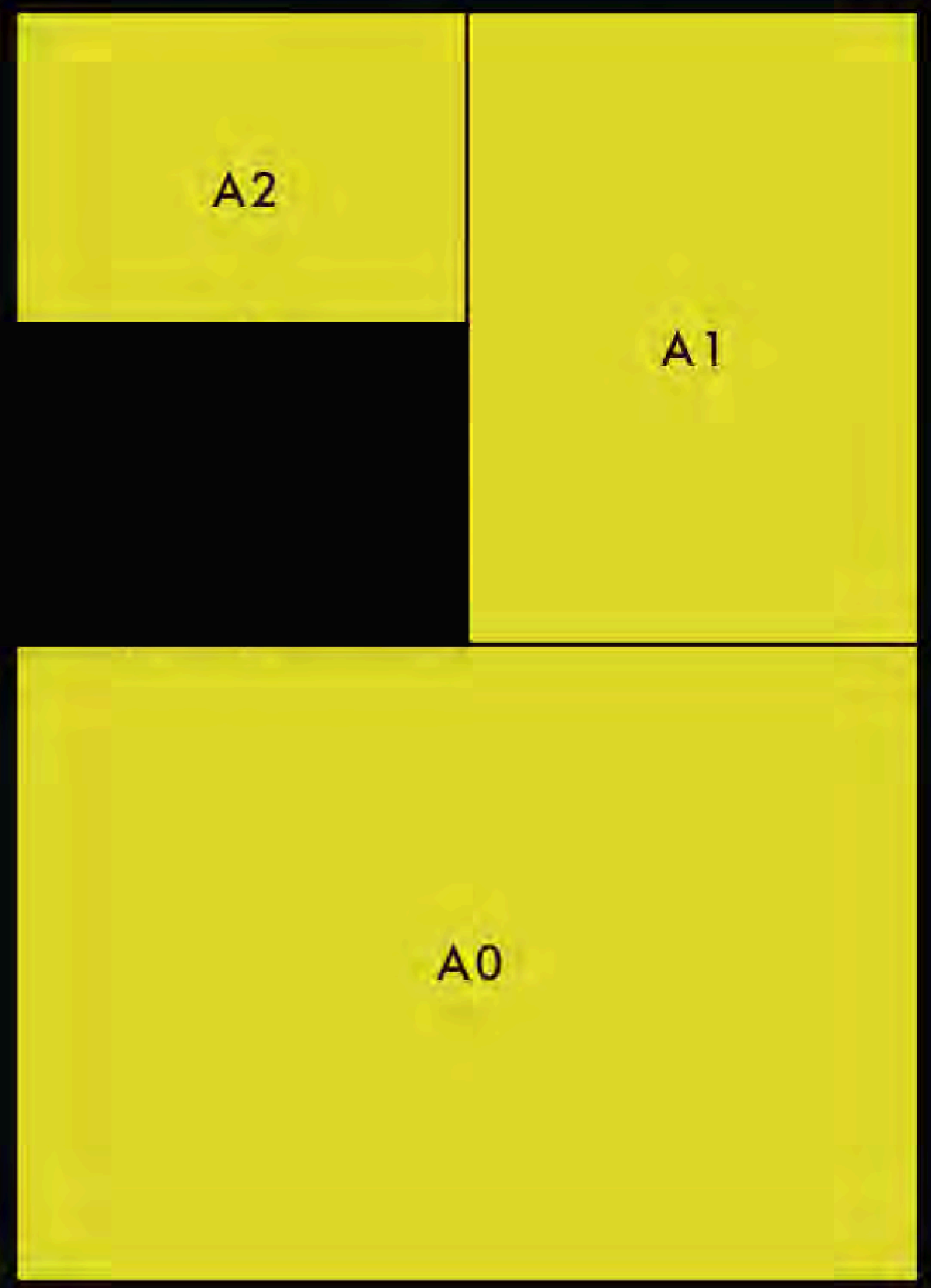
A0 is the largest. Area is $1m^2$

Fold A0 once to get A1 $= 1/2\ m^2 = 2^{-1}$

Fold A0 2 times to get A2 $= 1/4\ m^2 = 2^{-2}$



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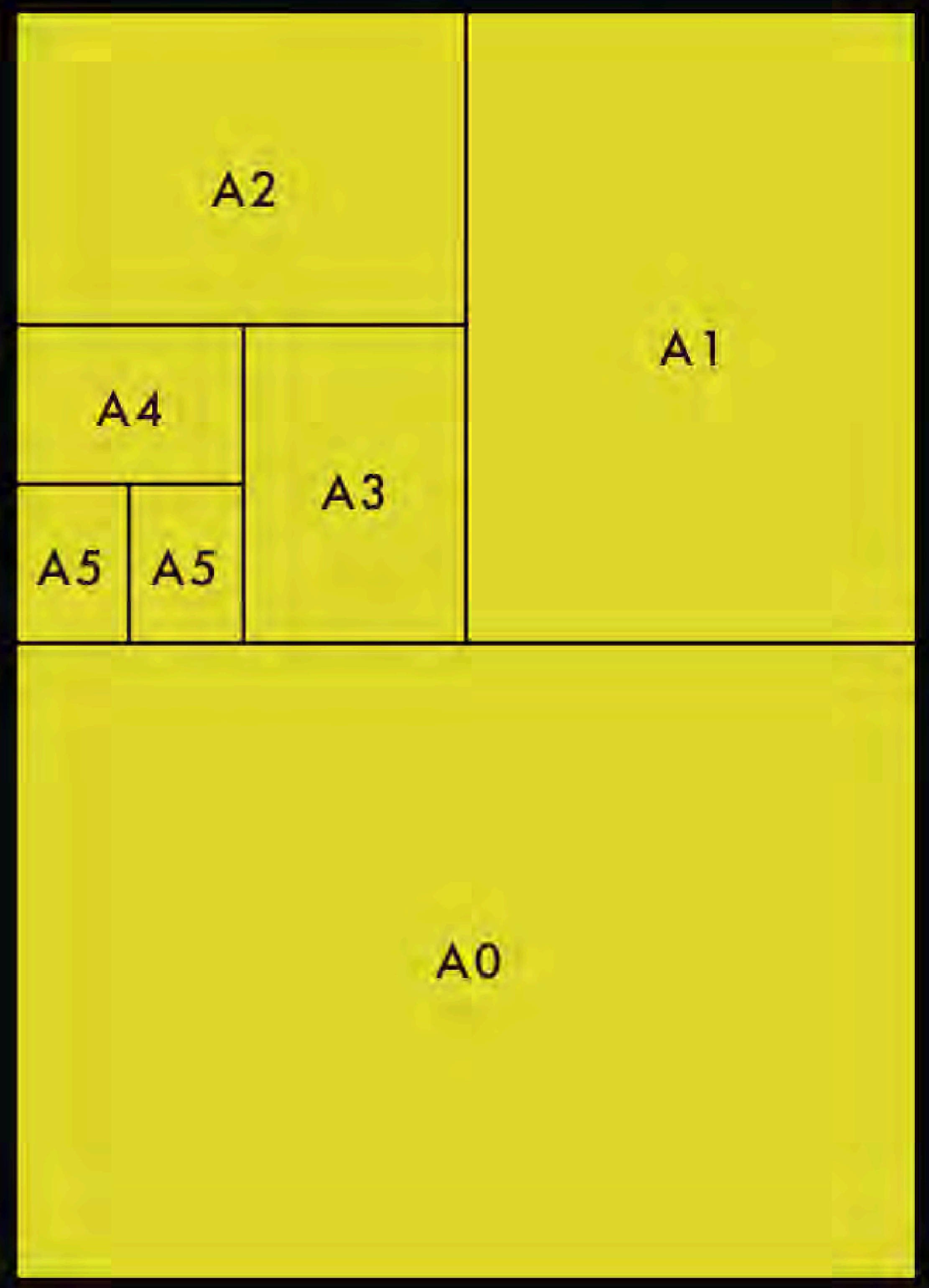
Fold A0 once to get A1 $= 1/2\ m^2 = 2^{-1}$

Fold A0 2 times to get A2 $= 1/4\ m^2 = 2^{-2}$

Fold A0 3 times to get A3 $= 1/8\ m^2 = 2^{-3}$

Fold A0 4 times to get A4 $= 1/16\ m^2 = 2^{-4}$

Fold A0 5 times to get A5 $= 1/32\ m^2 = 2^{-5}$



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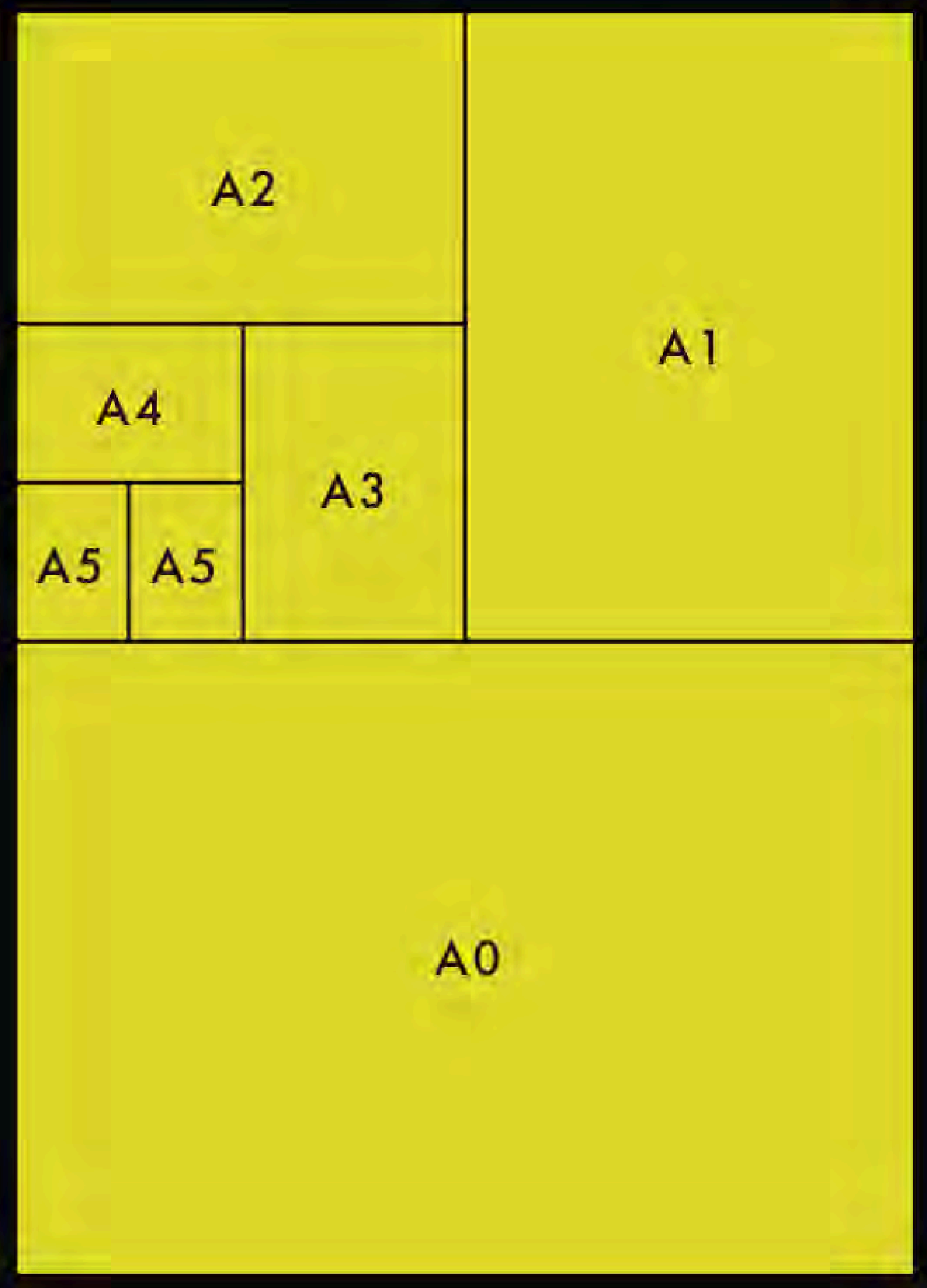
Fold A0 4 times to get A4 $= 1/16\ m^2 = 2^{-4}$

Fold A0 5 times to get A5 $= 1/32\ m^2 = 2^{-5}$



So what are the dimensions of the A4 page?

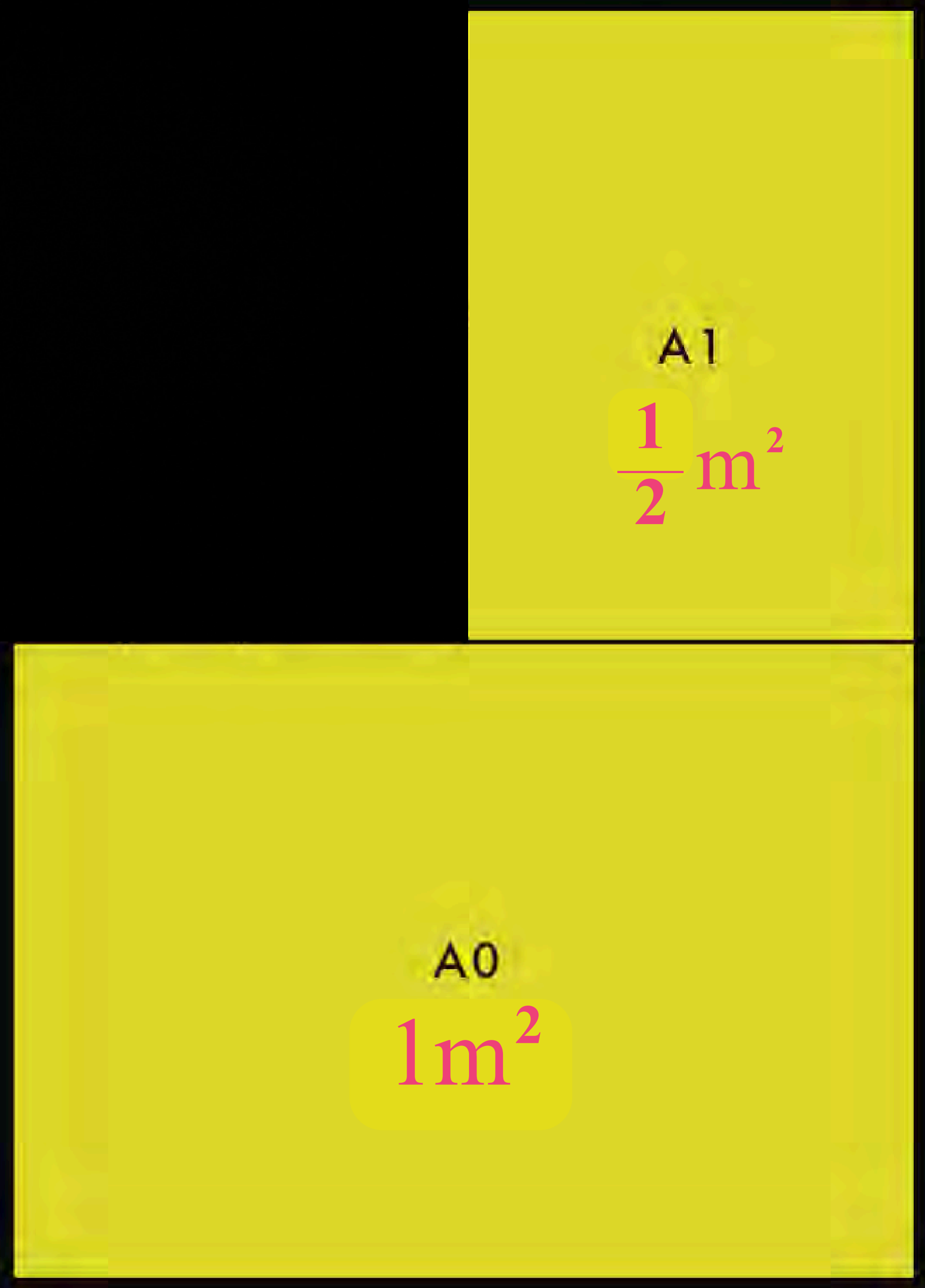
A4 family

A0 is the largest. Its area is $1m^2$

The area of a size is half the area of its predecessor

The length of A0 is the width of A1, and so on.

Each size is mathematically similar to all the other sizes.



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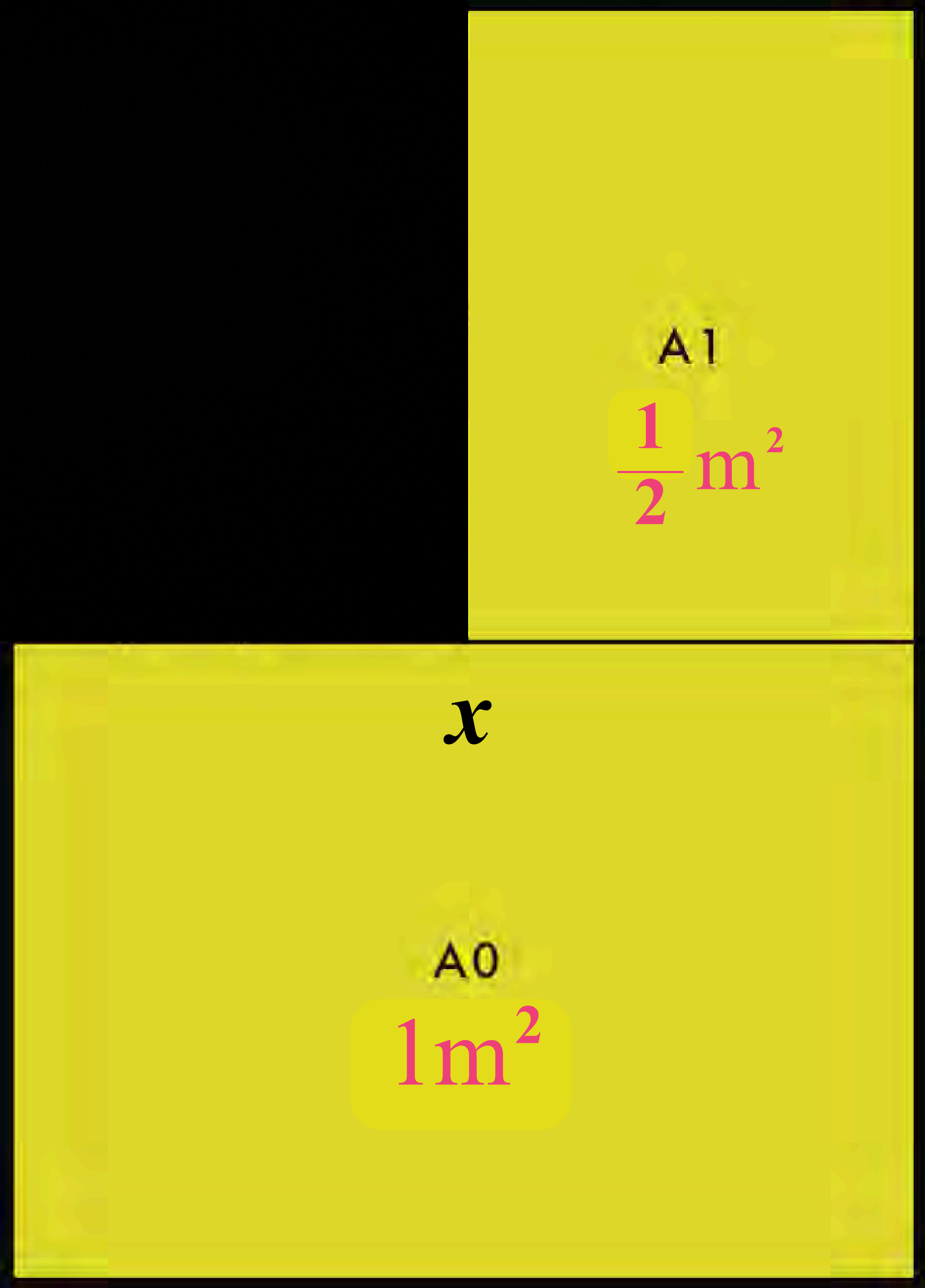
Let x be the length of A0. ....



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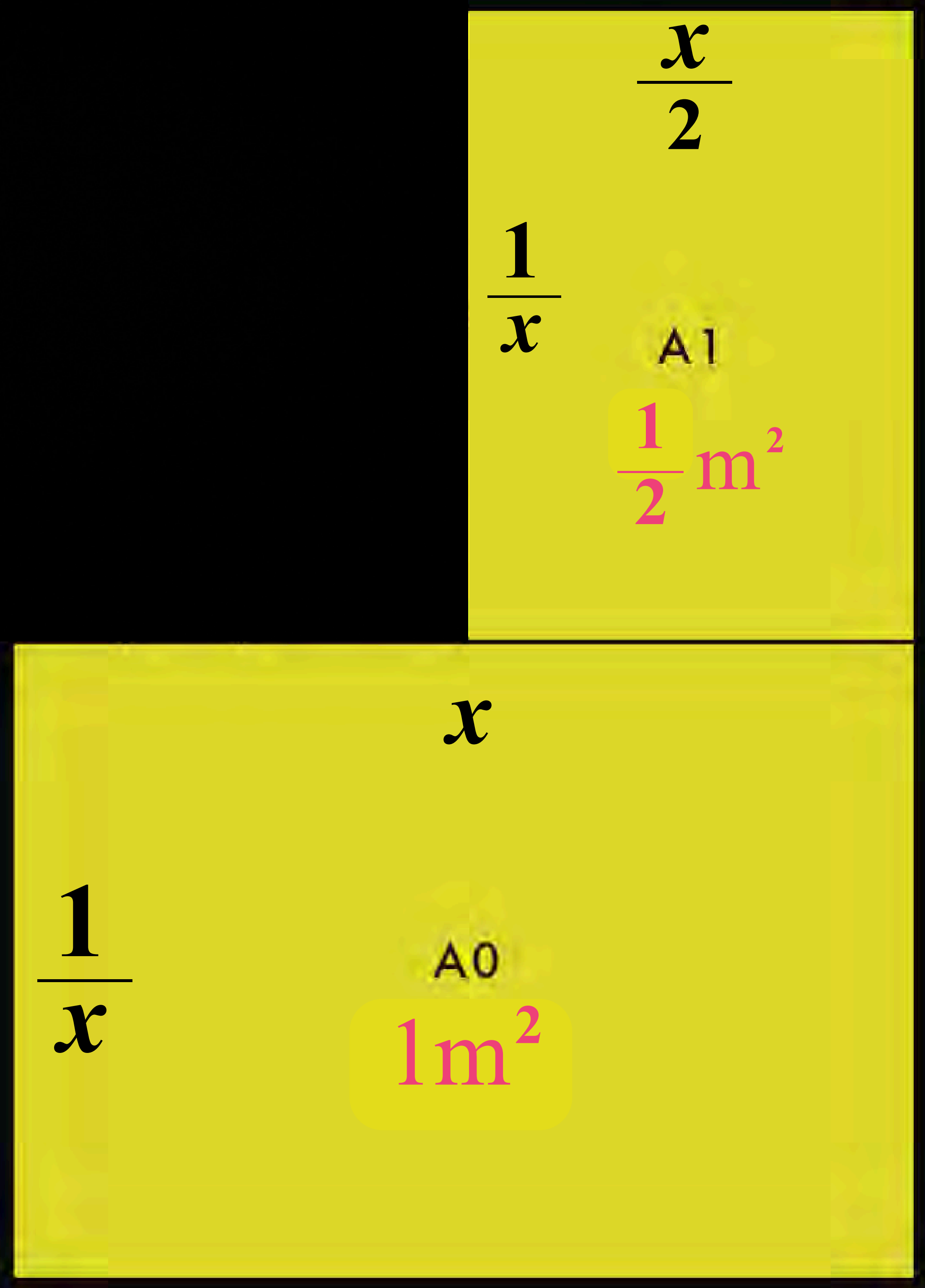

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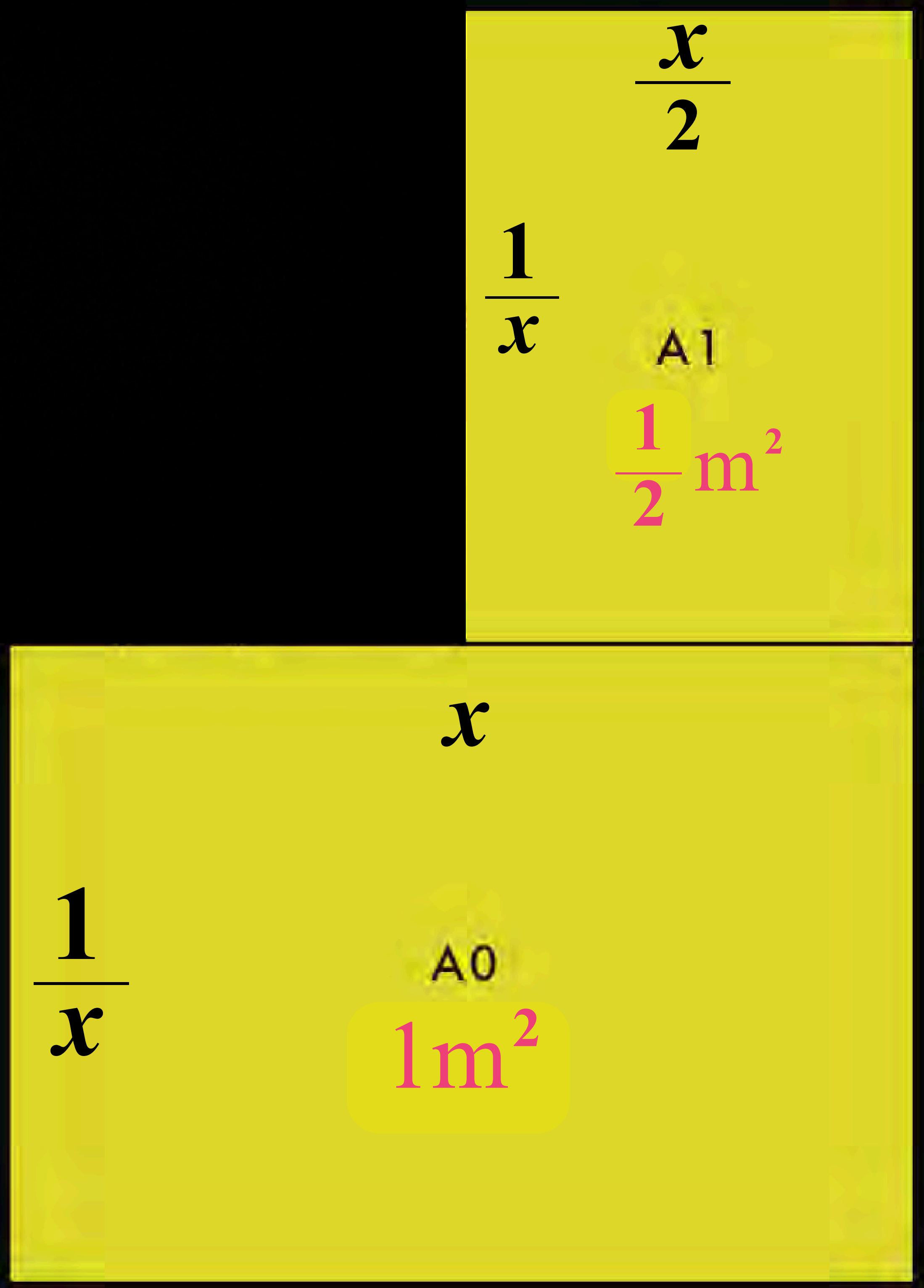


$$x : \frac{1}{x} = \frac{1}{x} : \frac{x}{2}$$

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

$$x^4 = 2$$

$$x = \sqrt[4]{2} = 2^{1/4}$$

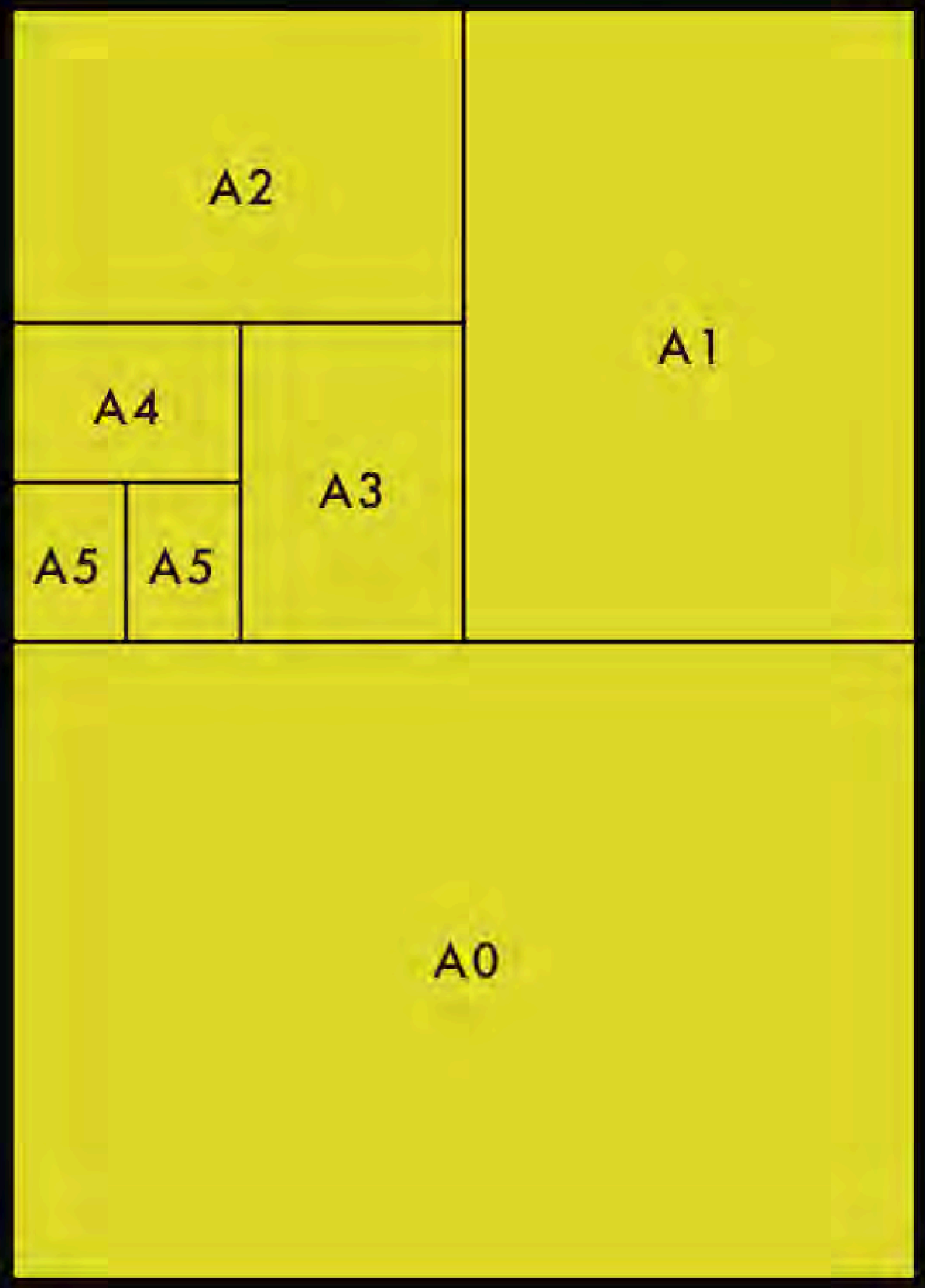
Therefore:

The length of A0 = $2^{1/4}$

width is = $2^{-1/4}$

A0 A1 A2 A3 A4

$2^{1/4}$ $2^{-1/4}$ $2^{-3/4}$ $2^{-5/4}$ $2^{-7/4}$ $2^{-9/4}$



Exact A4 dimensions

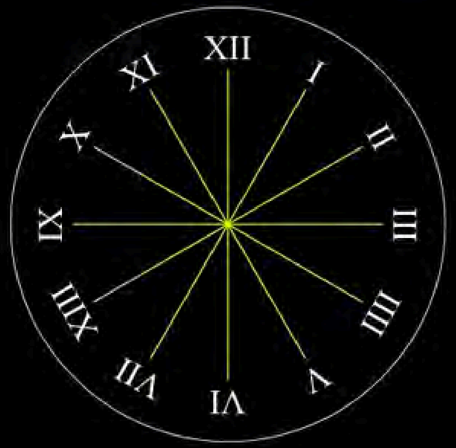
$2^{-7/4}$ = 0.291m

$2^{-9/4}$ = 0.210m

Algebra, Surds, Indices, Fractions, Ratios, Similarity, Measurement

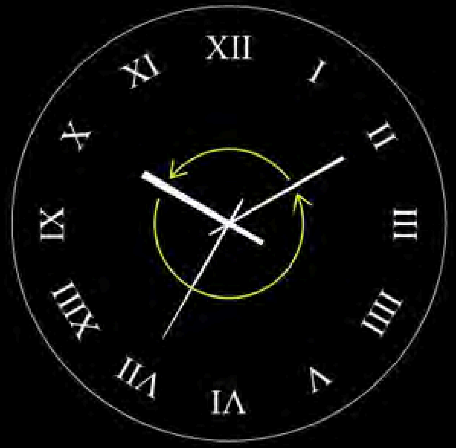
THE MATHEMATICS OF **THE CLOCK**

When you look at an analogue clock, what do you see? Some hands that tell the time? Look a bit closer - there's a lot more maths to behold!



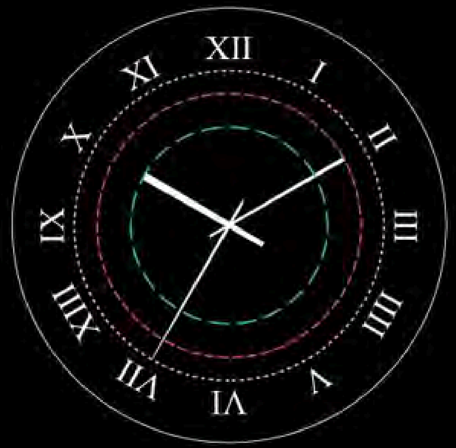
Fractions

Each minute represents $\frac{1}{60}$ of an hour; two minutes represents $\frac{1}{30}$ of an hour, 3 minutes $\frac{1}{20}$; 4 minutes $\frac{1}{15}$, 5 minutes $\frac{1}{12}$; 6 minutes $\frac{1}{10}$; 10 minutes $\frac{1}{6}$, 15 minutes $\frac{1}{4}$, 30 minutes $\frac{1}{2}$, and so on.



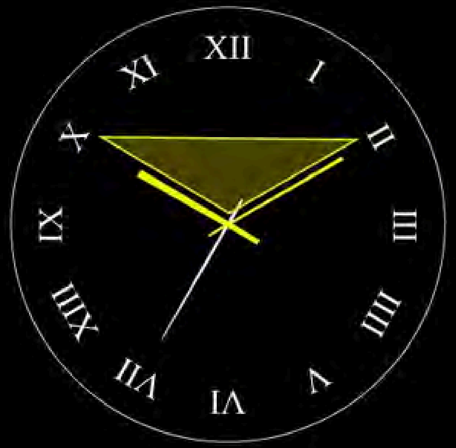
Angles

The hour hand and the minute hand (and the second hand, if there is one), are separated by an angle that is constantly changing.



Speed

The hands are travelling at different speeds. In fact, every point on each hand is travelling at a different speed! It's because each point is tracing out a circle when it moves, and each circle all have different radii, and therefore different circumferences. Yet each point travels around their circle in the same time, so they must each be travelling at a different speed! That's mind blowing!



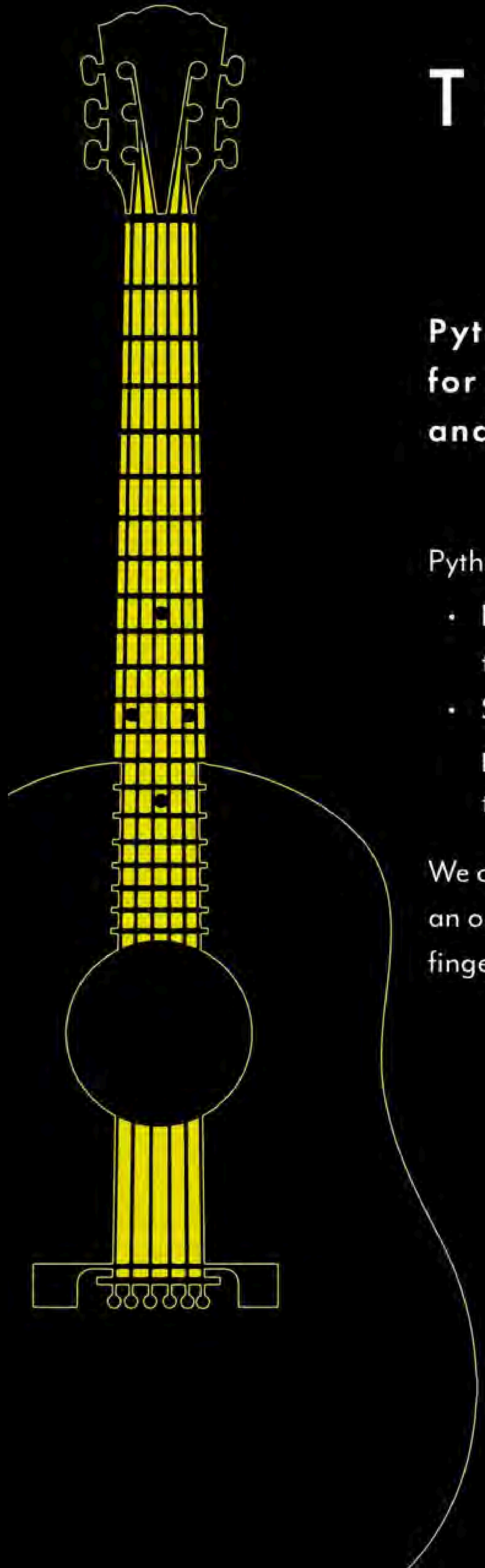
Triangles

The hour and the minute hands form two sides of a triangle. Can you picture the missing side? The triangle changes over the course of each hour between scalene, right and isosceles, but is never equilateral (unless the hour and the minute hands are the same size). And if you do a bit more Maths, you can work out when each type of triangle is formed, and the area and perimeter of the triangle.

FACT

Did you know a clock is often numbered with Roman Numerals.
Interestingly, the number 4 is generally represented on clocks as 'IIII' instead of the usual 'IV'.

THE MATHEMATICS OF **THE GUITAR**



Pythagoras is most famous for Pythagoras's Theorem (described in March). However he is also well known for his contribution to music. He experimented with strings of different thicknesses, lengths and tensions, and found that dividing the string in simple fractions produced notes that were harmonious.

Pythagoras discovered that:

- Halving the length of a string produced the same note an octave higher.
- Shortening a string by $\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{4}$ produced notes that sounded good with the original note.

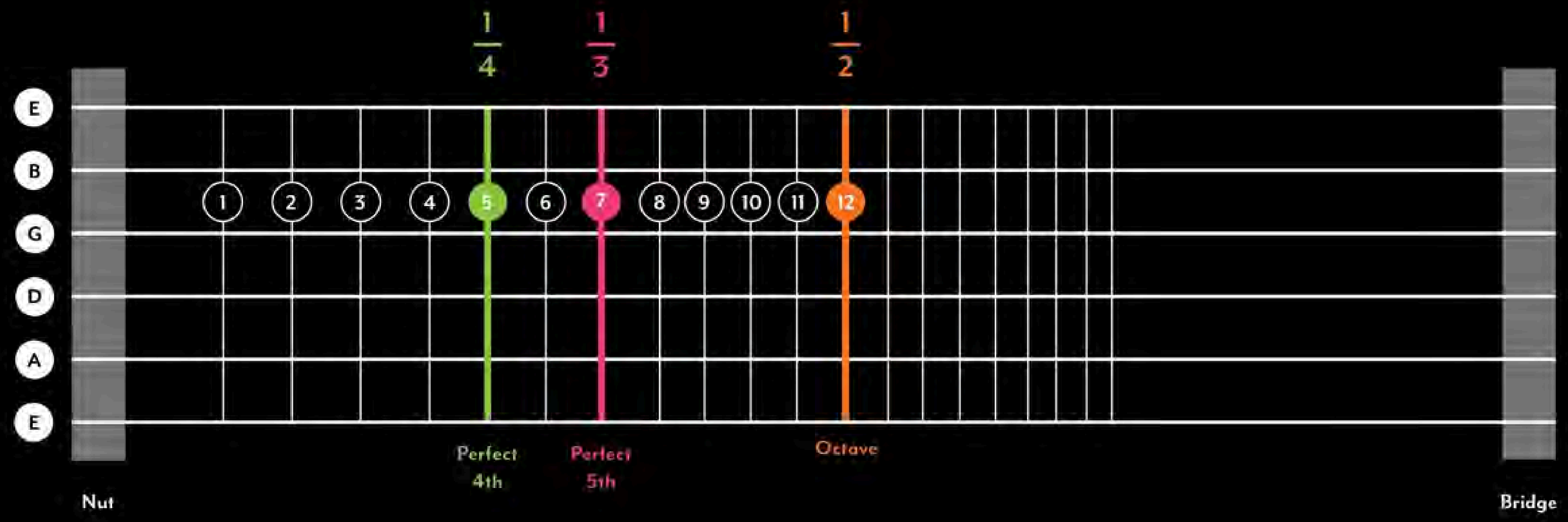
We can demonstrate this with a guitar. Play an open string, then play the string with your finger placed on the 5th fret. Repeat with the 7th fret, and then the 12th fret. Do you hear how good it sounds?

When you place your finger on the **5th** fret of any string, you're reducing the length of the string by $\frac{1}{4}$. Similarly, holding the **7th** fret reduces the string's length by $\frac{1}{3}$. And holding the **12th** fret reduces the string's length by $\frac{1}{2}$. And notice the 12th fret produces the open string one octave higher!

You could say that good music is the result of harmonious fractions working together!

The way the frets are positioned on a guitar is highly mathematical too. The positions are determined by dividing the open string length by the 12th root of 2, $\sqrt[12]{2}$.

So next time you pick up a guitar listen for the maths in your music!



THE MATHEMATICS OF

THE SUNFLOWER

There are few things as happy as a field of sunflowers in full bloom. They also showcase the mathematics that's everywhere around us. When sunflowers are growing, one side grows in the daytime and the other at night, which gives the effect of them turning towards the sun.

When you look at a sunflower more closely, even more fascinating things emerge. Can you see the seeds are in a spiral pattern?

The number of seeds in each spiral is a Fibonacci number! (The first 10 Fibonacci numbers are; 0, 1, 1, 2, 3, 5, 8, 13, 21, 34. Each number is the sum of the previous two numbers).

The spiral pattern follows an amazing formula which the French Mathematician Pierre Fermat is credited with discovering, and so it is called Fermat's spiral.

Koboldy(https://commons.wikimedia.org/wiki/File:Sunflower.svg), "Sunflower",https://creativecommons.org/licenses/by-sa/3.0/legalcode

Photo: Cass Holmes on Unsplash

THE MATHEMATICS OF

THE PIZZA

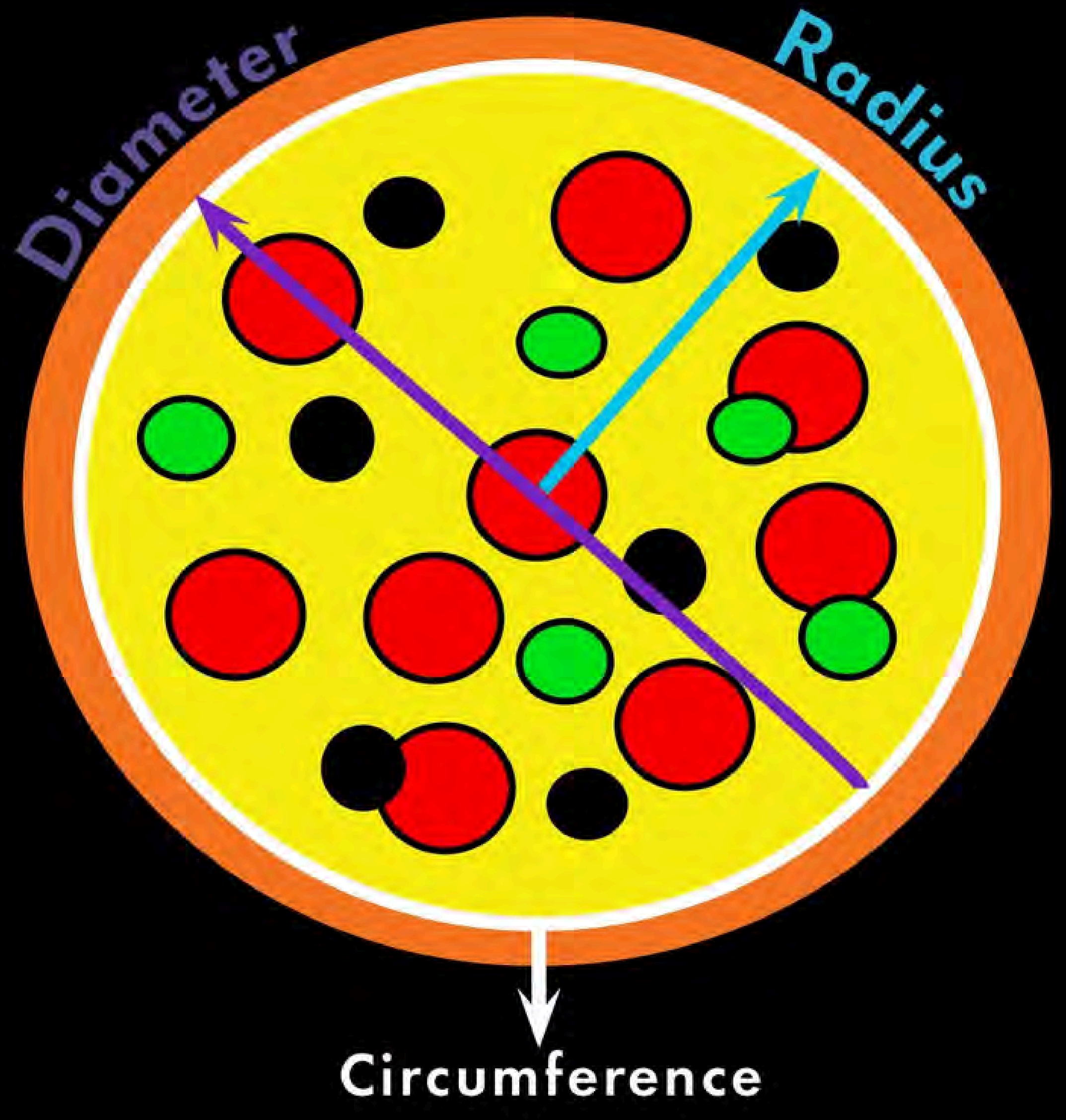
Pizza! Everyone likes pizza!! Perhaps it's because inside each slice there is a delicious chunk of mathematics!

The size of a pizza usually refers to its diameter. By halving the diameter we get the radius. With the radius (r), we can work out the pizza's circumference (C), and its area (A)! Because for any circle, $C = 2\pi r$, and $A = \pi r^2$.

When a pizza is cut into slices, each slice is a sector of the circle. It almost looks like a triangle, but the outside edge isn't a straight line.

If you want to ensure you cut your pizza into identical slices, you could use a protractor! The angle at the centre of the circle is 360^{o}. So if you want to cut the pizza into 8 equal slices, the angle of each would be $360 \div 8 = 45^{o}$. Or you could cut it in half, then halve each half, then halve the quarters, giving you eighths!

Pi (π) = the result when you divide the circumference of a circle by its diameter. It doesn't matter how big or small the circle is, you'll always get the same result. Mind blowing, isn't it!



If a 12 inch pizza costs $20, and a 16 inch pizza costs $25, which is the better value for money?

We can work out the answer by calculating the area of the two pizzas, and dividing each by its price. This will tell you how much pizza you get for $1.

The 12-inch pizza gives you 5.8 square inches for $1, while the 16-inch gives you 8.0 square inches. So the 16-inch is better value!

Diameter = a straight line that goes from one side of a circle to the other, and passes through the centre.

Radius = a straight line from the centre of a circle to the circumference. It's half the diameter.

Circumference = the length of the outside of a circle.

THE MATHEMATICS OF

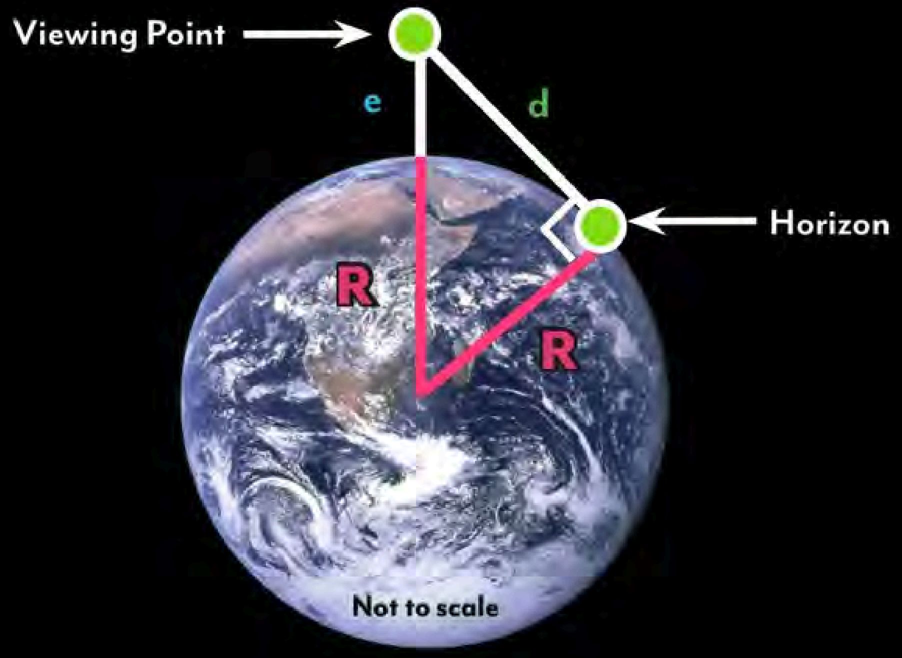
THE HORIZON

Horizons are associated with dreams, the future, the wonderful world we live in and even infinity - similar to what comes to mind when you think about maths! And no wonder - the horizon is a very mathematical concept!

The horizon is the apparent boundary between the earth and the sky. It's the place where roads and railway lines disappear into. It looks like a straight line, yet it is curved, just as the earth is curved. Have you ever thought how far the horizon might be? Once again, Pythagoras comes to the rescue because there's a right triangle at work!

The distance depends on your elevation above sea level. If we let e be the elevation, R be the radius of the earth (approximately 6378 km), and d be the distance to the horizon, we can form a right triangle (see picture).

Pythagoras' Theorem (see May) tells us that $(R + e)^2 = d^2 + R^2$. If we simplify this and make the assumption that the elevation is very small compared to the radius, we get d is approximately equal to $\sqrt{(2eR)}$.



Another mind blowing fact is that if people with different heights are viewing the horizon, at different elevations, the distance will change for each of them! See the table below:

	Elevation: 0m	Elevation: 10m	Elevation: 100m	Elevation: 1km
Height of Person	Horizon Distance	Horizon Distance	Horizon Distance	Horizon Distance
1m	3.6km	11.8km	37.4km	112.9km
1.5m	4.4km	12.1km	38.3km	113.0km
2m	5.0km	12.4km	39.1km	113.0km

Photo: Anthony Adu on Unsplash

THE MATHEMATICS OF

THE ROTARY CLOTHESLINE

Do you ever think about maths when you're hanging out the washing? There's a lot of maths going on, although it might be hiding in plain sight.

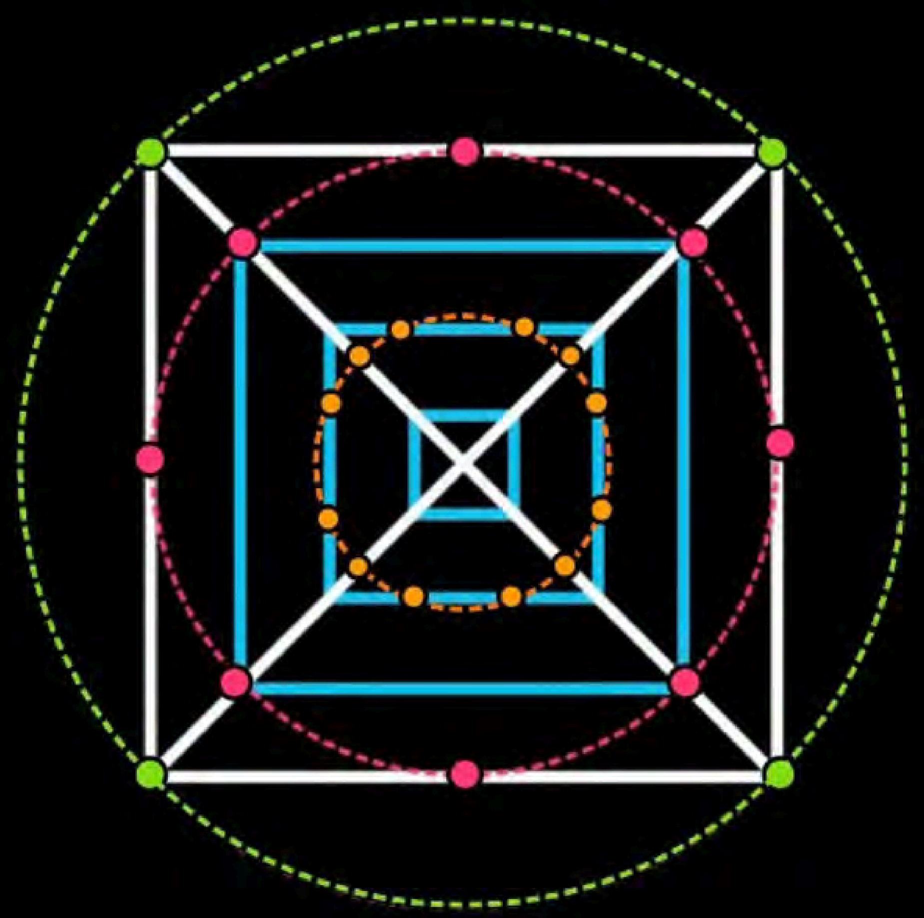
One of the most mind-blowing things about a clothesline is that when it turns, all the points on each individual line are moving at different speeds! That's because each point of the clothesline moves in a circle (also a bit mind-blowing!), and the speed depends on the distance around the outside of the circle. There are an infinite number of these circles!

Top View of the Clothesline

The 12 orange points are travelling at the same speed.

The 8 pink points are travelling at the same speed, but faster than the orange points.

The 4 green points are travelling at the same speed, but faster than the pink and orange points.



FUN FACT

Did you know that triangles are used to animate shapes in games and movies?

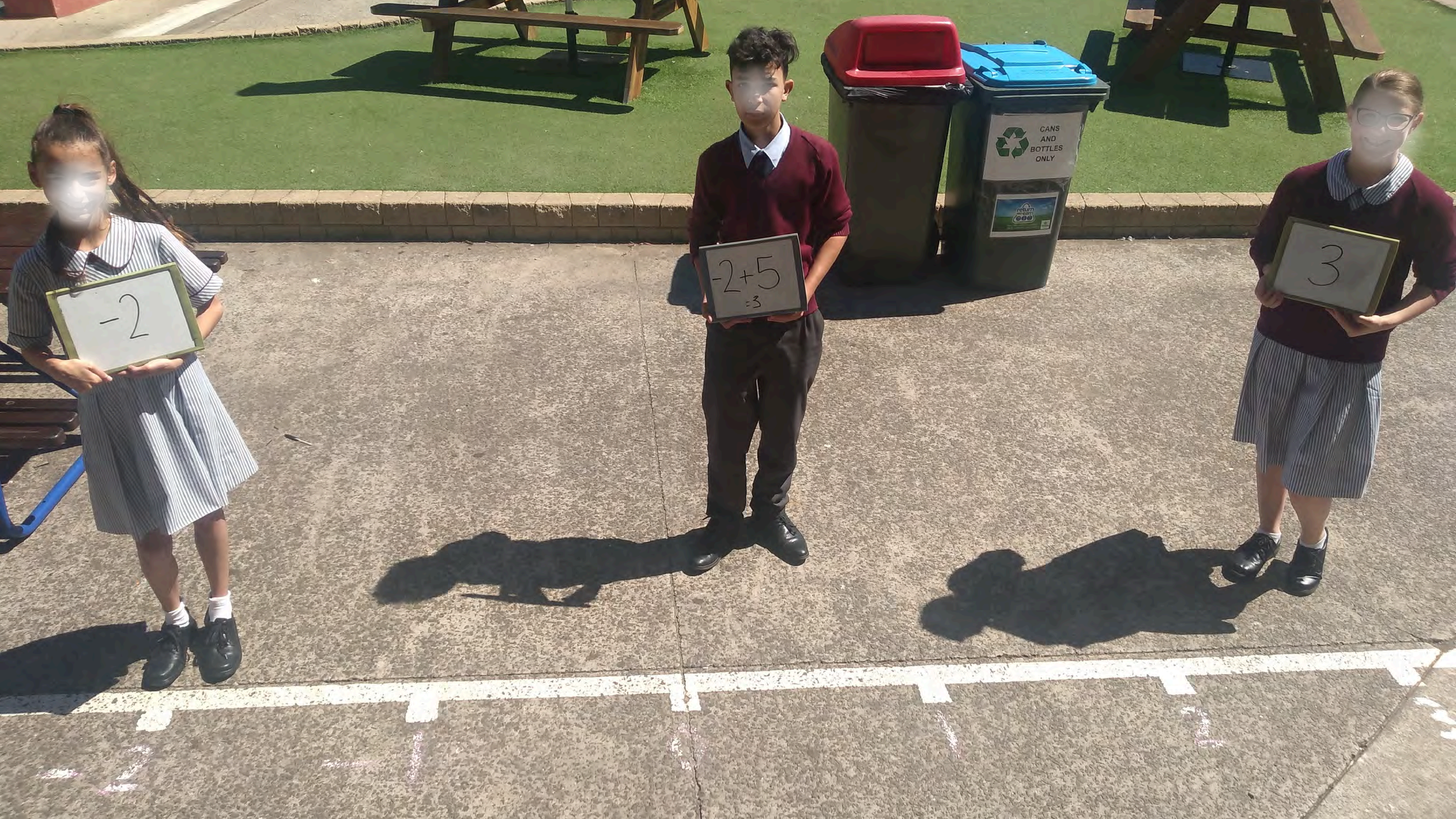
There's an abundance of shapes and other mathematical constructions in a clothesline:

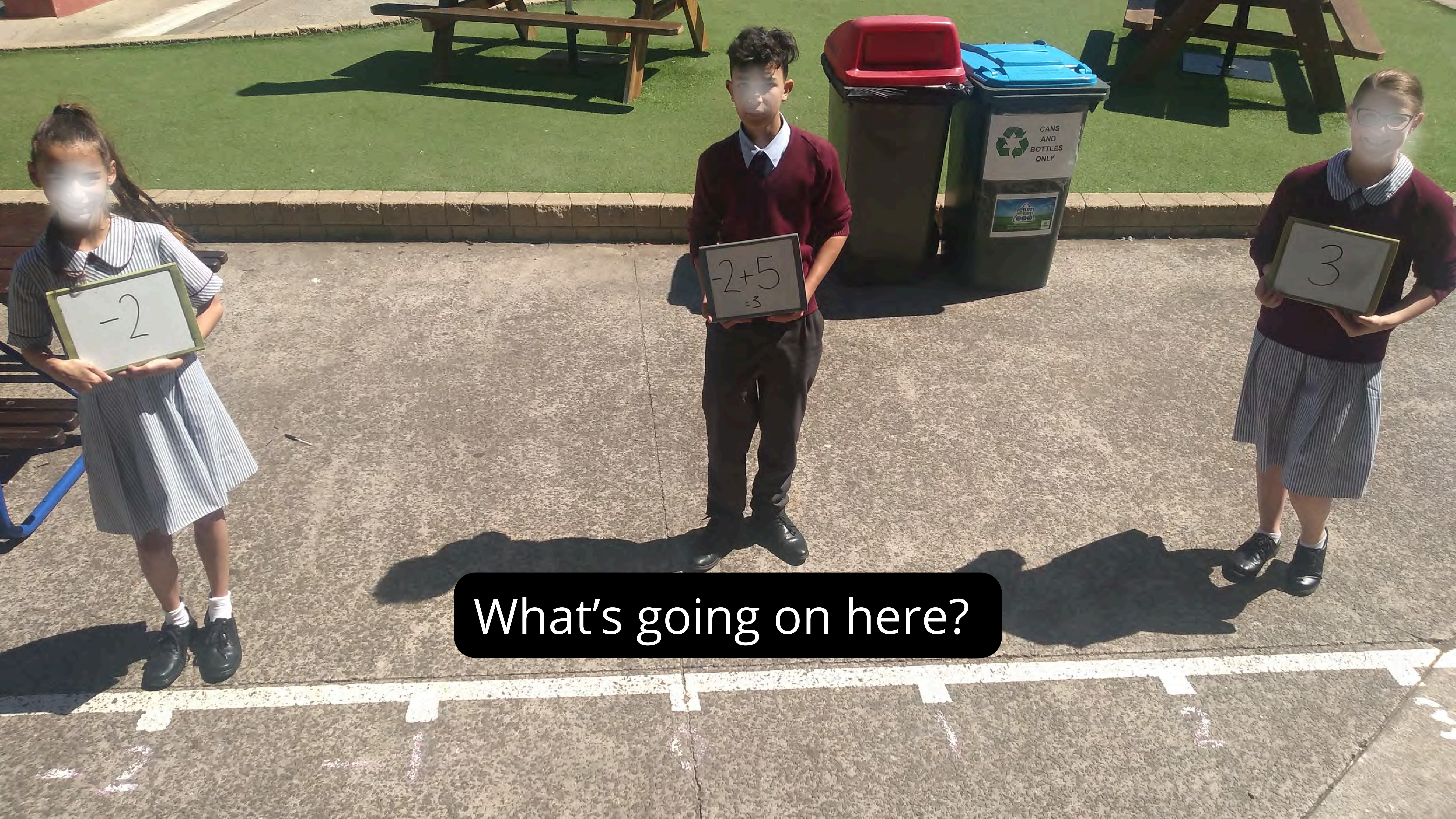
- Transversals
- Perpendicular Lines
- Congruence
- Similarity
- Symmetry
- Squares
- Isosceles Triangles
- Right Triangles
- Hypotenuse
- Straight Angles
- 45^0 Angles
- Parallel Lines

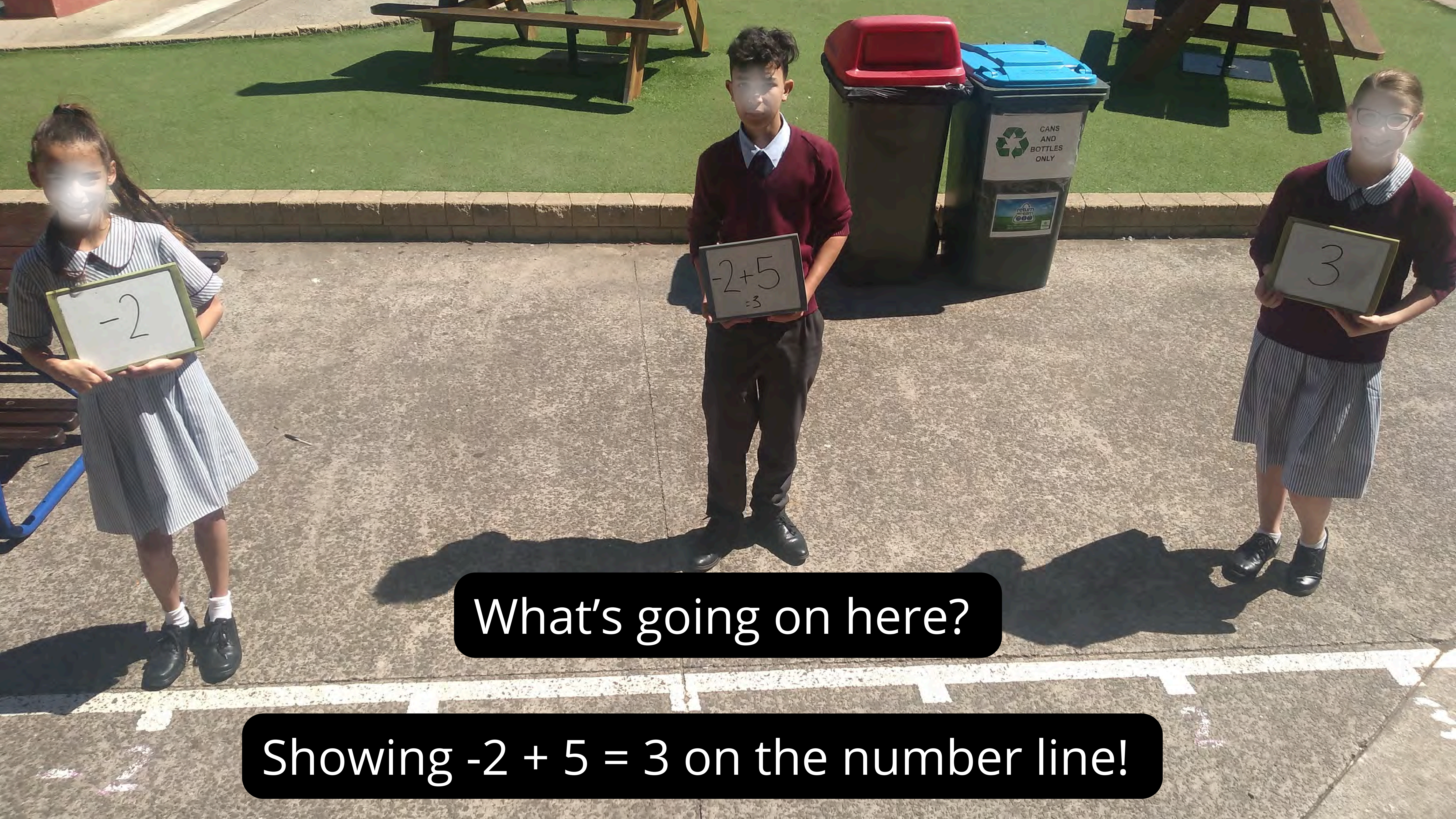
3. Go out to the Universe

Mathematics, rightly viewed, possesses not only truth, but supreme beauty.

Bertrand Russell


-2
-2+5
=3
3
CANS AND BOTTLES ONLY


-2
-2+5
=3
3
CANS
AND
BOTTLES
ONLY
What's going on here?


-2
-2+5
=3
CANS
AND
BOTTLES
ONLY
3
What’s going on here?
Showing -2 + 5 = 3 on the number line!


Lots more possibilities....


(2, -4)
(2, -5)
What’s going on here?

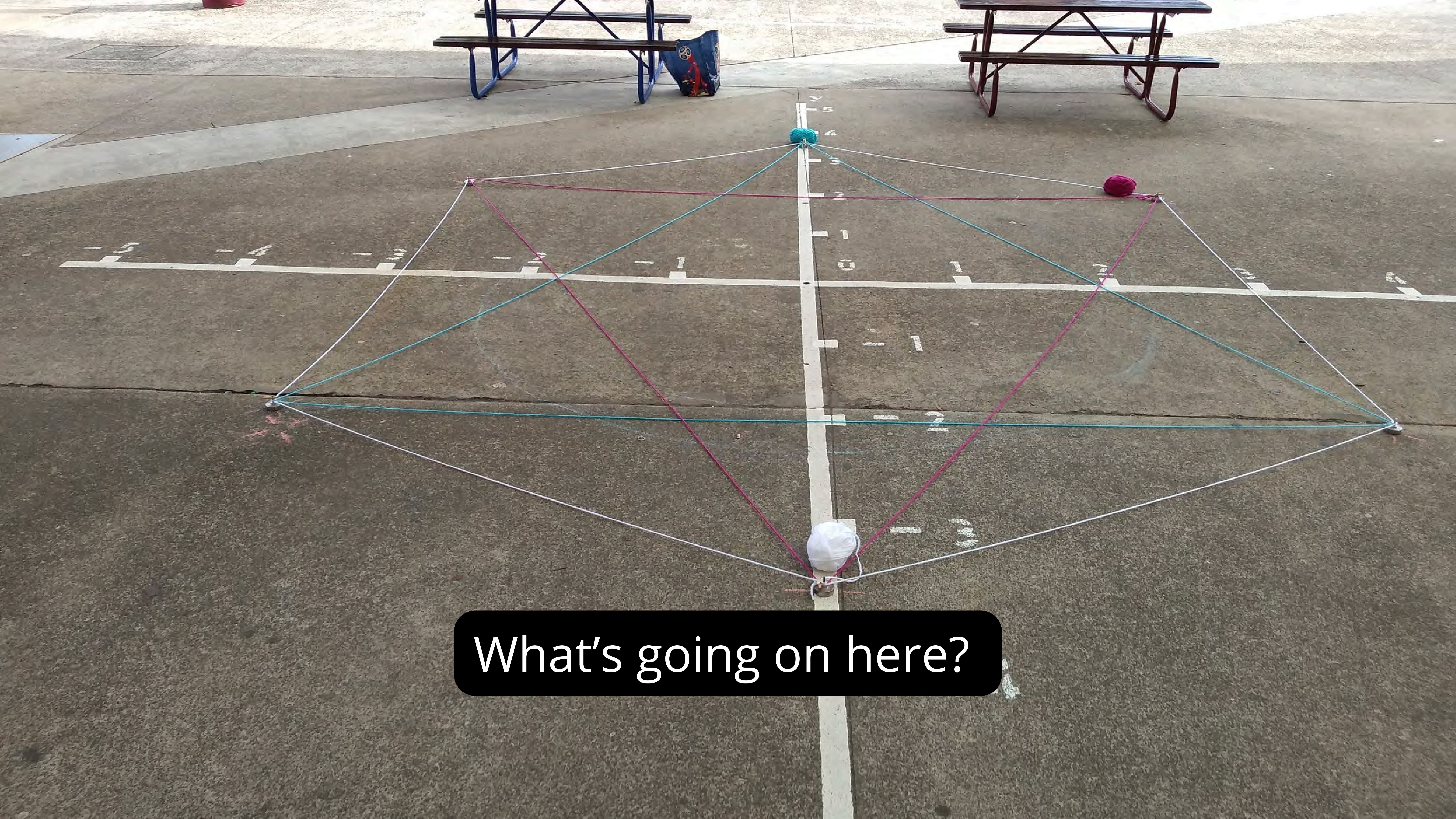

(-2, -4)
(2, -4)
(2, -5)
What’s going on here?
Finding coordinates on the Number Plane!

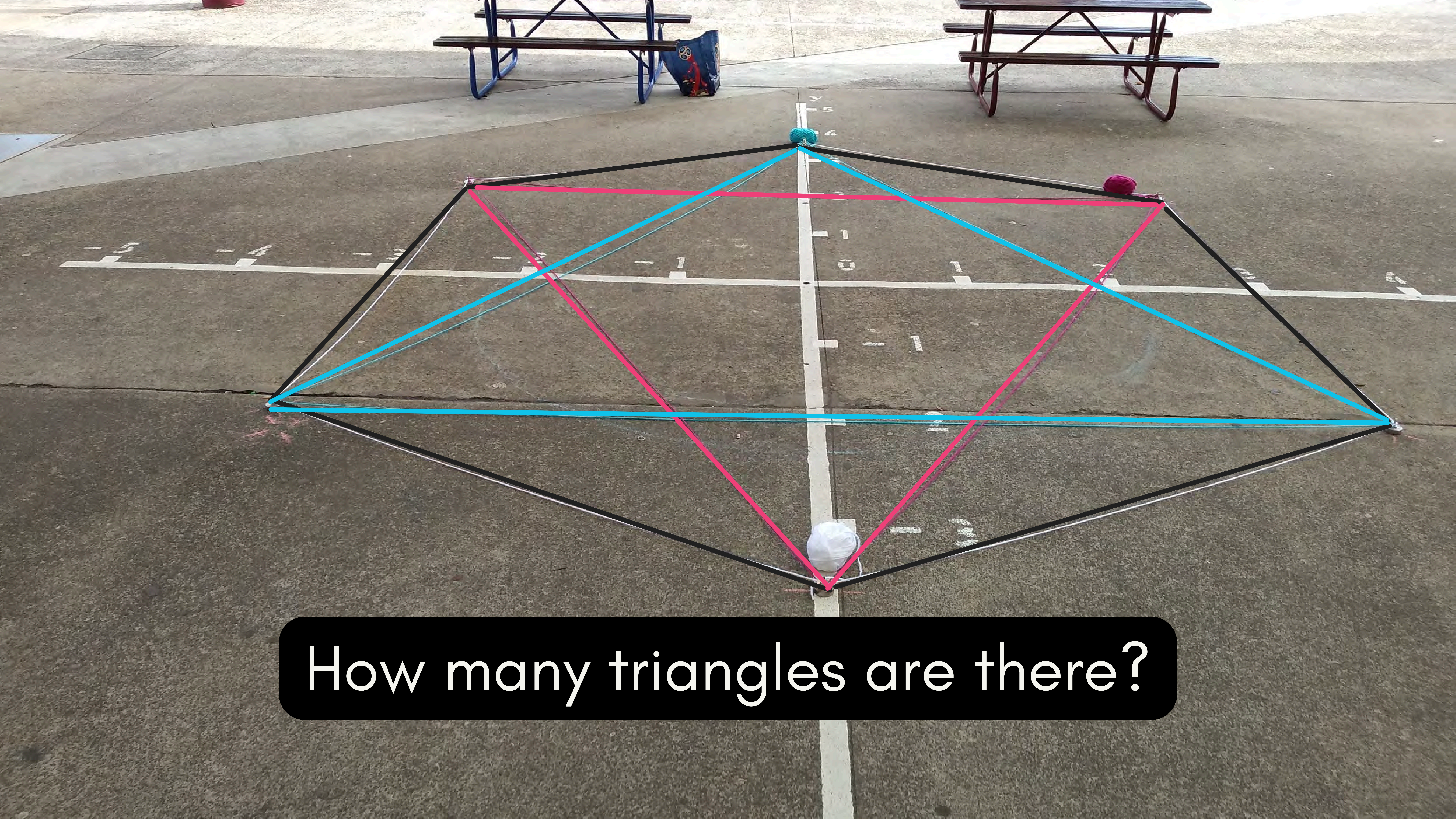
Students are coordinates.

RMAs* in the playground

RMAs* in the playground

*Random Mathematical Activities!


What’s going on here?


How many triangles are there?

Tradies

THE MATHEMATICS OF THE PLUMBER

Plumbers wouldn't be able to do their job without Maths. And it's pretty interesting Maths too. Take a look:

Pythagoras

Plumbers often have to make angles square (that is right-angled, or 90°). They use the "Rule of 3, 4 and 5". You might remember these numbers from last month. They measure 3 units (such as metres) from a corner along one wall, and 4 units from the corner on the other wall. Then they measure the distance between those two points. If it's 5m, they know it's a right triangle because $3^2 + 4^2 = 5^2$! They're using Pythagoras's Theorem (explained in March). Other tradesmen like carpenters, carpet-layers, concreters also use Pythagoras extensively.

Ratios

Plumbers frequently use a mixture called mortar. It's made by mixing together 6 parts of sand, 1 part of cement and 1 part of lime. This ratio is 6:1:1. So if the plumber needed 8kg of mortar, they would use 6kg sand, 1kg cement and 1kg lime. They can mix any quantities using this ratio.

Trigonometry

Plumbers connect copper pipes to taps. Often they lay several pipes that come out on the same wall. To make the pipes look neat in the buildings, they use trigonometry to work out what offsets and angles to make! The finished product is a piece of art (see the picture). What a shame that it's usually covered up when it's finished!

Gradients

All roofs have pitches (or angles). The pitch determines how quickly the rain falls from the roof. If the gradient is not correct, the water will either pool on the roof, or overflow from the gutter. The plumber has to make sure this doesn't happen by adjusting either the pitch, or the gutter's capacity.

Pressure

Plumbers use pumps that must deliver water to people on all floors of an apartment building. They use Maths to calculate the power of the pump and the diameter of the pipes needed so that when the person on the top floor apartment turns on the tap, water comes out!

Plumbing perfection thanks to trigonometry

Carpet Layers

Carpet Layers use
Pythagoras to make
sure the carpet
looks square

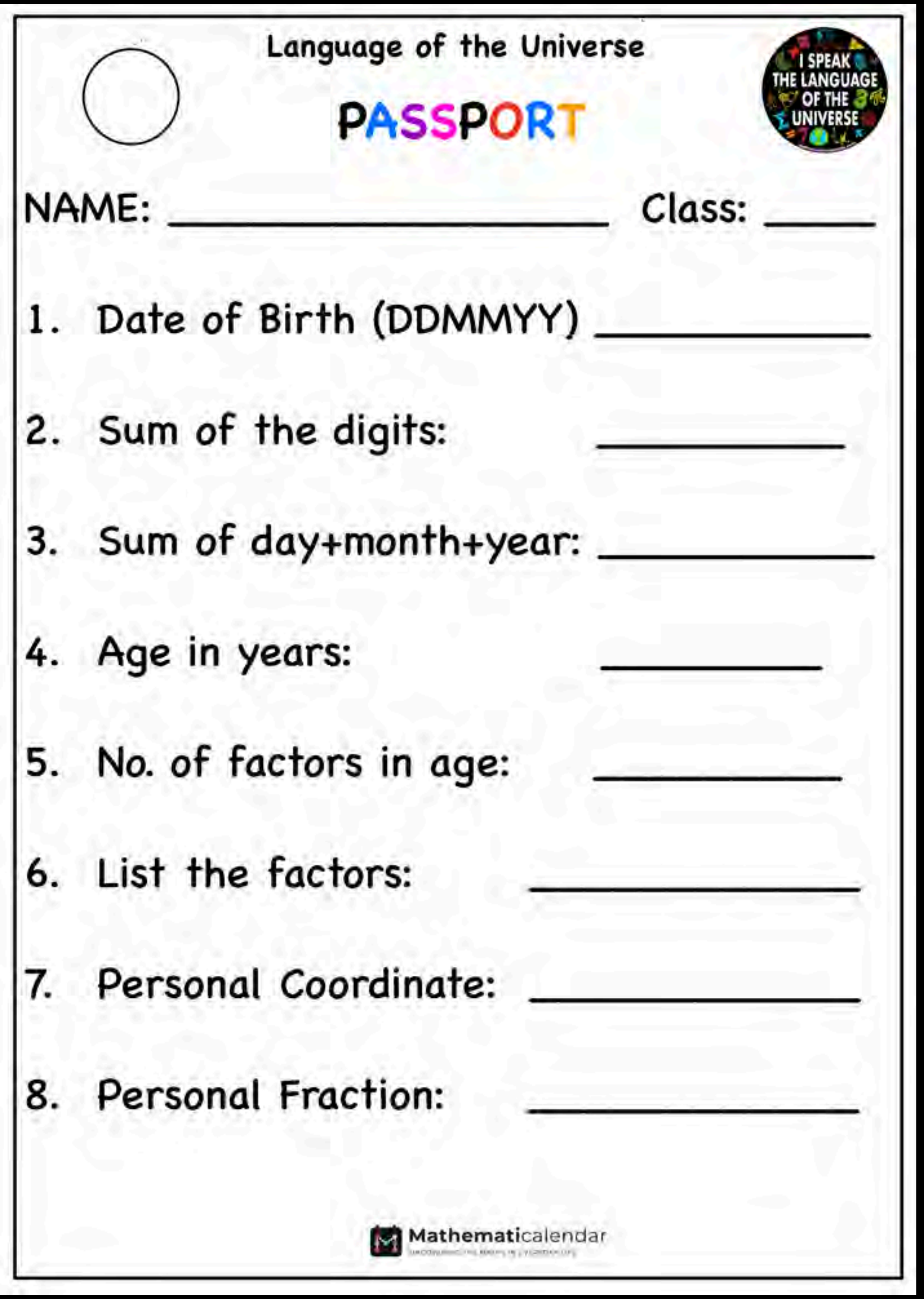
Poster installers!

Have to centre the poster!
How would you do it?!

4. Getting Personal

You have a lot of personal Maths to tap into!

Time to fill out your Passport!


Language of the Universe

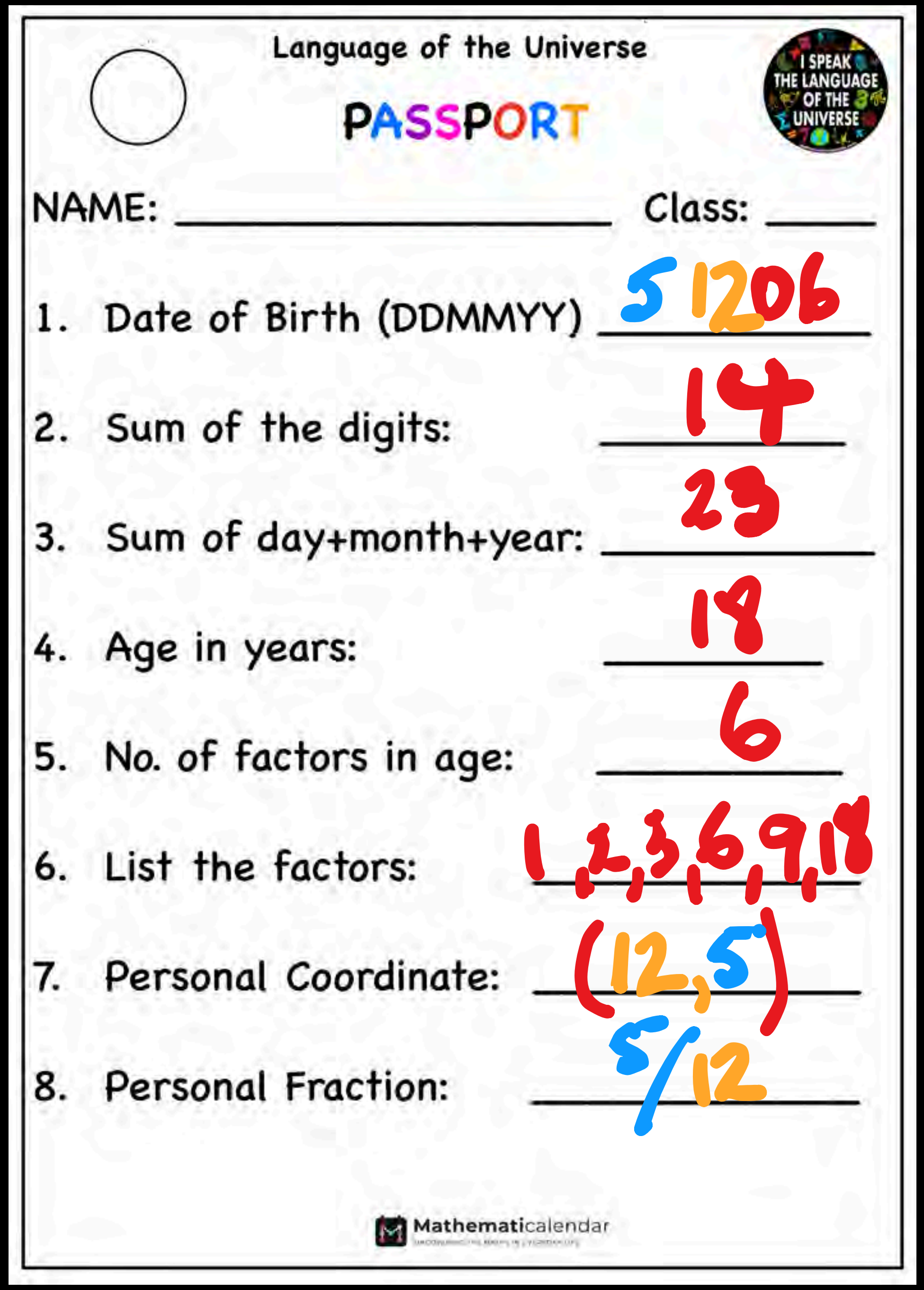
PASSPORT

NAME: ____________ Class: ______

1. Date of Birth (DDMMYY) ____________
2. Sum of the digits: ____________
3. Sum of day+month+year: ____________
4. Age in years: ____________
5. No. of factors in age: ____________
6. List the factors: ____________
7. Personal Coordinate: ____________
8. Personal Fraction: ____________

Mathematicalendar

Time to fill out your Passport!



Language of the Universe

PASSPORT

I SPEAK THE LANGUAGE OF THE UNIVERSE

NAME: ______________ Class: ______

1. Date of Birth (DDMMYY) 51206
2. Sum of the digits: 14
3. Sum of day+month+year: 23
4. Age in years: 18
5. No. of factors in age: 6
6. List the factors: 1, 2, 3, 6, 9, 18
7. Personal Coordinate: (12, 5)
8. Personal Fraction: 5/12

Mathematicalendar

Activity - Factors in your age

- How many factors in your age?

Activity - Factors in your age

- How many factors in your age?
- Will you have the same, more, or less on your next birthday?

Activity - Factors in your age

- How many factors in your age?
- Will you have the same, more, or less on your next birthday?
- What's the most factors you've had in your age so far?

Activity - Factors in your age

- How many factors in your age?
- Will you have the same, more, or less on your next birthday?
- What's the most factors you've had in your age so far?
- If you live to 100, what's the most factors you will have in your age?

THE MATHEMATICS OF **YOUR AGE**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

No. of factors	1	2	3	4	5	6	7	8	9	10	12
No. of ages with this many factors	1	25	4	32	2	16	1	10	2	2	5

Activity – Personal Fraction

- Plot your PF on the appropriate number line
- Work out the distance between you and your neighbour
- Find your table's sum and product (strategise first!)
- What else could you do with your class?

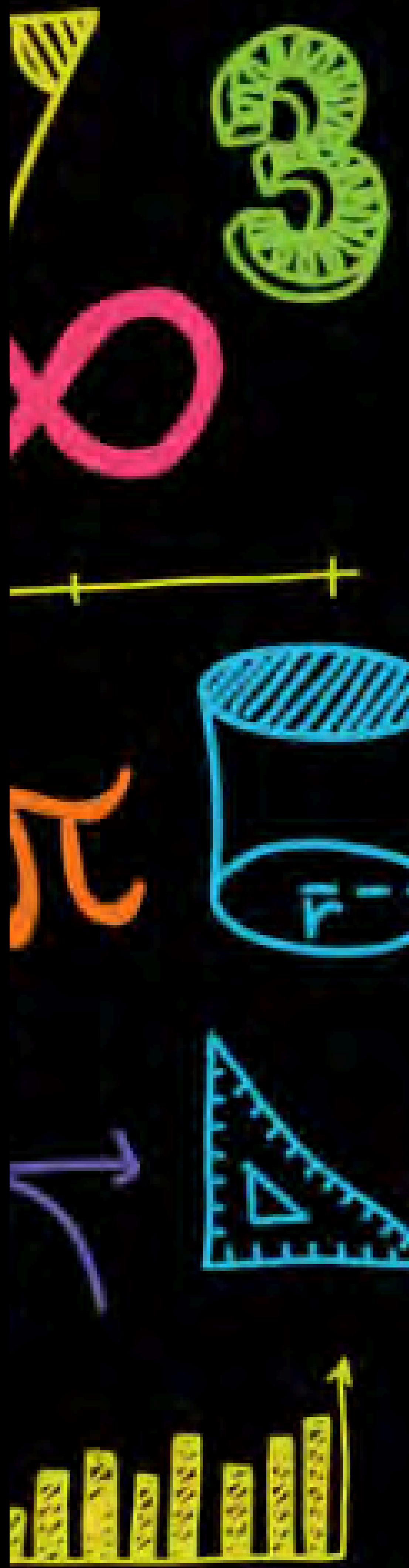
Activity – Personal Coordinate

- Plot your PC on the sheet
  (Great way of keeping track of your class's birthdays!)
- Find a partner and work out:
  - the distance between your PC's
  - the equation of the line linking them
- what else could you do with your class?

5. A prism to view the world

Without mathematics, there's nothing you can do. Everything around you is mathematics. Everything around you is numbers.

Shakuntala Devi



Last week I had a class of 19 students

2 were absent

So there were 17 in the class

19 - 2 = 17

Anything special about these numbers?

Last week I had a class of 19 students

2 were absent

So there were 17 in the class

19 - 2 = 17

They're Prime numbers

Last week I had a class of 19 students

2 were absent

So there were 17 in the class

19 - 2 = 17

They're Prime numbers

Is there a different combination this could happen with?

Another time there were 25 students

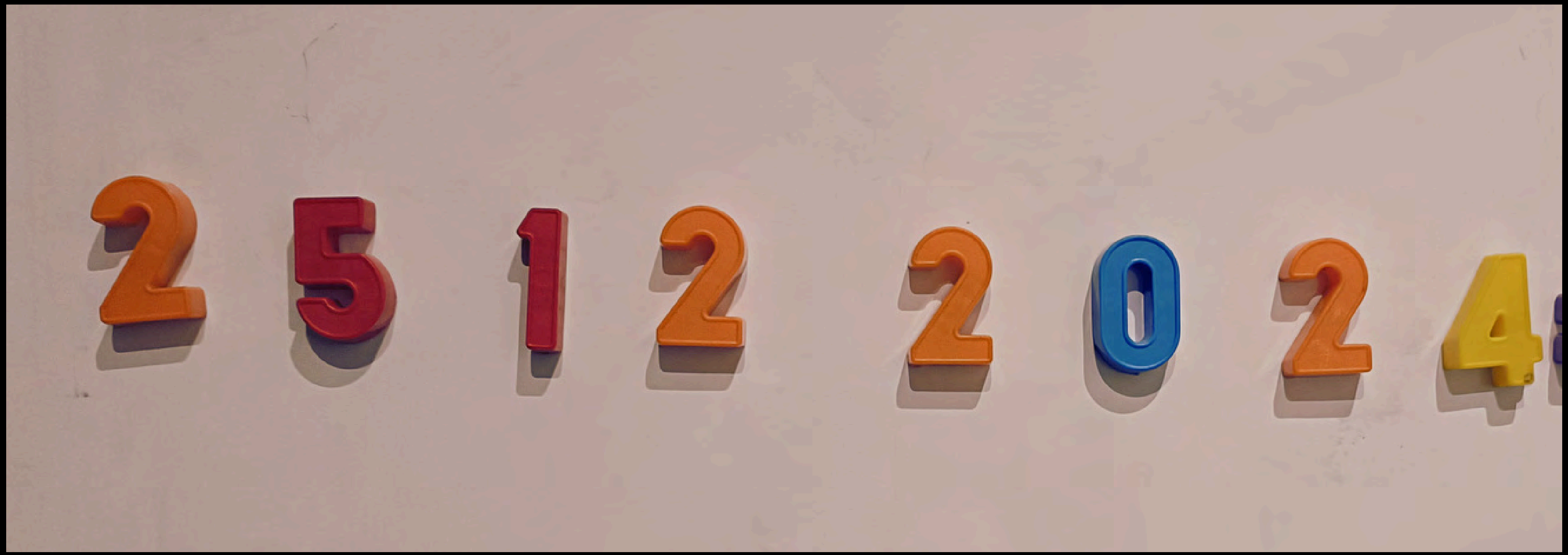
And we....


… formed that perfect square!


And then found that 1+3+5+7+9 = 25 !!!


These are also RMA's
And then found that 1+3+5+7+9 = 25 !!!

Christmas equation



Christmas equation

Christmas equation

Can you make the 2 sides equal

keeping the numbers in the same order?

Christmas equation

Can you make the 2 sides equal

keeping the numbers in the same order?

Answers a little later...

Road signs


M1
PACIFIC HIGHWAY
Byron Bay 14
Bangalow 16
Ballina 40
Grafton 169
Sydney 782

How many odd/ even/ prime/ square numbers?

What is the shortest/longest distance between towns?

The next sign is 15km away. What will it show?


OCEAN DRIVE
10
North Haven 1
Bonny Hills 8
Lake Cathie 16
Port Macquarie 32


OCEAN DRIVE
10
North Haven 1
Bonny Hills 8
Lake Cathie 16
Port Macquarie 32

$= 2^0$

$= 2^3$

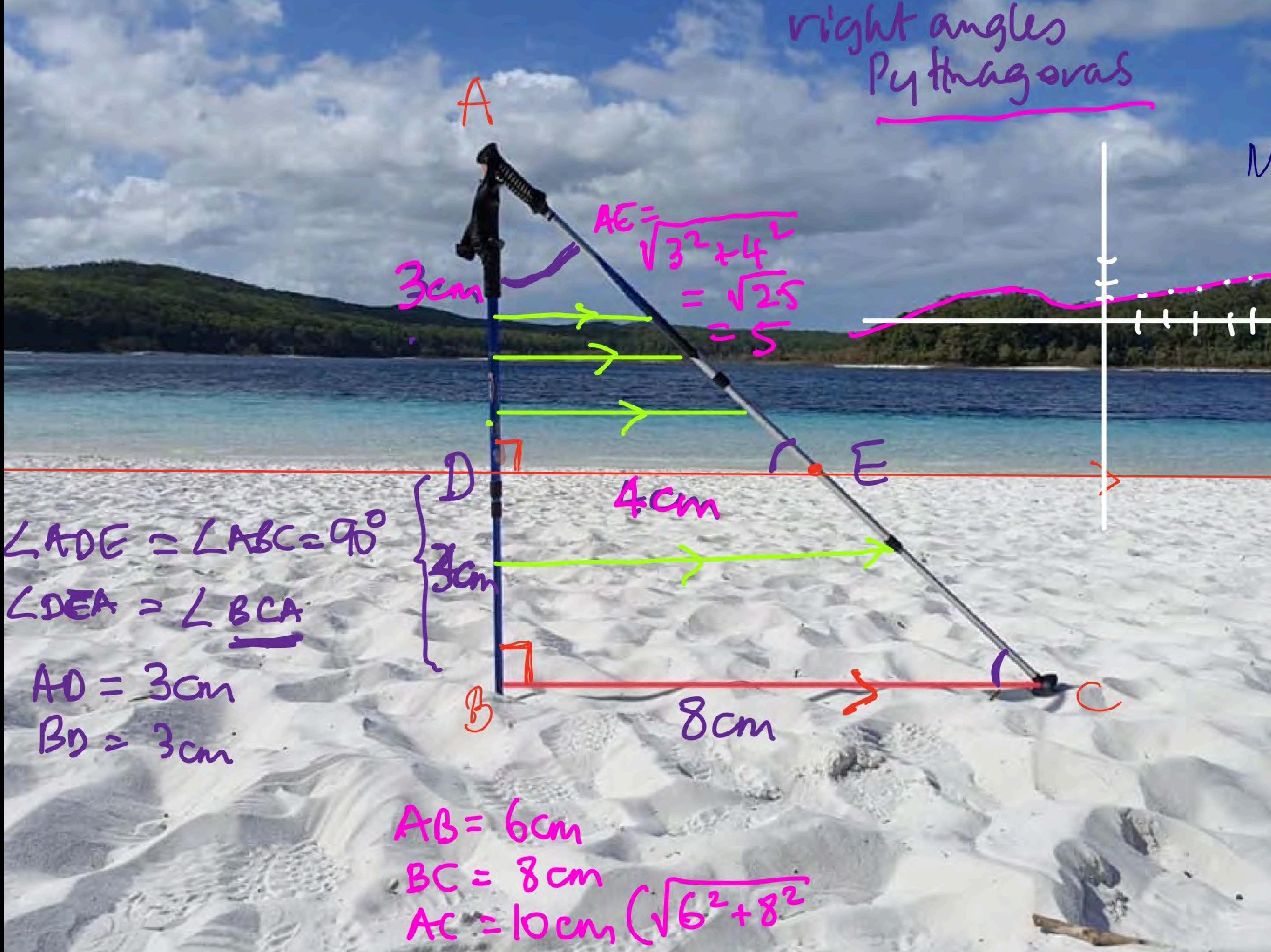
$= 2^4$

$= 2^5$

The Mathematics of Fraser Island

The Mathematics of Fraser Island

Mathematics everywhere!



Mathematics everywhere!

Mathematics everywhere!

Mathematics everywhere!

Mathematics everywhere!

Mathematics everywhere!

He's making angles on parallel lines

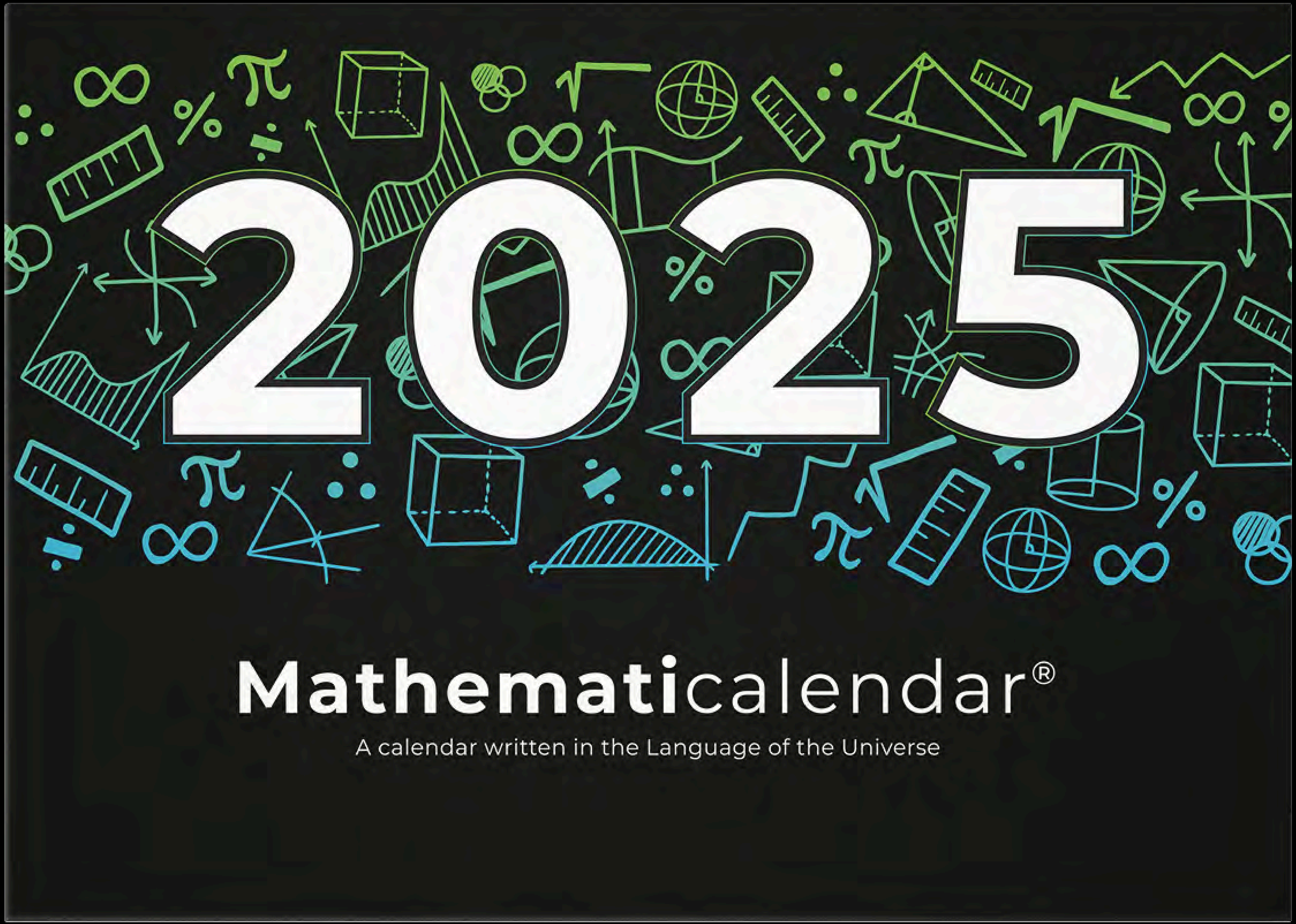
So celebrate!

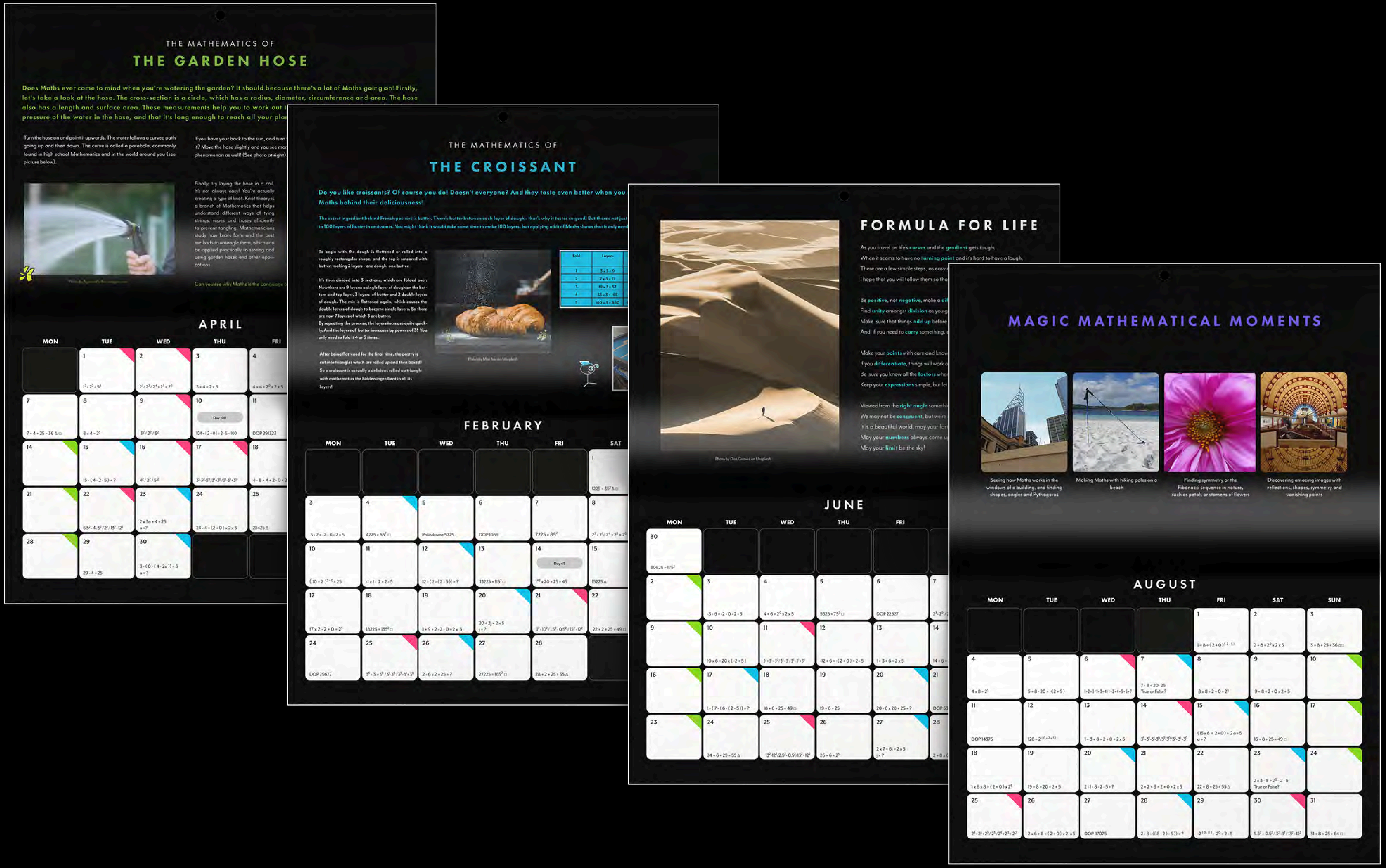
So Celebrate!!

- Wed 25/12/24: Revolution Day (360)
- Mon 30/12 : 301224 – Most factors (64)

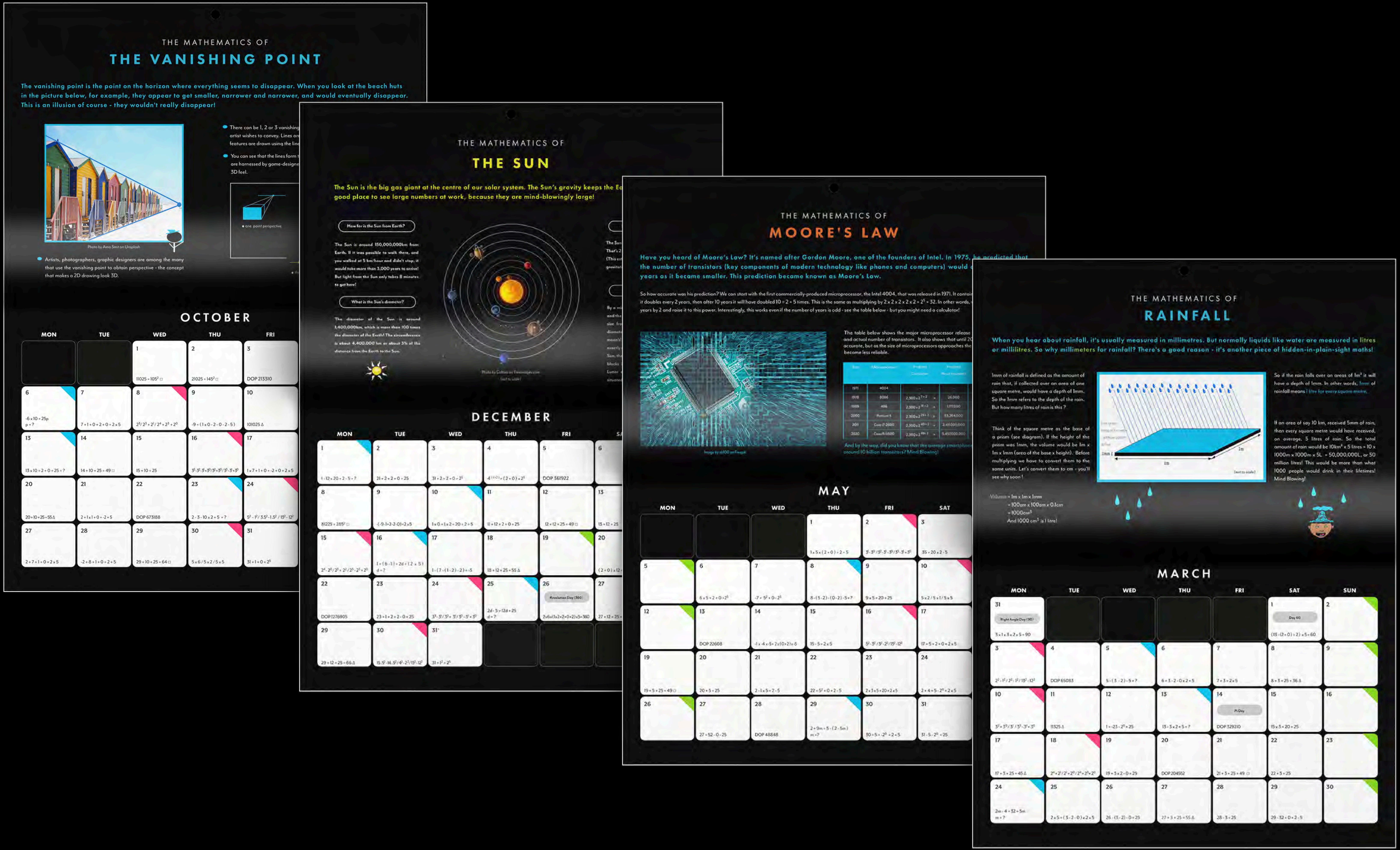
- Wed 5/2/25: Palindrome
- Thu 27/2: Day – Month = Year
- Thu 14/3: Pi Day
- Sat 30/3: Right Angle Day (90)
- Tue 10/4: Day 100
- Fri 27/6: Straight Angle Day (180)
- Thu 24/7: Pythagorean Triad (7,24,25)
- Fri 31/10: 311025 – Most factors (48)
- Wed Dec 26: Revolution Day (Day 360)

Mathematicalendar 2025


2025
Mathematicalendar®
A calendar written in the Language of the Universe

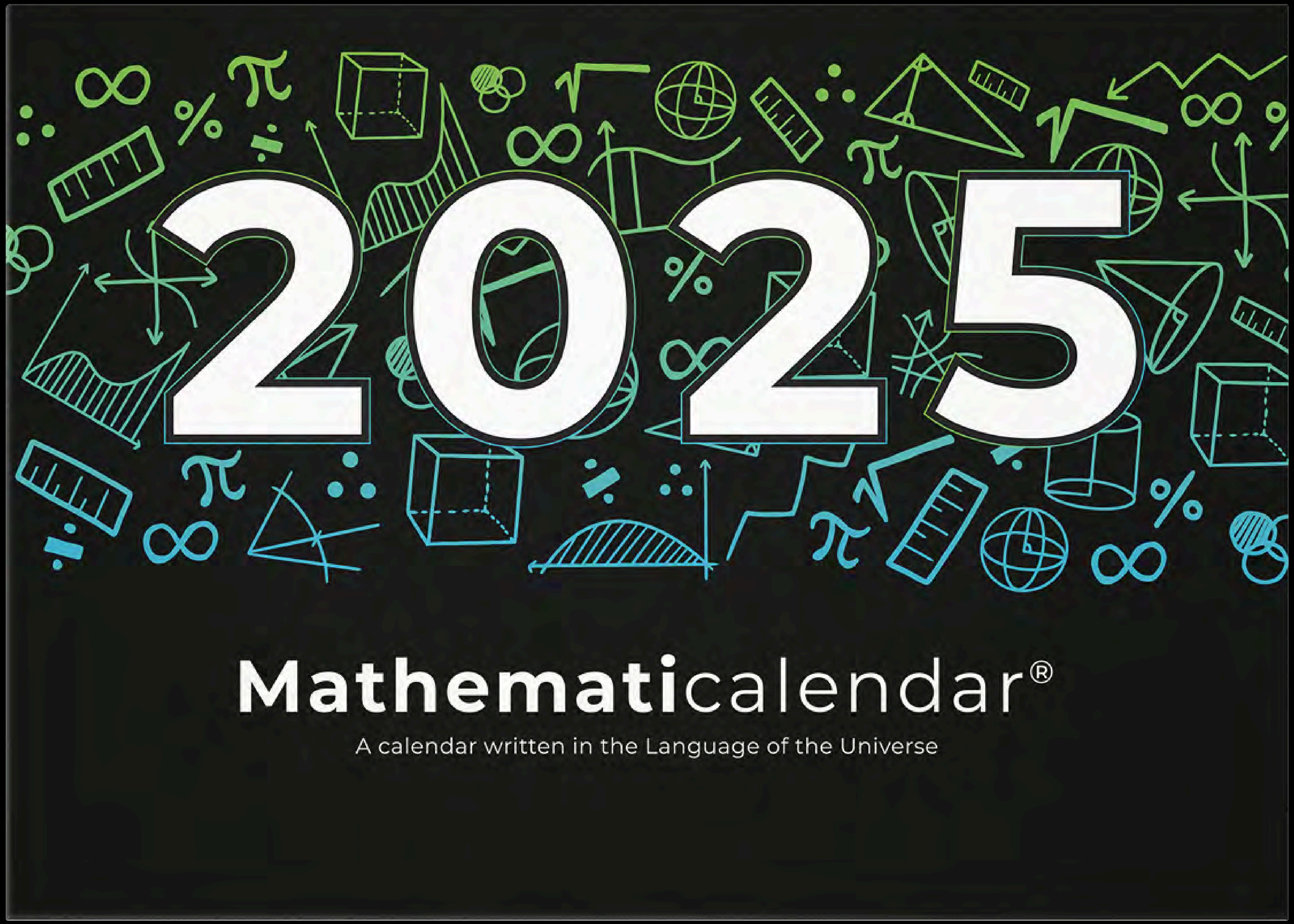


THE MATHEMATICS OF
THE GARDEN HOSE
Does Maths ever come to mind when you're watering the garden? It should because there's a lot of Maths going on! Firstly, let's take a look at the hose. The cross-section is a circle, which has a radius, diameter, circumference and area. The hose also has a length and surface area. These measurements help you to work out
APRIL
MON
TUE
WED
THU
FRI
THE MATHEMATICS OF
THE CROISSANT
Do you like croissants? Of course you do! Doesn't everyone? And they taste even better when you
Maths behind their deliciousness!
FEBRUARY
MON
TUE
WED
THU
FRI
SAT
FORMULA FOR LIFE
JUNE
MON
TUE
WED
THU
FRI
MAGIC MATHEMATICAL MOMENTS
Seeing how Maths works in the windows of a building, and finding shapes, angles and Pythagoras
Making Maths with hiking poles on a beach
Finding symmetry or the Fibonacci sequence in nature, such as petals or stamens of flowers
Discovering amazing images with reflections, shapes, symmetry and vanishing points
AUGUST
MON
TUE
WED
THU
FRI
SAT
SUN


THE MATHEMATICS OF
THE VANISHING POINT
The vanishing point is the point on the horizon where everything seems to disappear. When you look at the beach huts in the picture below, for example, they appear to get smaller, narrower and narrower, and would eventually disappear. This is an illusion of course - they wouldn't really disappear!
OCTOBER
THE MATHEMATICS OF
THE SUN
DECEMBER
THE MATHEMATICS OF
MOORE'S LAW
MAY
THE MATHEMATICS OF
RAINFALL
When you hear about rainfall, it's usually measured in millimetres. But normally liquids like water are measured in litres or millilitres. So why millimeters for rainfall? There's a good reason - it's another piece of hidden-in-plain-sight maths!
MARCH

OCTOBER

MON	TUE	WED	THU	FRI	SAT	SUN
		1 11025 = 105^2 □	2 21025 = 145^2 □	3 DOP 213310	4	5 5 x 1 / 5 x 2 / 5 x 5
6 -6 x 10 = 25p p = ?	7 7 + 1 + 0 + 2 + 0 = 2 x 5	8 $2^3 / 2^3 + 2^1 / 2^4 + 2^3 + 2^0$	9 -9 = (1 x 0 - 2 - 0 - 2 - 5)	10 101025 Δ	11	12 1 x $2^{10 \div 2}$ + 0 = 2^5
13 13 x 10 ÷ 2 + 0 + 25 = ?	14 14 + 10 + 25 = 49 □	15 15 + 10 = 25	16 $3^5 - 3^2 - 3^1 + 3^0 / 3^2 + 3^0 / 3^2 - 3^1 + 3^0$	17 1 x 7 + 1 + 0 = -2 + 0 + 2 x 5	18	19 19 - 10 = 2 + 0 + 2 + 5
20 20 + 10 + 25 = 55 Δ	21 2 + 1 x 1 + 0 = -2 + 5	22 DOP 673188	23 2 - 3 - 10 x 2 + 5 = ?	24 $5^2 - 1^2 / 3.5^2 - 1.5^2 / 13^2 - 12^2$	25	26 26 - 1 - 0 = 25
27 2 + 7 + 1 = 0 + 2 x 5	28 -2 + 8 + 1 + 0 = 2 + 5	29 29 + 10 + 25 = 64 □	30 5 x 6 / 5 x 2 / 5 x 5	31 31 + 1 + 0 = 2^5		



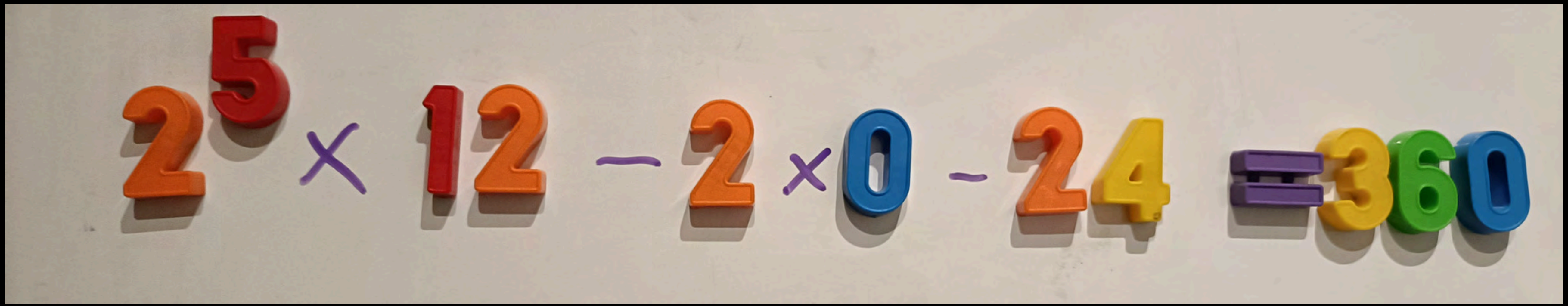
ONLY $24.95
AT THE MAV STAND

Using the date

Did you find an answer?

Can you make the 2 sides equal keeping the numbers in the same order?

Using the date



Here's one...

Can you make the 2 sides equal

keeping the numbers in the same order?

Conclusion

1. Blow their Minds!
2. Bring the universe to the classroom
3. Go into the Universe
4. Get Personal
5. A prism to view the world
6. Celebrate!

Go forth

and multiply!

Thank you !

Paul Bowyer
pbowyer88@gmail.com
0438 856 880
@mathematicalendar


Questions?

THE END