



THE 2023 YOUNG MATHEMATICAL STORY AUTHOR (YMSA) COMPETITION

THE STUART J. MURPHY AWARD
(THE 8-11 YEARS OLD CATEGORY)

LONGLISTED

'Angle Adventure' by Liv Halamish (11 years old)
at St Christopher's School (UK)

You can read the author's inspiration for the story and the judges' comments
on:

www.mathsthroughstories.org/ymsa2023

#YMSAMaths

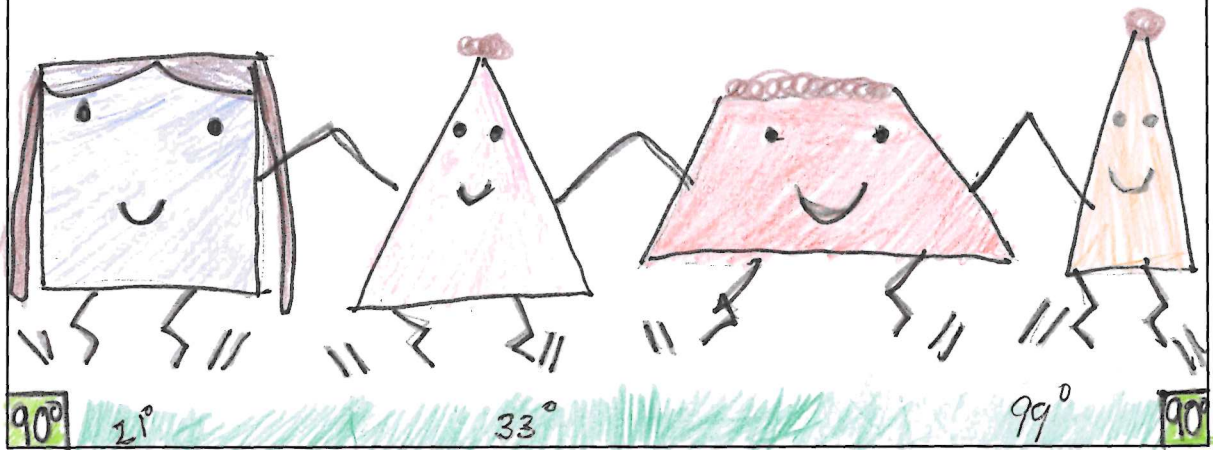


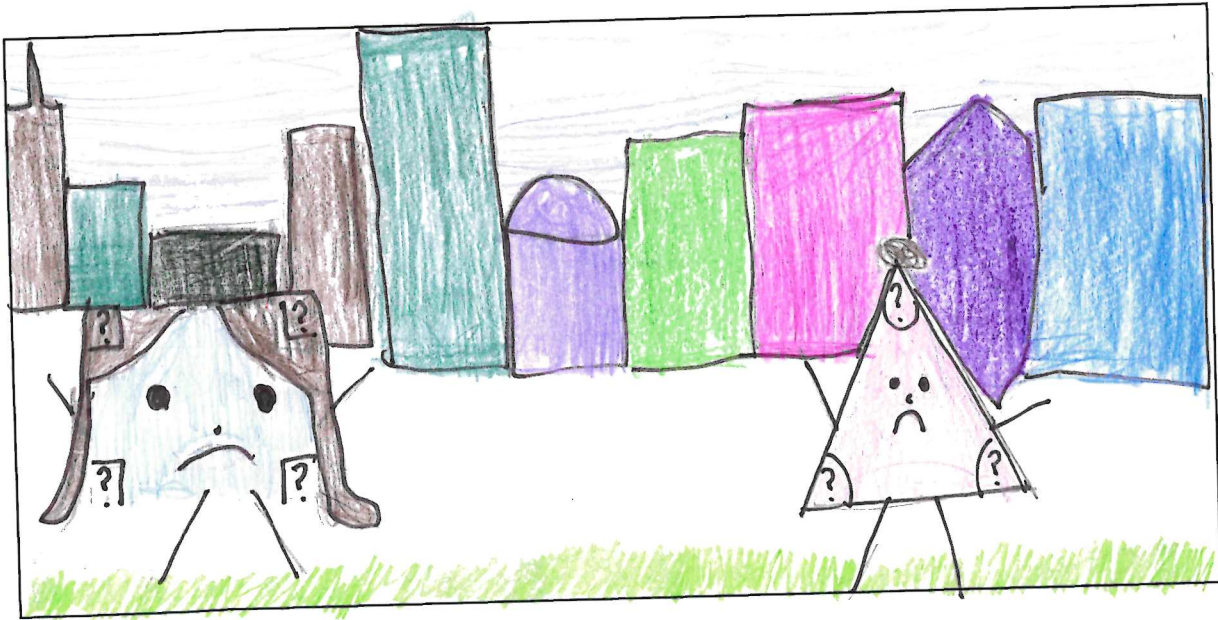
90°

90°

angle

adventure





Once upon a time, in the far away town called Shapeville, lived two best friends who were rather different from the rest. It was quite a small town which was secluded but had a lot of famous sights, for example Number Hunt Park. They were determined to find their angles there...

It wasn't just 1 angle missing, all of their angles were all missing. How they did feel quite alone, if only there was a way they could figure out their angles. Their names were Squarta (the square) and Equally (the equilateral triangle). They were quite upset because usually when you turn one, your angles turn up in your individual shape, but it was different for these two.



As they were walking to school, Squarta and Equally bumped into each other all of a sudden. "Hi, Squarta!" Equally said.

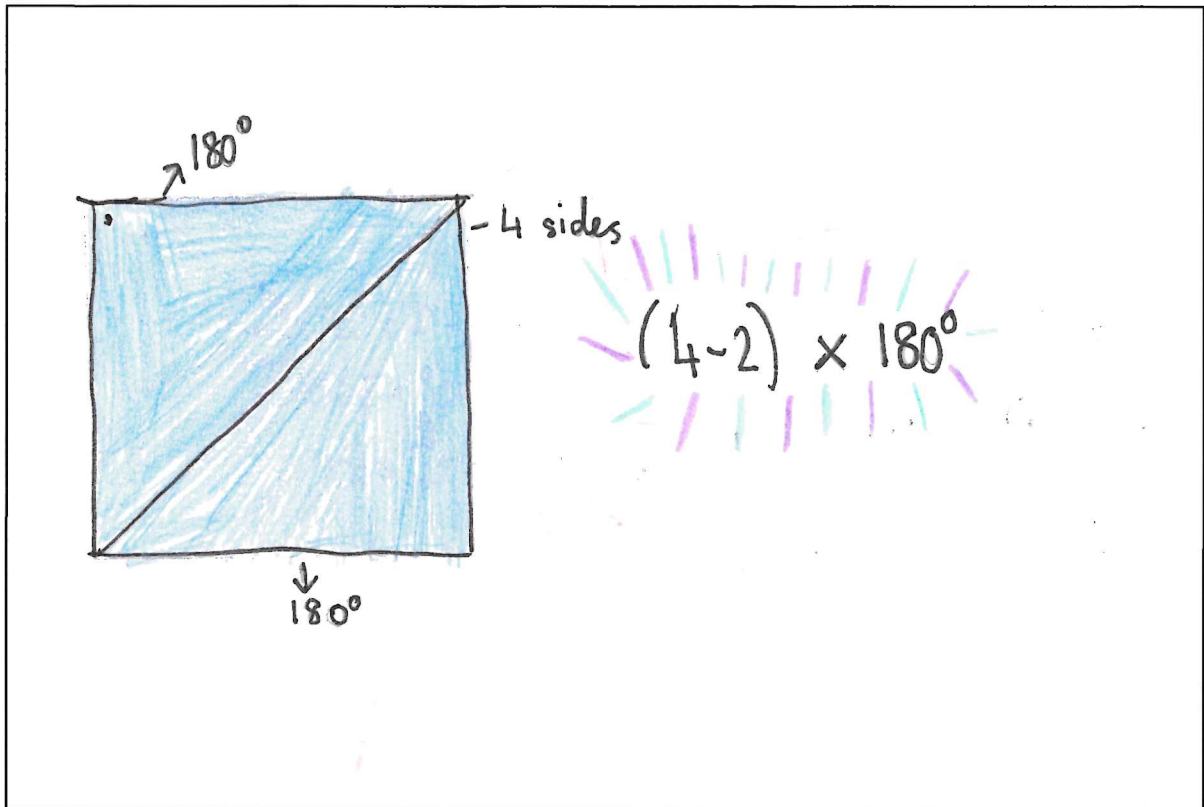
"Hi, Equally! I really want all my angles... Usually people get their angles at 1 years old!" Squarta exclaimed.

"I know it's annoying, but Mr Rectangle is taking us to the Number Hunt park! That's where missing angles turn up if they do not go into the shape!" Equally said in an excited tone.

"That's nice, however, how do we know which numbers will match us?" Squarta sighed. All hope was lost.



The two solemn best friends sat on the bench with miserable expressions on their faces. “Will we always be incomplete?” Squarta sighed.
“No, things are bound to get better, you know you will never know if you do not ask. I am still rather gloomy, but perhaps Mr Rectangle will know the answer to our missing angles. It’s ok, I am sure that he will.”



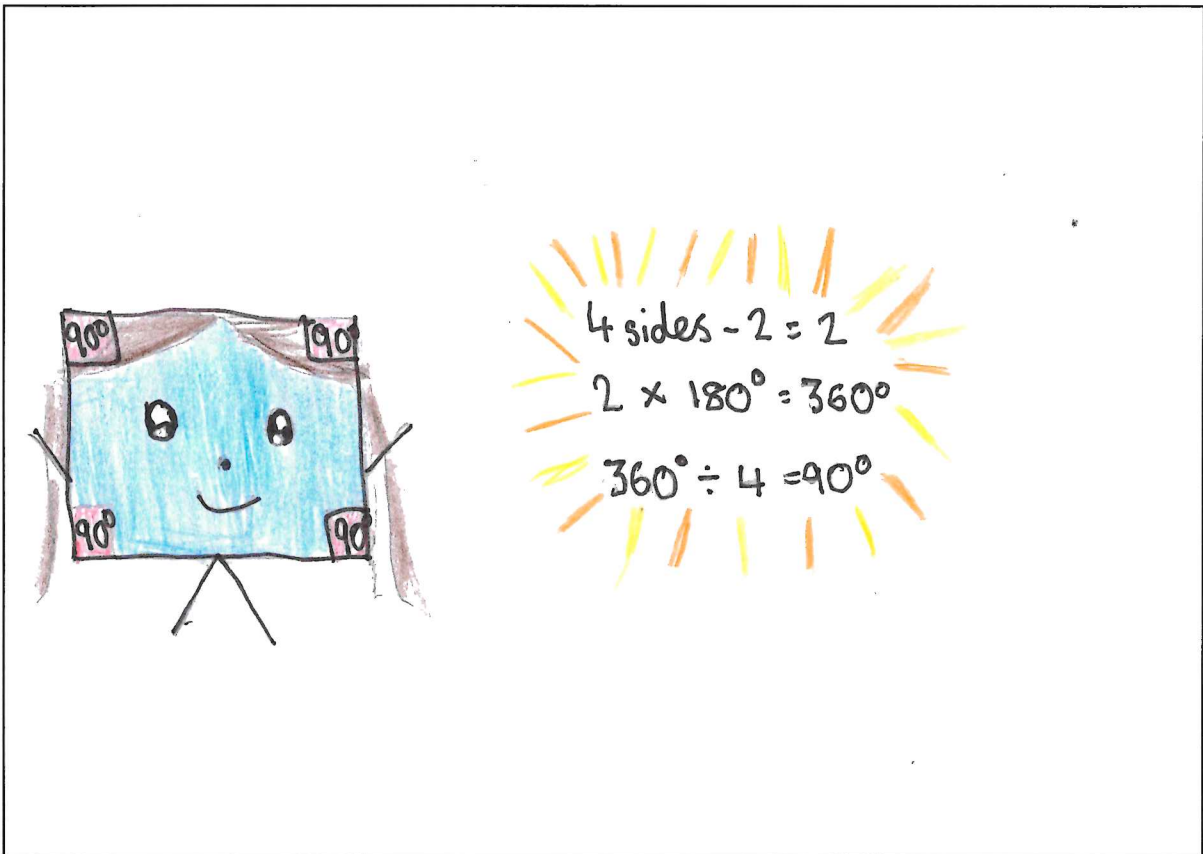
Equally knocked loudly on her teacher's door.

"Come in! Oh hello, my two favourite students, what is wrong?" He asked.

"Well, we want to find out how to know what our missing angles are." Squarta said.

"Of course, now, let's get started. You two are too different polygons, (shapes). However I am going to teach you a magical formula that will let you find any Regular polygon angles, like you too! It is hard, but I am sure you will understand. The letter "N" in this formula stands for " Number of sides" The formula is, $(N-2) \times 180$. It works because if you split your shape into triangles, for example a square, there are only two. Each triangle is 180 degrees and the number of triangles will always be 2 less than the number of sides you have.

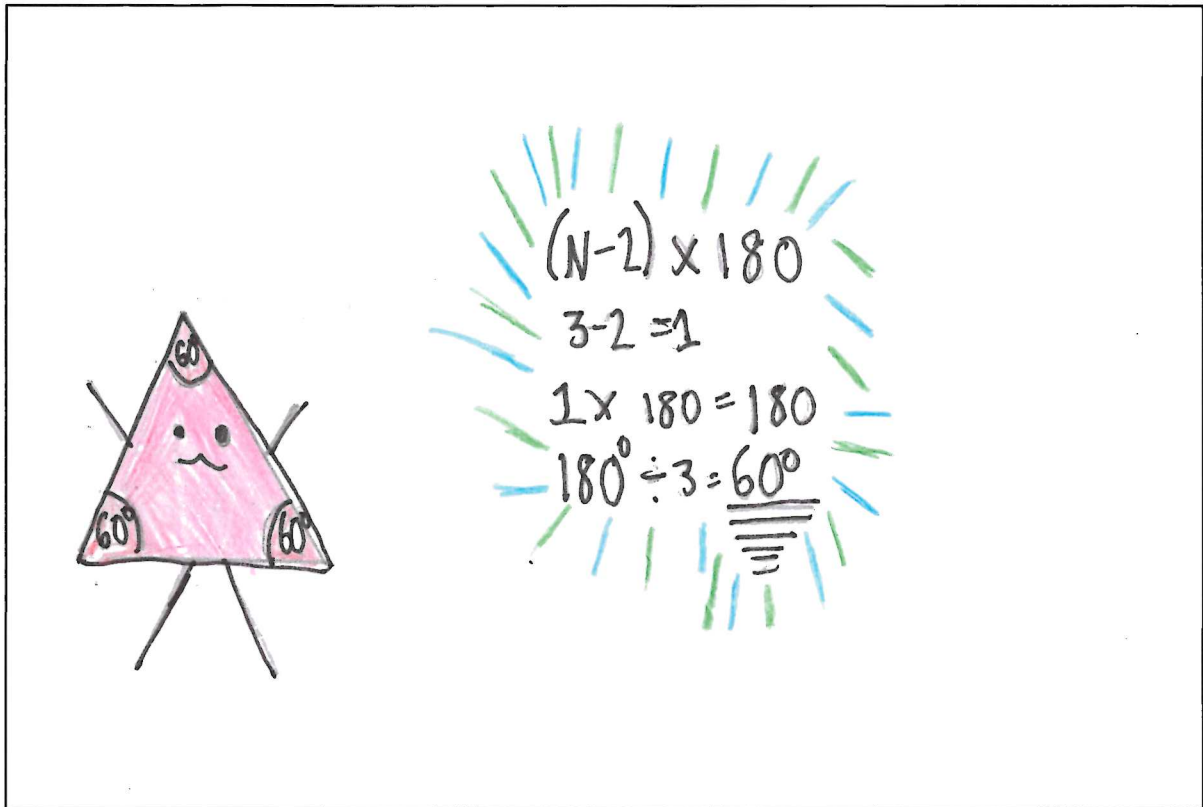
Try it on your shape, a square, I believe in you Squarta," Mr Rectangle said.



“Ok, well my shape has 4 sides, so $4-2=2$ and 2×180 is 360 degrees!! However, those are my angles altogether. I want to find them individually, so I think I should divide 360 degrees into 4 because I have 4 angles, which is 90 degrees!” Squarta squealed ecstatically.

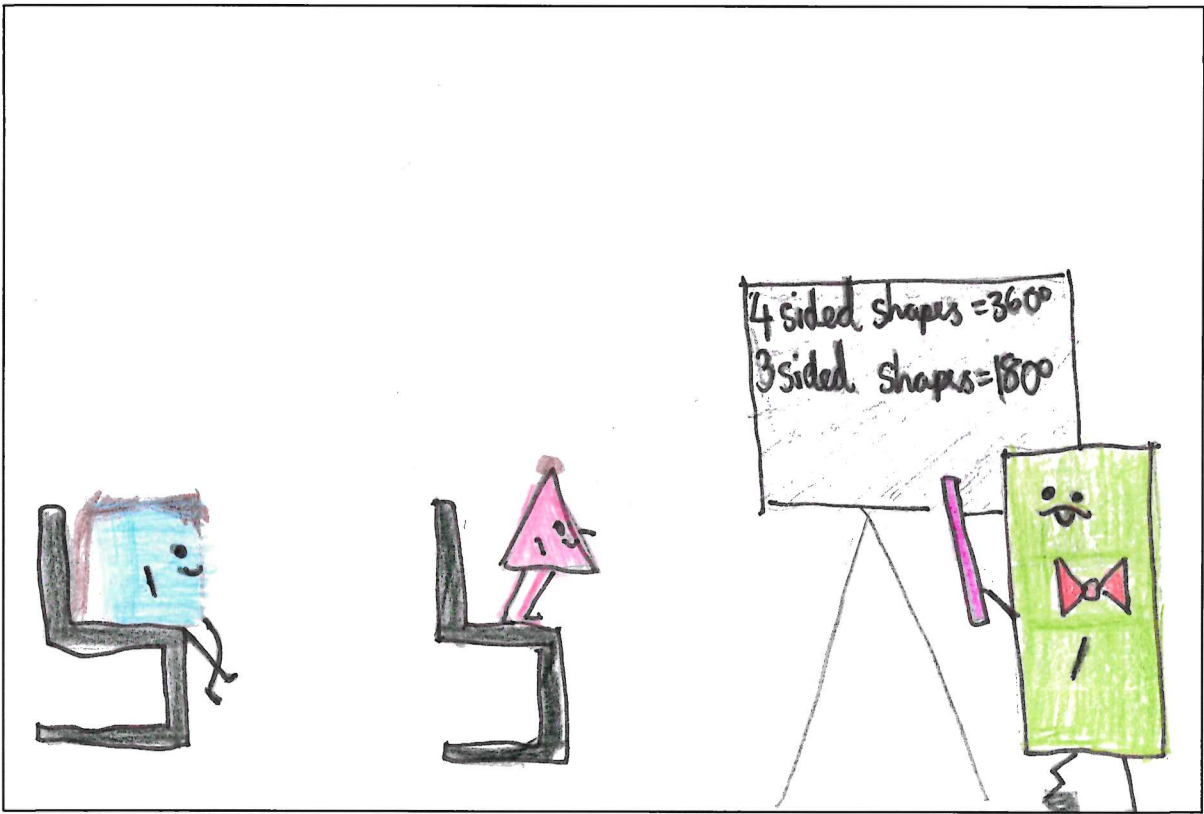
“ I am very happy for you! Can I try Mr Rectangle?” Equally asked timidly.

“Of course!” He said whilst smiling.



“Ok, well my shape has 3 sides, and $3-2=1$ and 1×180 is 180 degrees! If I use the same method as Squarta, I should divide 180 into 3, because I have 3 angles. That means all my angles are 60 degrees!!” Equally was shouting in delight.

“Wait, Wait, before you go, how about you show your friends how to do it. After all, they will be coming with us to Number Hunt Park.” Mr Rectangle suggested.



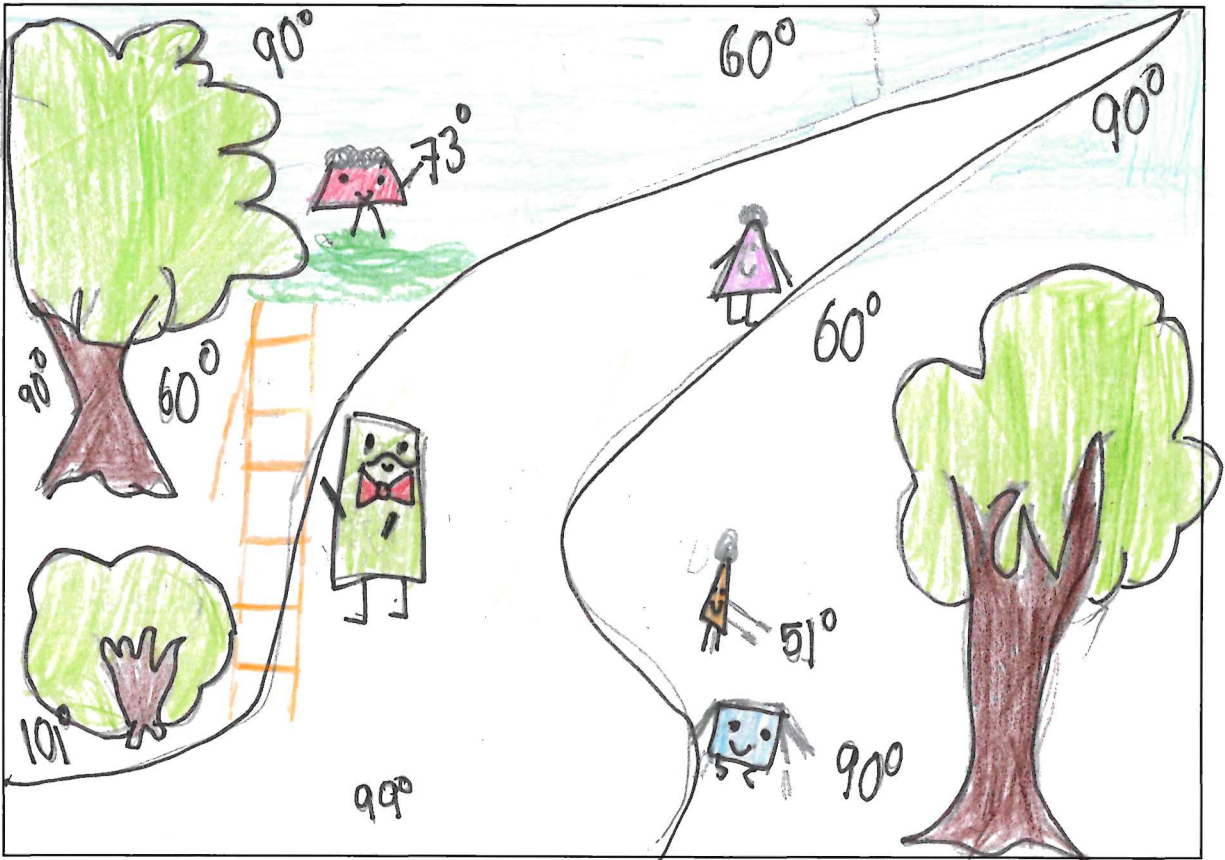
"I don't think we can, they are irregular shapes and only have one missing angle, Trapezo the trapezium and Iscosy the isosceles triangle." Squarta said sadly.

"Well, like you, all quadrilaterals angles add up to 360 degrees and like you, Equally all types of triangle angles add up to 180 degrees. It doesn't matter if you are irregular or regular!"



Squarta ran to the playground and told the two shapes the exciting news. As they were skipping to the classroom, She explained how to find their last angle. “ Well, quadrilateral angles add up to 360 degrees and triangle angles add up to 180 degrees. So add up your current angles and minus them from whatever degrees is your total, in this case 360 or 180 degrees, and you have your answer!”

“Why Thank you! We are extremely excited to go to the Number Hunt Park and find our lost angle, let's go tell Mr Rectangle we are ready to go.” Trapzo ran as fast as his little legs would take him.



On that command, the 4 shapes and Mr Rectangle left for Number Hunt Park and searched for their missing angles. After 2 long hours of searching, each and every one of them was complete. With a big smile planted across their faces they skipped back to their school.

Blurb

Two best friends, Squarta and Equally, have missing angles in each of their shapes. This is unusual as usually when you turn 1, all of your angles turn up. Luckily, they go on a school trip on a Number Hunt in the park, that is where shapes with missing angles go to find them. There is one problem though, How will they know which numbers match them?

ABOUT THE AUTHOR



Hi, my name is Liv and I am 10 years old. I go to St Christophers School, London. At first missing angles were hard for me and that is why I chose that topic. I enjoy writing and maths so combining them is a fun task that I enjoyed.

