



THE 2022 YOUNG MATHEMATICAL STORY AUTHOR (YMSA) COMPETITION

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

SHORTLISTED

‘Detective Numeral and the Missing Number Grid’ by
Armaani Notta (11 years old) at Ashton House School (UK)

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

www.mathsthroughstories.org/ymsa2022

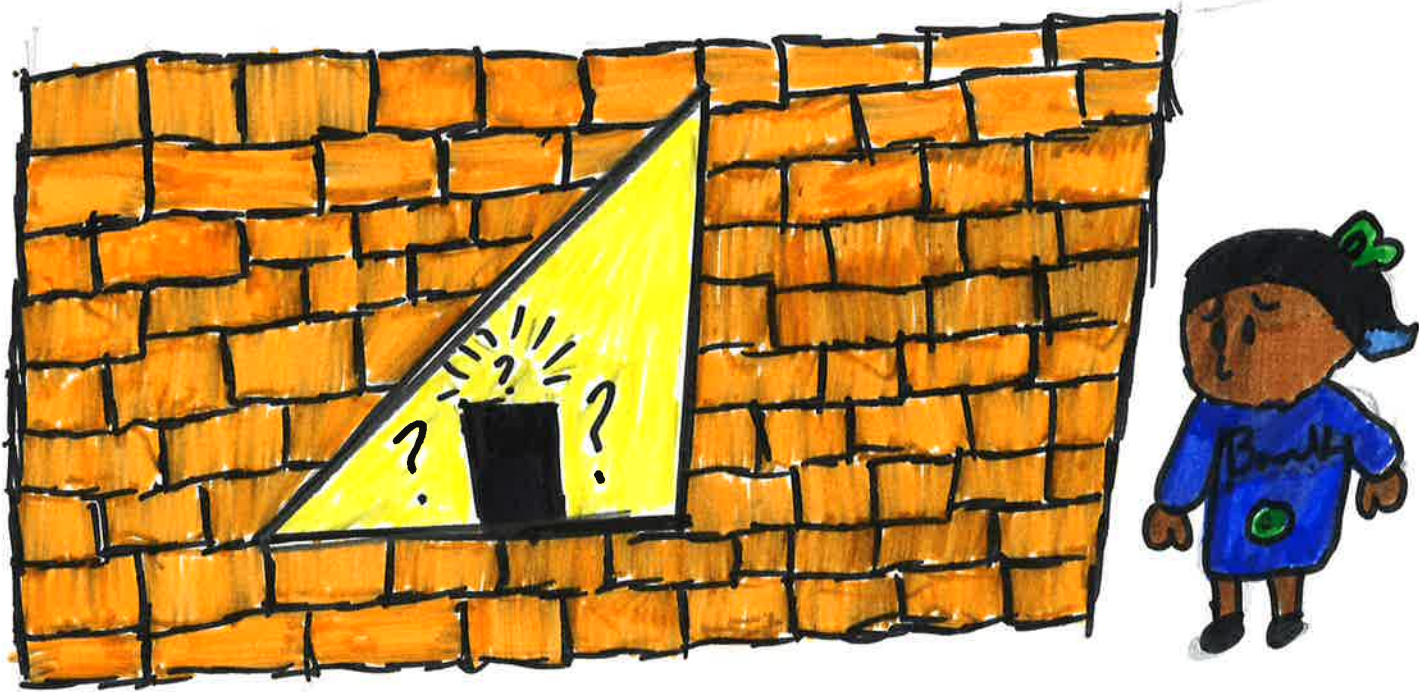
#YMSAMaths

Detective Numeral and the missing number grid

By Armaani Notta

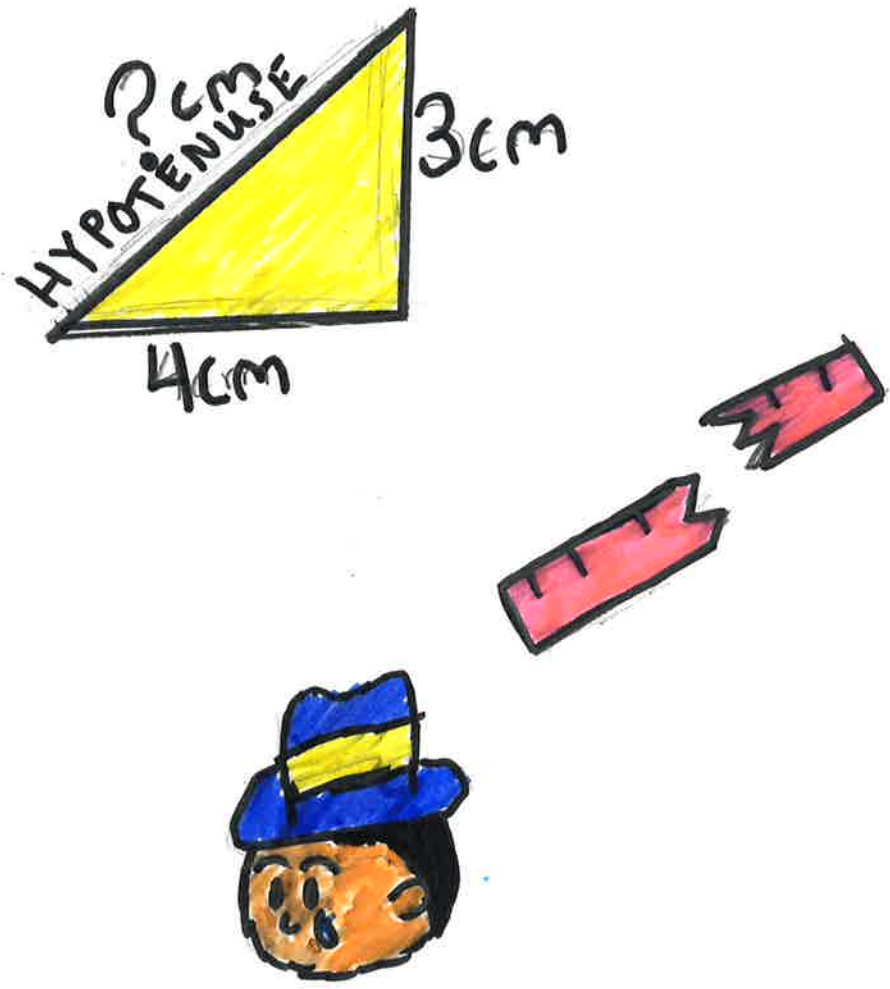


It was a stifling hot day. Detective Numeral sat in his luxury office, pondering when his next case would arrive. Suddenly, there was a loud, familiar, echoing sound. RING ;as quick as a flash Numeral picked up the telephone. A distressed voice exclaimed “Help us Mr Numeral! The most expensive and rare thing at the bank has been stolen- the number grid! Please meet me at Bar Graph Bank” Numeral obediently agreed to their request.



At last, Detective Numeral had a worthy case! At once, he got to the crime scene; Bar Graph Bank. “Hmmm...” he curiously wondered, as he wandered around the perimeter. Finally, he found a gaping hole! “A triangular shape...I must get to measuring!” He declared. At once, Detective numeral whipped out his trusty ruler to measure the available sides.

The first side was equal to 4cm. The next was 3cm and finally “the last side!” exclaimed the detective joyfully “this is the hypotenuse which is the largest out of the three.”



As Detective Numeral began to walk to the hypotenuse (and was one step away from finding the culprit) BANG CRASH THUMP! Detective Numeral had tripped and now his ruler was broken!

As Numeral stood up and brushed off excess dirt a peculiar person politely came up to him and uttered "Numeral...come with me and I will show you how to find the hypotenuse with your ruler." Numeral obliged and followed this mysterious character through many twists and turns until the two reached their destination.



It was a remarkable office with whizzing and whooshing all around (from the many electronics). The person gestured for the Detective to go inside. "By the way" commented the slightly scary character "here is a list of culprits based on your findings." Numeral stood there-dumbfounded by the incredible work.



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“Make sure to listen now Numeral, this is the most important part of our journey. Firstly, SQUARE the TWO measurements you have. In this case, 3cm and 4cm. $4\text{cm} \times 4\text{cm} = 16\text{cm}$, $3\text{cm} \times 3\text{cm} = 9\text{cm}$. Now, ADD the two answers together; $16\text{cm} + 9\text{cm} = 25\text{cm}$. The final step is to find the SQUARE ROOT of 25 cm which will obviously equal 5cm.”

Pythagoras theorem

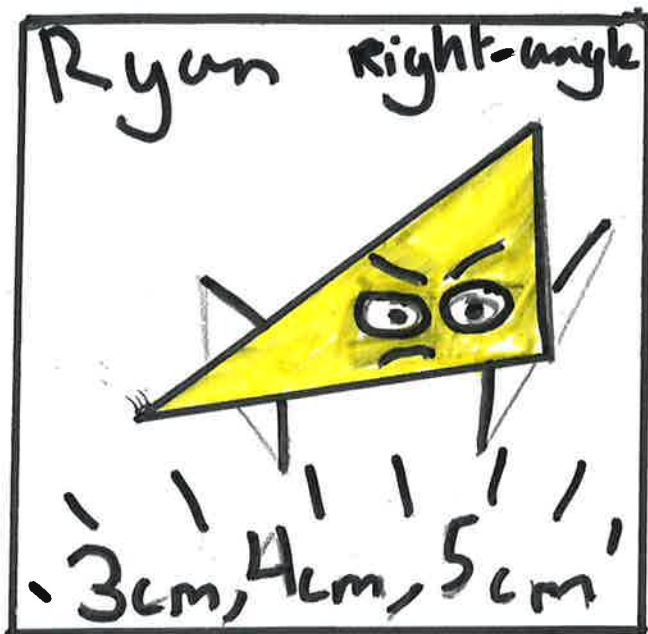
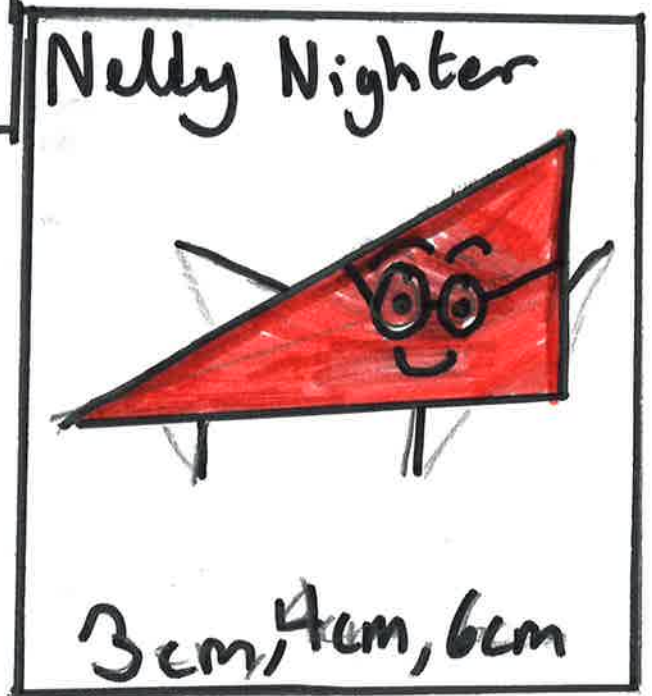
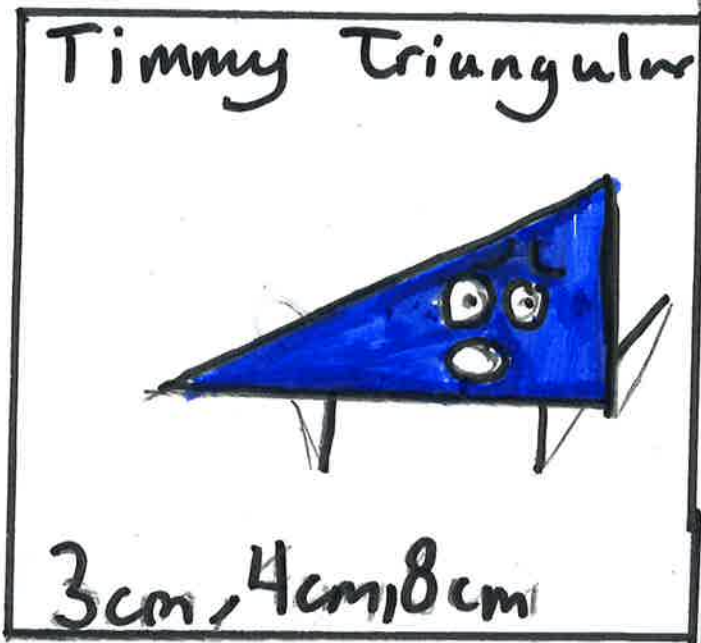
$$1. 4 \times 4 = 16 \quad 3 \times 3 = 9$$

$$2. 9 + 16 = 25$$

$$3. \sqrt{25} = 5$$

Answer = 5cm

After this clear explanation, Numeral scanned his eyes through the 3 culprits given and analysed their measurements before coming to a conclusion.



“ITS RYAN RIGHT-ANGLE” bellowed the content Detective.
“Remember this lesson Numeral for this is the secret technique called Pythagoras’s theorem!”

In the blink of an eye, Detective Numeral was back at bar graph bank. Subsequently, he went and confronted Ryan Right-angle (Ryan was then arrested). Today was another victory for Detective Numeral!



SUMMARY- Detective Numeral is given a new case where the prized number grid is stolen from bar graph bank.

Numeral discovers a triangular hole and starts to measure the sides when his ruler breaks! A mysterious man teaches him the Pythagoras theorem which leads to finding the culprit.

Numeral saves the day and arrests the thief.

About me-Hello, my name is Armaani and I am eleven years old. I go to Ashton House School in London, England. My teacher (Mrs Frampton) inspired my class to participate in this competition when she told us about her maths through stories course. Our recent lesson about Pythagoras's theorem sparked an idea for this story and I am glad I had an opportunity to write it down. I have enjoyed thinking of maths related substitutes for regular things.