THE 2023 YOUNG MATHEMATICAL STORY AUTHOR (YMSA) COMPETITION

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

WINNER

'When in Doubt, Divide It Out' by Samara Dhankar (9 years old)
at Oberoi International School JVLR (India)

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

www.mathsthroughstories.org/ymsa2023

#YMSAMaths

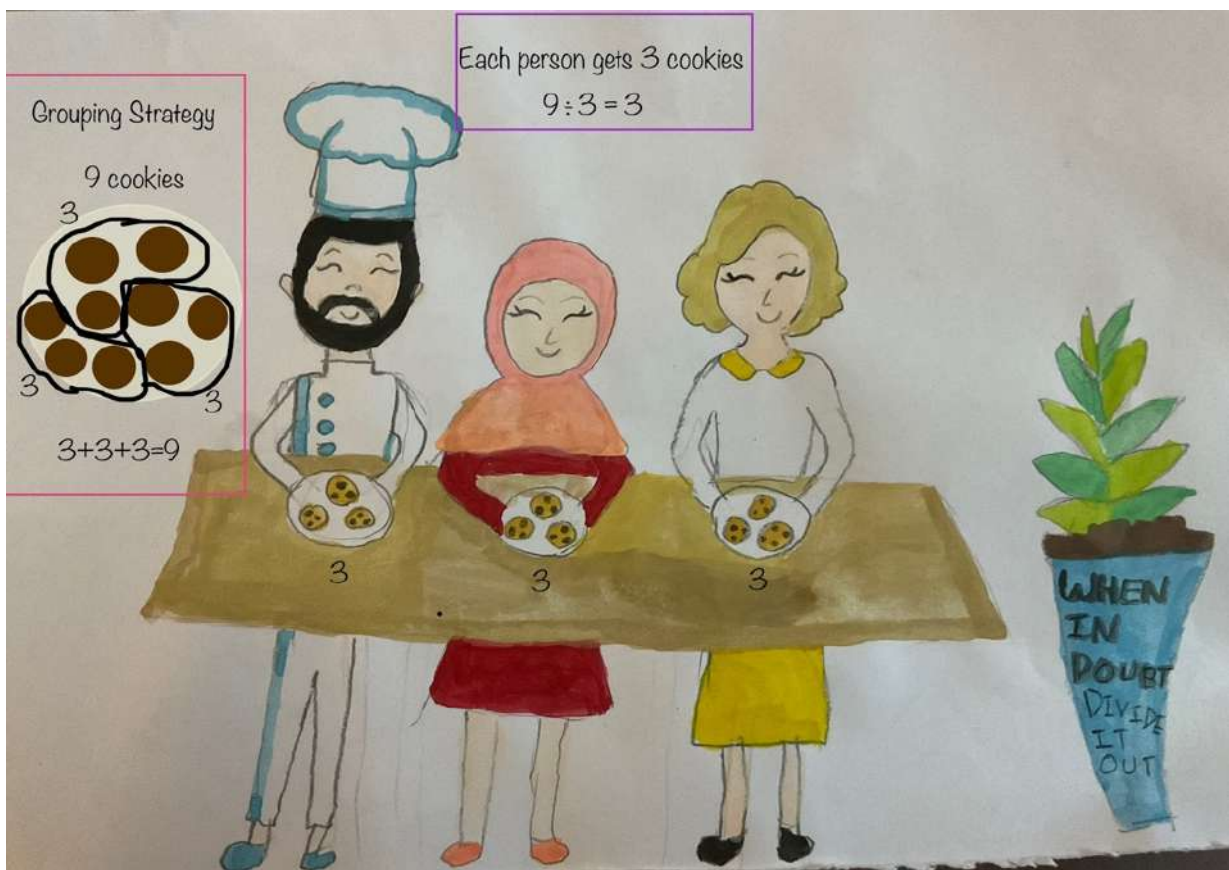SAMARA DHANKAR   OBEROI INTERNATIONAL SCHOOL JVLR

CHAPTER 1
Mariam's Dividor: A Happy Place

In a pretty, quaint little house in the town of Dividior, lived a girl named Mariam Abdullah who was passionate about Maths and was always eager to learn new concepts. She was especially intrigued by the concept of Division. Her Greek mother, Iris, who was a math teacher, had taught her how to divide so that she could apply it in her life when needed. Her mother always said:

> *" When in doubt*
> *Do not fret, do not pout.*
> *Instead, Divide it out ! "*

Her Lebanese dad, Omar, was a well-loved baker. Every Friday, he brought home 9 handmade, delectable cookies from his bakery and her mother equally divided them and distributed 3 cookies each to Mariam, Omar and herself.

Illustration: Mariam and her family sharing cookies baked by her father.

Total no of cookies: 9
Total no of persons: 3
9 cookies have to be divided equally amongst 3 persons
9 divided by 3= 3. Each person will get 3 cookies.

Everyone in Dividior was happy because everyone was considered equal. *They believed in equal and fair division of resources. So there was never scarcity. They had equal power, wealth and food. They also believed that everyone was equal no matter what their race, religion or gender was*.

There were 10 families of various origins like African, Japanese, Indian, Lebanese, English, Greek and others living in Dividior. Each family had 3 members only.

Every Monday, a person from each family would go to the Magic Apple Tree which had 60 apples and take 6 apples each for their families. Neither anyone had more nor anyone had less. The Apple tree, this way, never ran out of apples and citizens of Dividior had a balanced and a content life.

Illustration: The equal division of apples amongst all families.

Total no of apples on the tree: 60
Total no of families: 10
60 apples have to be divided equally amongst 10 families
60 divided by 10= 6. Each family gets 6 apples.

CHAPTER 2
The Dragon's Lair

Nearby, in a village called The Dragon's Lair, lived ferocious dragons who envied the townsfolk of Dividior. There was greed and inequality. Resources were never divided equally amongst dragons. Stronger dragons had more food, while others who had less were always fighting or stealing for more. Peace never prevailed there due to quarrels and thefts.

They often wondered "How are the townsfolk of Dividior always so happy?". They thought that if they can capture Dividior and its Magic Apple Tree, then they will be happy forever, not realising that *nature produced enough for their wants and if they divided fairly and equally amongst themselves, there would be no problems*. When the darkness fell, dragons lured by their greed to have more, attacked the serene Dividior and its Dividorians.

Stronger dragons taking share of weaker and smaller ones. The weaker ones stealing and fighting amongst themselves.

CHAPTER 3
The Great Escape

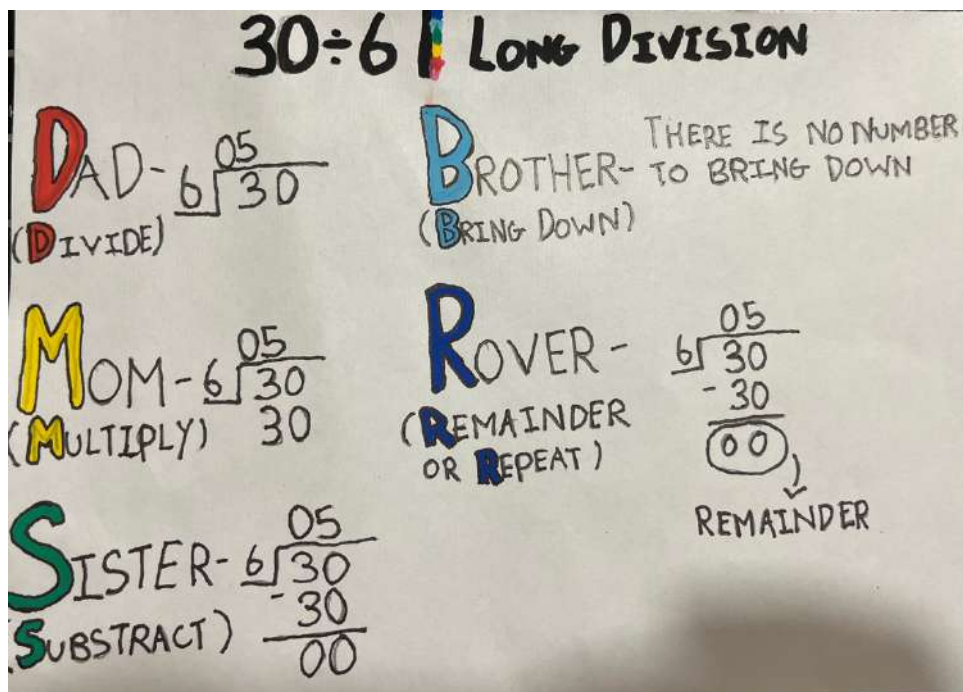The town of Dividior was stormed by fiery and greedy dragons. The ground rumbled and shrieks echoed. Mariam and other natives of Dividior had no option but to flee from Dividior, amidst the ground shaking stomps of dragons. When midnight dawned, entire town of 30 Dividorians left their much loved Dividior and its Magic Apple tree.

First, they went to the bus station to board the bus to the coast of Zande'. Each bus had only 6 seats. In panic, Dividorians, ran helter- sketer and started to scramble for seats. Some buses became overcrowded and some were empty. Mariam wondered, "How can we all equally and fairly board the bus?" She remembered what her mom had taught her.

> *" When in doubt,*
> *Do not fret, do not pout.*
> *Instead, divide it out. "*

"Division!", exclaimed Mariam. They needed to divide the number of people by the number of seats in a bus. The answer would determine how many bus they needed. 30 ÷ 6= 5. They would need 5 buses which would accommodate 30 people, with 6 people in each bus. So now all the Dividorians could leave in 5 buses comfortably and they cheered,

> *" When we are equal,*
> *When we are fair,*
> *Nobody can stop us,*
> *not even The Dragon's Lair"*

CHAPTER 4
The Problem Of Remainder: Never Leave Your Friends

Finally, the buses reached the coast of Zande'. The waves crashed violently along the coast lined with thick coconut palms. The sand was golden and the air laden with smell of salt. From there, Dividorians had planned to sail to the unexplored island of Candiopia which was said to be the abode of Pixie Goddess, who was known to help the lost travellers.

Several wooden boats dotted the shore. Now each boat could hold 5 people only and all of the boats had one boatsmen each, so only 4 seats were available in a boat for Dividorians. Also the boatsmen said, that a boat would sail only when all its seats were filled. There were 30 Dividorians waiting to be seated. In panic and haste, Dividorians started filling the boats. Some boats had too much weight of people and some had too less to sail safely. "How do we get to know how many people can go on each boat?," wondered Mariam. Then suddenly, she heard her mother saying:

" When in doubt,
Do not fret, do not pout.
Instead, divide it out. "

To find out the answer, they had to divide 30 (no of Dividorians) by 4 (no of seats available in each boat). 30 ÷ 4=7 with a remainder 2. So they needed 7 boats to take 28 Dividorians, however 2 people would be left alone and would have to wait for other passengers to fill up their boat. Then Mariam remembered that her father Omar and her mother Iris had grown up on the shores of Mediterranean Sea and were rowing experts. So Omar and Iris decided to row the boats and replace the boatsmen in 2 boats. This way, they could accommodate 2 more Dividorians and nobody would be left behind. So finally 7 boats rode the waves to Candiopia with all the 30 Dividorians and they cheered:

"When we are equal,
When we are fair,
Nobody can stop us,
not even The Dragon's Lair"

Long Division method used to solve the problem

CHAPTER 5
Battle Plan with fair division!

After a long journey, Dividorians reached the island of Candiopia. As the weary travellers crawled onto the island, the sky had become deep purple and the stars sparkled. They walked up the stream where flowers in reds and yellow grew happily.

Suddenly at the end of the stream, appeared a thick green fog. Poof! Infront of them appeared a kind old lady with green eyes, rose bud lips and pixie ears. "Hi, my name is Cassandra. I am the Pixie Goddess," she said. The Pixie Goddess told Mariam, " O dear Mariam ! Do not feel defeated by the Dragons who are greedy, unfair and even foolish to not understand the power of division, equality and fairness. You have the power of division. I think you should create weapons to attack and get back Dividior". She then disappeared just as mysteriously as she had appeared and Mariam prepared the Dividorians for a battle plan.

She made a list of things they needed and fairly distributed tasks depending on Dividorians' skills and abilities. Mariam began giving tasks to each family. Each family had 3 members.

She asked the Kim family who were good at making cannons to make 3 cannons. There were 3 people in the family. 3 ÷ 3=1 so each person in the family made 1 cannon.

The Pierre family who were ironsmiths had to make 30 shields. Now Mr Pierre was old and could not make all the 30 shields. There were 30 shields to be made and 3 people in the Pierre family. 30 ÷ 3=10 so Mr Pierre, his wife and his warrior daughter made 10 shields each.

Next, she asked the Calderon family who were good at making sharp swords to make 9 swords. 9 ÷ 3=3 so each person in the family made 3 swords.

Further, since the African Jabaris were a bunch of techies, they decided to make 30 walkie talkies. 30 ÷3=10, so each one of them made 10 walkie talkies.

They needed 9 heavy clubs. So Mr Fischer, Mrs Fischer and their son who were carpenters agreed to make 3 clubs each as 9÷3=3.

Mariam also needed 3 bows and 21 arrows. So she asked Suzukis to make a bow each, (3÷3=1), while each person in Angelos family made 7 arrows. (21÷3=7)
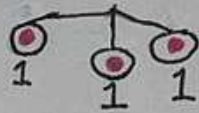
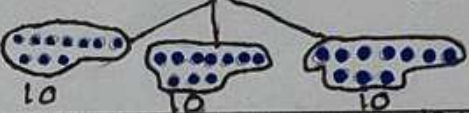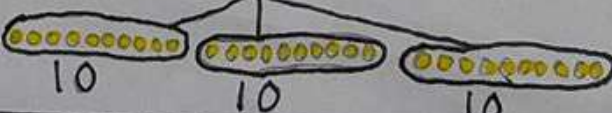She asked the Dhankar Family to make 6 guns. There were 6 guns to be made and 3 people. 6 ÷ 3=2 so each person made 2 guns. *Daddy Dhankar was a bit lazy but little girl Samara encouraged both Mommy and Daddy Dhankar.*

The last task of making 60 bullets for the guns was assigned to the Smiths. Each member made 20 bullets and together were able to make 60 bullets. Mariam's family decided to assist all families and lend a helping hand to others.
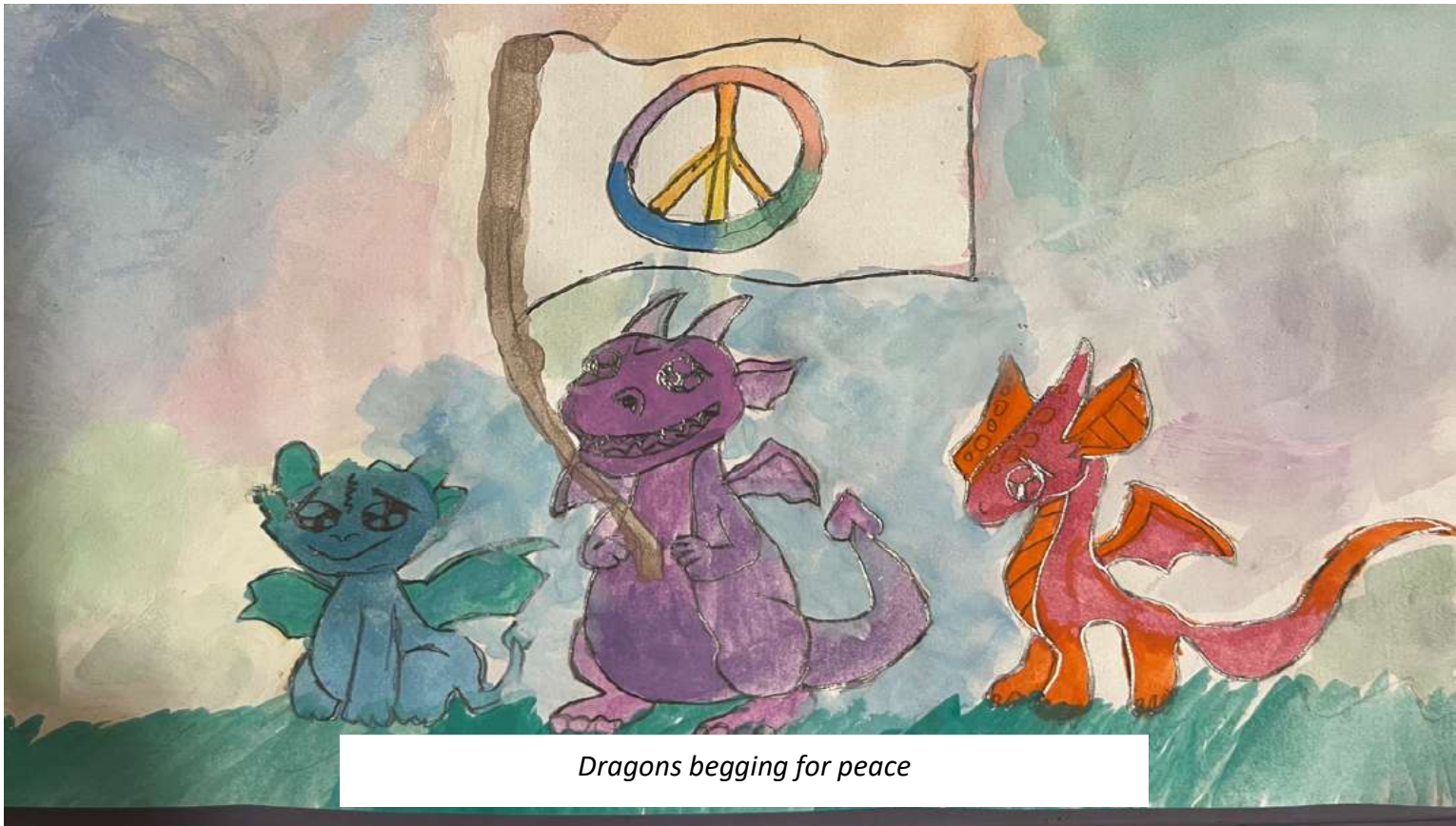
60 BULLETS	SMITH FAMILY- 3 MEMBERS $60 \div 3 =$ 20 20 20	$20+20 +20=60$
3 CANNONS	KIM FAMILY- 3 MEMBERS $3 \div 3 = 1$ 1 1 1	$1+1+1=3$
9 SWORDS	CALDERON FAMILY- 3 MEMBERS $9 \div 3 = 3$ 3 3 3	$3+3+3= 9$
30 WALKIE-TALKIES	JABARI FAMILY- 3 MEMBERS $30 \div 3 = 10$ 10 10 10	$10+10+10 =30$
9 CLUBS	FISCHER FAMILY- 3 MEMBERS $9 \div 3 = 3$ 3 3 3	$3+3+3= 9$
21 ARROWS	ANGELOS FAMILY- 3 MEMBERS $21 \div 3 = 7$ 7 7 7	$7+7+7= 21$
6 GUNS	PHANKAR FAMILY- 3 MEMBERS $6 \div 3 = 2$ 2 2 2	$2+2+2= 6$
3 BOWS	SUZUKI FAMILY- 3 MEMBERS $3 \div 3 = 1$ 1 1 1	$1+1+1=3$
30 SHIELDS	PIERRE FAMILY- 3 MEMBERS $30 \div 3 = 10$ 10 10 10	$10+10+10= 30$
HELPING FAMILIES	ABDULLAH FAMILY- THEY will assist families	

CHAPTER 6
Sail To Victory

After having worked long hours to prepare all the weapons, the Dividorians gathered the weapons in one box and prepared to return to Dividior to fight the dragons. Mariam distributed the jobs and weapons. 3 people had arrows and bows, 6 people had guns, 9 people had clubs and 9 people had swords. Everyone had walkie-talkies to communicate and shields to protect. As the Dividorians sailed their boats to Dividior, braving the stormy sea, they cheered each other.

As their boats reached Dividior, the Dividorians braced themselves with their shields and attacked the dragons. The dragons shrieked in pain as the arrows struck them. They scampered for shelter as cannons boomed and guns were shot. The dragons had remained hungry for past few days and had no strength to fight. Mariam with her meticulous battle

Dragons begging for peace

plan, could easily defeat the dragons. The dragons tried to fight back but they were no match for Mariam and the townsfolk of Dividior. They ran away and hid in one of the houses. Mariam and the townsfolk were puzzled and confused as to why they did that. Suddenly, the dragons came out of the house and raised a white flag and begged for peace. " We are sorry for our cruel act of attacking you all," they cried. "We kept on wondering how you were so happy in Dividior while none of us were happy at the Lair. Once we arrived here, we saw that again everyone was starving, stealing and quarrelling. Some of us would grab more food. The Magic Apple Tree also stopped growing apples. We promise that if you tell us your secret of living happily at Dividior, we will go back to The Dragon's Lair and will never come back"

CHAPTER 7
The End

Mariam gave a sigh of relief and began to explain the reason for their peaceful lives.

She said, "In Dividior, we believe that everyone is equal, irrespective of their country and gender. Hence we divide everything equally amongst us so that everyone has the same amount of power, wealth, and food. If somebody has more food they share it with the people who have less food. Even after leaving Dividior, we followed the principles of equal division and with our unity and fairness, we managed to survive and even win the war against the most ferocious creatures. You might think that division is just a math concept but if you use it in the right way it can end up solving more problems than you expect."

Mariam further said,"If we all equally and fairly divided all that we have, we all can live peacefully with no scarcity or chaos. It is important to equally share our resources, wealth and power so that everyone is content and the world is a happy place. However sometimes in division, there will be remainders but there is always a solution.

Therefore remember:

"When in doubt.
Do not fret,
do not pout.
Instead, divide it out!"

Our World – A Happy Place for All with Simple Rules of Equal Division

BLURB

There is a girl named Mariam who lives in Dividior. Mariam's mother always said " When in doubt, do not fret, do not pout, instead, divide it out". Dividior is a very peaceful and happy town as they believe that everyone is equal and divide their resources equally. But one day dragons attack the peaceful hamlet of Dividior. Mariam and the townsfolk flee their land. Can division help her and the rest of Dividorians? Read to find out.

ABOUT THE AUTHOR

My name is Samara Dhankar and I live in Mumbai, India. I go to Oberoi International School, JVLR Campus. As Editor in Chief of my school's newsletter, I am extremely fond of penning my thoughts . I chose to write this story to show how important the concept of division is and how it can help the world become a peaceful place if we equally and fairly share our resources. The solutions to problems in the story include using equal grouping strategy, long division methods. I have also tried to make problems challenging by introducing the concept of remainder. Since this is a story of unity, inclusivity and equality I wanted to show a good balance of all nationalities which is why I have included characters of Africans, Greek, Lebanese, English and Indian origins living together and helping each other. Since I love to draw, my story contains illustrations done by hand in water colours and ink.

My story is inspired by the people who have to flee their beloved country and home due to war and persecution. The Dividorians also had to flee their land because of the attack by dragons but their spirit of togetherness and fairness along with their knowledge of division helps them win over the mighty dragons.