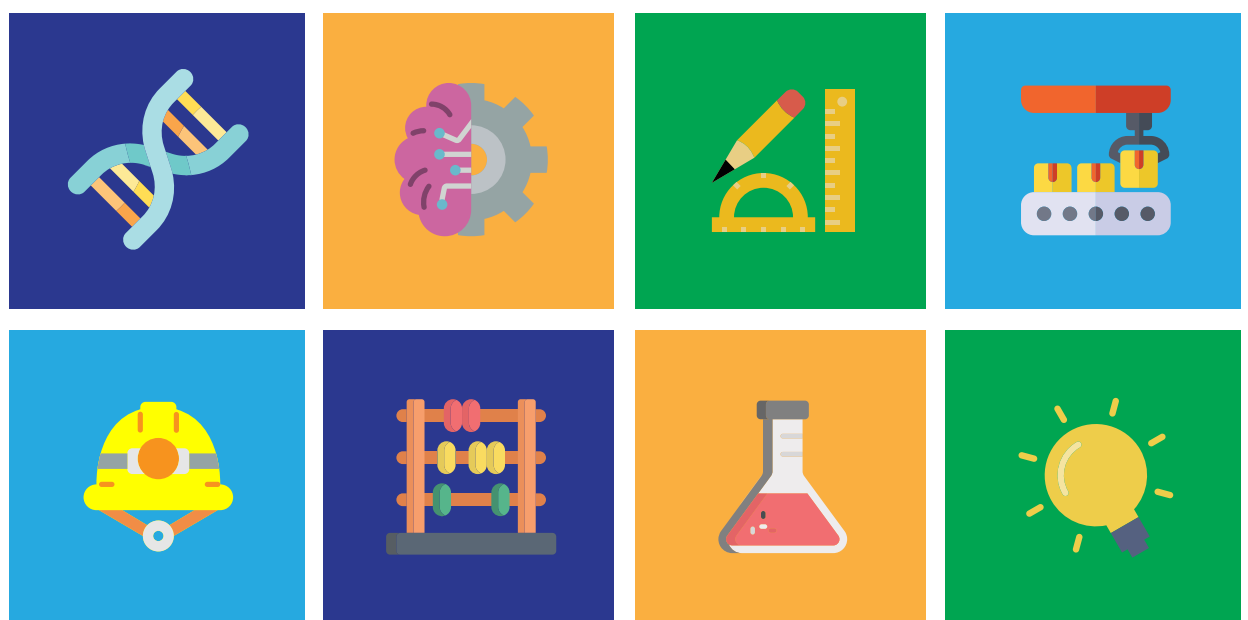


HeadStart STEM

2018-19



**A Compilation of Creations and Contributions
by STEM HeadStarter Students**

Qualcomm
aqriti

**United
Way**
United Way Mumbai

About HeadStart STEM

Headstart STEM is United Way Mumbai's education enhancement initiative, bringing STEM education to children from **15 municipal and low-income schools in Mumbai's F-North and F-South Municipal wards**. The initiative aims to encourage scientific thought and learning among children from 1st to 10th grades, especially girls, through various interventions throughout the academic year. It also promotes the pursuit of STEM related careers to the children. Additionally, professional teachers from low-income and government schools are also engaged to promote new thinking within the classroom and build capacities.

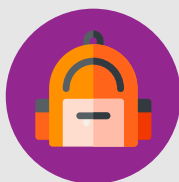
HeadStart STEM aims to:

- Create an enabling environment for students to succeed.
- Develop and enhance STEM learning outcomes through innovative educational materials and infrastructure.
- Engage community stakeholders to ensure enrolment retention and quality education.

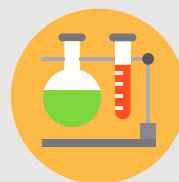
Impact of the HeadStart STEM Interventions:



15 schools equipped with digital learning support for children from Grades 1-5



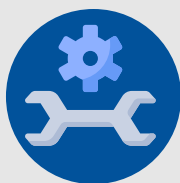
300+ children participated in STEM camps



10 Mini Science Centres set up to promote hands-on STEM learning



15 classroom STEM libraries to encourage a love for reading and STEM



1000+ children part of STEM exposure visits



Remedial education in Mathematics for **1000+ children from Grades 1-5**



Goal setting, time management, career mapping & guidance for **330+ girls**



Around **400 Grade 10 children** participated in Career Fair for guidance on STEM careers



Monthly STEM newsletters circulated



1050 children part of Anvesha: A STEM Carnival to promote experiential learning

STEM HeadStarters

The STEM HeadStarters is a monthly newsletter for the children, by the children. Every month, children share a host of entries comprising fun facts, Maths tricks, STEM news, experiments to try at home, information about famous personalities and trends in STEM fields. The shortlisted entries are then featured in the newsletter. The STEM HeadStarters offers children a platform to share knowledge and learn from peers, while fostering a spirit of competition as children compete among themselves to get their entries featured.

This book is a compilation of the children's creations and contributions to STEM HeadStarters over the academic year 2018-2019. The newsletters are not only an informative resource, but are also evidence of the children's interest and involvement in generating them every month.

We are grateful to all our partner schools for their participation and support throughout the year.

1. *Dr. D.B. Kulkarni Vidyalaya*
2. *Guru Nanak High School*
3. *S.S.M. M.C.M. Girls' High School*
4. *Lion Mohanlal Parmanand Bhuta Sion Sarvajanic School*
5. *SVB's U.M. Thevar School*
6. *Ahilya Vidyamandir*
7. *Shishu Vihar Madhyamik Vidya Mandir*
8. *Karmaveer Bhaurao Patil Vidyalaya*
9. *Navbharat Vidyalaya*
10. *Pratiksha Nagar MNP Marathi School No. 2*
11. *Haji Ismail Haji Allana Marathi School*
12. *Nadkarni Park Marathi School No. 3*
13. *K. D. Gaikwad Marathi School No. 1*
14. *New Sion Municipal Secondary School- Hindi*
15. *New Sion Municipal Secondary School- Marathi*

STEM HeadStarters

THE "EXPLORERS, OBSERVERS, THINKERS, PROBLEM SOLVERS"


United Way Mumbai is here on Mission HeadStart STEM!
A mission to make you love the world of
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In HeadStart STEM we will...

- Learn about science through fun, educational models
 - Go on a STEM picnic and camp
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 - And many more fun filled activities




SCIENCE is all about

- Searching for knowledge about the universe
- Making observations
- Conducting experiments
- Sharing results of experiments




TECHNOLOGY is all about

- Using knowledge to invent new devices or tools
- Using devices that make life simple



ENGINEERING is all about

- Creating new things or improving things
- Designing things that can solve problems in the world



MATHS is all about

- Counting, measuring and using formulae
- Using numbers to tell time, play games, build things and almost everything else

Source: <https://kids.britannica.com/kids/article/mathematics/353443>
<https://www.britannica.com/topic/STEM-education>



The important thing is to
NOT STOP QUESTIONING.
-Albert Einstein

5 FASCINATING FACTS ABOUT THE HUMAN BODY

- It is impossible to sneeze with your eyes open (sciencealert.com)
- There are ten times more bacteria cells in your body than human cells (harvard.edu)
- Over the course of just one day, our blood 'runs' the distance of 19,312 kilometers (howstuffworks)
- The heart beats 35 million times a year. Yes, 35 million. A year! (roddershealth)
- When you blush, the inside of your stomach does too (academicstips.org)

ORDERING MATHEMATICAL OPERATIONS

$$7 + (6 \times 5^2 + 3)$$

What do we do first? Order of operations-

- Do things in **Brackets** first
 $7 + (6 \times 5^2 + 3)$
- Solve **Orders**
 $7 + (6 \times 5^2 + 3)$
 $7 + (6 \times 25 + 3)$
- **Divide** OR **Multiply** (whichever comes first)
 $7 + (6 \times 25 + 3)$
 $7 + (150 + 3)$
- **Add** OR **Subtract**
 $7 + (150 + 3)$
 $= 7 + 153$
 $= 160$

How do I remember it all?

B	O	D	M	A	S
Brackets ()	Orders $\sqrt{x^2}$	Division \div	Multiplication \times	Addition $+$	Subtraction $-$

Source: <https://byjus.com/maths/bodmas-rule/>

Amaze your friends with this demonstration of centripetal force:

- Tornado in a bottle experiment
- Add water to a bottle
 - Add a little dish soap
 - Add a pinch of glitter
 - Close the bottle
 - Hold the bottle upside down and shake it as fast as you can in a circular pattern for 20 seconds

You will see a tornado beginning to form!

Why does this happen?

Centripetal force acts on the bottle when it moves in circular motion. This is what catches the glitter and makes it move.

Source: <https://scienceexplorers.com/category/experiments/>

Attention Everybody!!!

Let's write for September together...

Do you love to draw, colour, write, read about new things and explore?
Then come write for STEM HeadStarters!

You can share:

- Interesting facts
- Experiments you have conducted
- Mini Science Centre models you like
- Math tricks you know
- Famous personalities you like
- News you have watched

And anything else from the world of STEM! Give your drawings and writings to your class teacher by 10th September.

OR

Send in your entries via email to Aishwarya Iyer or Monika Gurnasinghani at headstartstem@unitedwaymumbai.org
Or call us on +91 22 24937676 / 80-82, 62378947 / 8

OR

United Way Mumbai
309, Nirman Kendra, Famous Studio Lane, Off Dr. E. Moses Road, Mahalaxmi Estate, Mumbai 400 011

Students' Contributions

September - October, 2018

01/09/2018 STEM Savita/viii/47

Interesting facts

* Animal facts.

- 1) A hummingbird weighs less than a penny.
- 2) An ostrich's eye is bigger than its brain.
- 3) A sheep, a duck and a rooster were the first passengers in a hot air balloon.
- 4) Butterflies taste their food for more than two years.
- 5) The tongue of a blue whale weighs more than most elephants!

* Mind-blowing facts.

- 1) A ball of glass will bounce higher than a ball of rubber.
- 2) Saturn's density is low enough that the planet would float in water.
- 3) There are 60,000 miles of blood vessels in the human body.

Savita Paswan from Grade 8, U.M.T. High School found these fascinating facts for our Newsletter.

Maths tricks

1) 57×24

- The simplest way to multiply faster

- a) Write one number vertical and one number horizontal.
- b) Make box in between.
- c) Divide in four parts.
- d) Draw one vertical line in all parts.
- e) Then multiply one digit ~~by~~ ^{by} one digit.
- f) Write one digit on one side of vertical line and second digit on one side of vertical line.
- g) Then ~~write~~ ^{write} the number by ~~adding~~ ^{adding} them.
- h) ~~Then you will get correct answer!~~ ^{Add the number that are in straight line.}

	5	7
2	10	14
4	20	28

1368

Ans $57 \times 24 = 1368$

Name = Shubham
Roll no = 26
Std = VII

Shubham from Grade 7, U.M.T. High School sent us this amazing Maths Trick!

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 - And many more fun filled activities

DID YOU KNOW?


Bees must collect nectar from 2 million flowers to produce one pound of honey.


The world's longest pencil is 1091 metres long, and is bendable as it is made of graphite & polystyrene.
- Mariyam Fatima Khan, Grade 7, U.M.T. High School


Saturn's density is low enough for it to float in a large body of water.
- Savita Paswan, Grade 8, U.M.T. High School

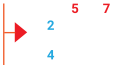

A ball of glass will bounce higher than a ball of rubber.
The tongue of a blue whale can weigh as much as an elephant!

Maths Tricks

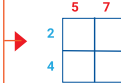
How to multiply numbers easily

E.g. 57×24

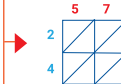
1. Write one number vertically and one number horizontally



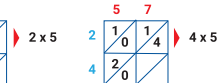
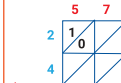
2. Draw a box between the numbers and divide it into 4 parts



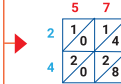
3. Draw a slanting line in each part of the box



4. Multiply each digit of the vertical number with each digit of the horizontal number. Write the answer in the box with one digit on either side of the slanting line.



5. Then add the digits that are in the same slanting line starting from the digit at the bottom right.



- Shubham Vaishya
Grade 7, U.M.T. High School

Source: <https://www.khanacademy.org/math>

The answer is 1368

विज्ञानकविता

काहीही झाले तरी या विज्ञानाला पर्याय नाही
या विज्ञानाला पर्याय नाही
व्यापून टाकले त्याने हे मानवी जीवन सारे
सर्वा मध्ये शिरले विज्ञानाचे वारे

असे कसे हे घडले हे फळ खाली पडले
न्यूटनने ते पाहिले डोके हे चालवले
होते असावे आकर्षण शोधले गुरुत्वाकर्षण

सागरात राहतात हे जलचर प्राणी सारे
वातावरणात असतात सूक्ष्म जीवन पक्षी सारे
अवकाशातून फिरती चंद्रग्रहण तारे
भूपृष्ठावर आढळते हे मानवी जीवन सारे

निरीक्षणातून शोधले शेती ज्ञान सारे
मातीतून अंकुर ते बी। बियाणे न्यारे
धरतीला नेसवले हिरवेगार वस्त्र न्यारे
यातूनच आले सृष्टीला रूप न्यारे !

-Grade 6, Shishuvihar
Madhyamik Shala

Exceptional Powers!

YOU WILL NEED:

1. 2 transparent glasses
2. 4 spoons of salt
3. 2 eggs
4. Water

FOLLOW THESE STEPS:

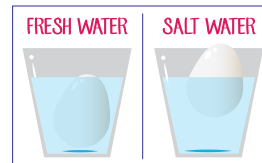
1. Pour water into the glasses till they are $\frac{3}{4}$ full of water.
2. Stir the salt in one of the glasses until it completely dissolves.
3. Place an egg in each glass carefully.

What do you see?

The egg sinks in fresh water but floats in salt water.

WHY DOES THIS HAPPEN?

The force of gravity pulls objects downwards. But water exerts an upward force called buoyancy (boy uhn see). Salt water has greater buoyancy than fresh water, so it pushes the object upwards. Hence, the egg floats in salt water while it sinks in fresh water.



Source: <https://www.britannica.com/science/Archimedes-principle>

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- News you have watched

And anything else from the world of STEM! Give your drawings and writings to your class teacher by 31st October OR

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Or call us on +91 22 24937676 / 80-82, 62378947 / 8

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Source: <https://www.khanacademy.org/math>

Students' Contributions

November, 2018

INDIAN ASTRONAUT



RAKESH SHARMA BECAME THE FIRST INDIAN ASTRONAUT TO GO INTO SPACE. IN 1994 HE SPENT EIGHT DAYS ON A SPACE STATION FOR A JOINT MISSION OF THE ISRO AND THE SOVIET INTERCOSMOS SEEING INDIA FROM SPACE. HE SAID 'SAARE JAHAN SE ACHHA!'

Tanishq Gaware, Grade 5, Guru Nanak High School showed us his interest in astronomy with this snippet

COOL MATH TRICK

STEP I: Come up with any digit below 10

STEP II: Multiply your number by 2.

STEP III: Add 6 to your multiplied number.

STEP IV: Divide the number by 2.

STEP V: Subtract the first number you have thought of back in Step I from the latest number you have come up with in step IV.

AND THE ANSWER IS... 3!!

Vedant Desai, Grade 7, Dr. D.B. Kulkarni Vidyalaya shared this cool Maths trick

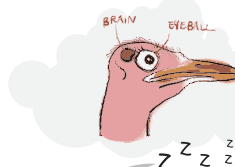
STEM HeadStarters

THE "EXPLORERS, OBSERVERS, THINKERS, PROBLEM SOLVERS"

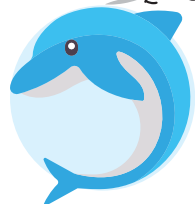
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DID YOU KNOW?



An ostrich's
eyeball is bigger
than its brain!



Dolphins sleep with
one eye open.

- Savita Paswan
Grade 8, U.M. Thevar High School

Source: <https://www.livescience.com/7763-dolphins-eye-sleeping.html>

STEM JOBS

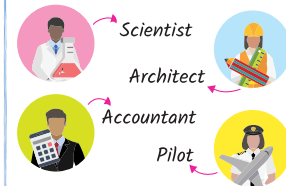


Who is an astronaut (अंतराळवीर)?

An astronaut is a person who travels in outer space (अंतराळ). Astronauts can pilot, command or work as a crew member on a spacecraft (अंतरिक्षयान). They gather information about other stars and planets (तारे आणि ग्रह). For protection in space, they wear spacesuits (स्पेस सूट) that allow them to breathe. Rakesh Sharma was the first Indian astronaut to go into space in 1984. He spent eight days on a space station. When he saw India from space, he said, 'सारे जहाँ से अच्छा हिंदुस्तान हमारा'



More STEM Jobs...



--Tanishq Gaware

Grade 5 A, Guru Nanak High School

Source: <https://kids.britannica.com/kids/article/Rakesh-Sharma/623627>

विज्ञान

कवि : विवेक कुमार सिंह

एडिसन ने बालक को खोजा बड़ी पकड़ावाज है,
बंदखाने में कंप्यूटर खोजा, तकनीकी असाहस है।

देखो ये तन्वीरें अपने शोर की अभिमान की,
आओ बच्चों! तुम्हें दिखाएँ, झाँकी विज्ञान की।

देखो अपने बॉयस, फार्स के ताप-दाब संबंधों को,
उसने सारा जीवन काटा खोजों और प्रयोगों को।

ये हैं अपना पोर्टल इन जूसे रेडियोधर्मी,
एलेक्ट्रॉन को थॉमसन और न्यूटन को चेडविक को।

देखो मिट्टी का उपजाऊ बोरेर का यूरिया था,
अगल रही है कण कण से बंद श्रुति का खोना था।

टेक्सकोप नाम था मूढ़ी में बहारा बम्बोज़ था,
बोली हर-हर गैसिलीयों की बच्चा-बच्चा बोला था।

अलेक्संडर फ्लेमिंग आप पेनिसिलिन से घाब भराये,
आइबुप्रोफेन का डान का तो मेडल का सम्मान।

एक्स किरण है मिकस प्लांक के श्रवणत का इनाम,
करल जीव से सृष्टि आयी हो गया इतिहास नाम।

देखो रेडियो मारकोनी का, मन उमंग से भरा सभी का,
हरागोविंद खुराना लोका लाये अपने कृत्रिम जीव का।

विज्ञान प्रगती का है सपना जान हो विज्ञान का,
सब पढ़े सब बड़े नाम हो भारत देश का।

यहा वैज्ञानिकों ने लगा दी बाजी अपने ज्ञान की,
आओ बच्चों! तुम्हें दिखाएँ झाँकी विज्ञान की।

दामिनी सहदेव मुख
टी. अ. डॉ. डी. बी. कुलकर्णी विद्यालय



Attention Everybody!!!

Let's write for December together...
Do you love to draw, colour, write, read about new things
and explore? Then come write for STEM HeadStarters!

You can share:

- Interesting facts (मनोरंजक माहिती)
- Famous personalities (प्रसिद्ध व्यक्ती)
- Experiments (प्रयोग) you have conducted (प्रसिद्ध व्यक्ती) you like
- Maths (गणित) tricks you know
- News (बातचीत) you have watched

And anything else from the world of STEM! Give your
drawings and writings to your class teacher by 5th December

OR

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Students' Contributions

December, 2018

Volcano Effects



What are the effects of volcano?

- 1] The chemical substances such as lava, vapours, hot, mud, sulphur, etc. get collected on the surface of the earth and thereby mountains and hills are created.
- 2] The atmosphere gets polluted due to the ash and gases ejected by the volcano.
- 3] Often, it rains as a result of a volcanic eruption.
- 4] Temperature rises due to hot gases.
- 5] Forests and settlements get buried under the hot mud.

Janavi Vinod Adangale
from Std. VII, Div. A, Guru
Nanak High School sent us
these fun facts about
volcanoes

4] Which gas evolved from paddy fields and marshes?

→ Methane

5] Who invented periodic table?

→ Dmitri Mendeleev.

Sanobar Naim Khan from
M.P. Bhuta School shared
some knowledge on
Chemistry for the
newsletter

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DID YOU KNOW?



► Dmitri Mendeleev, a Russian chemist, created the periodic table.



► Methane gas evolved in rice fields and marshes.



► Diamond is the purest form of carbon

- Sanobar Naim Khan
M.P. Bhuta School

Source: <https://www.britannica.com>

कचरा-मोठी जबाबदारी



आपण संशोधन प्रत्येक गोष्टीत केलं तर ते परिपूर्ण होते. मला वाटत आपल्या देशातील मोठी टंचाई म्हणजे कचरा. आपल्या मुंबई शहरात दररोज ७२०० टन कचरा जमा होतो. आपण हा कचरा रस्त्यावर व कधी कधी कचऱ्याच्या डब्यात टाकतो पण त्यांचे वर्गीकरण करत नाही. सुखा कचरा व ओला कचरा अशा प्रकारे आपण वर्गीकरण करायला पाहिजे. ओला कचऱ्याचे भाजीपाला व खरकटे यांच्यामुळे शेताला उपयुक्त असे खत मिळेल. प्रत्येक कचऱ्याच्या Reuse, Refuse, Recycle, Rethink, Reduce, Research अशा प्रकारे वर्गीकरण केलं तर देशातील किती तरी मोठी समस्या दूर होईल.

- रुतिका नारायण शेलार
९वी अ, डॉ. डी. बी. कुलकर्णी विद्यालय

EFFECTS OF VOLCANIC ERUPTIONS

- Chemical substances like lava, vapour, hot mud, sulphur, etc. are collected on the earth's surface, helping create mountains and hills.
- The atmosphere gets polluted due to the ash and gases ejected by the volcano.
- Often, it rains as a result of a volcanic eruption.
- The particles released during a volcano block sunlight and cool the Earth.
- The temperature also rises due to hot gases over millions of years.
- Forests and settlements get buried under the hot mud.



- Janavi Vinod Adangale
Std VII, Div. A, Guru Nanak High School

Sources: <https://scied.ucar.edu/shortcontent/how-volcanoes-influence-climate>
<https://www.encyclopedia.com/earth-and-environment/geology-and-oceanography/geology-and-oceanography/volcanoes>

शरीररचनाशास्त्रा

हिरोफिलस या ग्रीक अभ्यासकांनी शरीररचनाशास्त्राचा पाया घातला. त्यांनी प्रथम शास्त्रीय पद्धतीने मानवी शरीराचे विच्छेदन इ. स. पु. तिसऱ्या शतकाच्या सुरवातीला केले. त्यांनी मेंदू, डोळा, प्रजात्पादन तंत्राचे अवयव यांच्या रचनेचे वर्णन लिहिले आहे. त्यांनी तंत्रिक (मज्जा), नीला, रोहिणी यांचे कार्याबाबत संशोधन केले होते. त्यांचे सहकारी एरासिस्ट्रास यांनी त्यावर अधिक संशोधन केले व त्यातून शरीरक्रियाविज्ञान या नवीन शाखेचा जन्म झाला.

संस्कृती समीर जाधव
९वी, तु.अ. डॉ.डी.बी.
कुलकर्णी विद्यालय

Source: <https://www.britannica.com>

India's first fighter aircraft

The Hindustan Aeronautics Limited HF 24 Marut was the first fighter aircraft built in India in the 1950s by a German aircraft designer Kurt Tank and his assistant. The aircraft was used in the Battle of Longewala during India's war with Pakistan in 1971 after which it was withdrawn from the Indian Air Force in 1990.

-Bhoomi Kunchikure
Std 7, M.P. Bhuta School

Source: <https://www.indiatimes.com/technology/news>
<https://theprint.in/security/>

Attention Everybody!!!

Let's write for January together...
Do you love to draw, colour, write, read about new things and explore? Then come write for STEM HeadStarters!

You can share:

- Interesting facts (मनोरंजक माहिती)
- Famous personalities (प्रसिद्ध व्यक्ती)
- Experiments (प्रयोग) you have conducted
- News (बातमी) you have watched
- Maths (गणित युक्त्या) tricks you know

And anything else from the world of STEM! Give your drawings and writings to your class teacher by 10th January

OR

Send in your entries via email to Aishwarya Iyer or Monika Gurnasinghani at headstartstem@unitedwaymumbai.org
Or call us on +91 22 24937676 / 80-82, 62378947 / 8

OR

United Way Mumbai
309, Nirman Kendra, Famous Studio Lane, Off Dr. E. Moses Road, Mahalaxmi Estate, Mumbai 400 011

Students' Contributions

January 2019

Do you Know?

GoldFish have only three
Second Memory they lost
their name.



Snail are slipping
three years.



Simran Pawar from Grade 8, S.S.M. Shivaji Vidyalaya showed us her knowledge of the natural world for the January edition

Step-1

write a table of 3 and 2.

Step-2

write a unit place of table of 2.

Step-3

Add the number of table 3 in the
number of ten place of table 2.

3	2	3 2
6	4	6 4
9	6	9 6
12	8	12 8
15	10	15+1 → 16 0
18	12	18+1 → 19 2
21	14	21+1 → 22 4
24	16	24+1 → 25 6
27	18	27+1 → 28 8
30	20	30+2 → 32 0

We use this method for making table
of any number.

Shraddha Devkar from Grade 8, S.S.M.
Shivaji Vidyalaya know amazing tips to
make number tables easy

News I know

- 1) Nasa's mission to 'touch' the sun
sends back first images
- 2) Nasa telescope discovers 2 new planets
smooths after launch.
- 3) British test satellite collects space
junk for first time
- 4) World record magnetic field 5000
times stronger than Earth's made
- 5) Space X signs 1st private passenger to
fly around the moon
- 6) Three new fish species found 71500 metres
below sea level
- 7) Electricity-producing bacteria found in
the human gut
- 8) India seeks Russia's help for human in space
mission :

Namira Sandogar from Grade 6, S.S.M.
Shivaji Vidyalaya gave us some news from
the world of STEM

STEM HeadStarters

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In HeadStart STEM we will...

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 - Go on a STEM picnic and camp
- Create your own newsletter, "STEM Headstarters"
 - And many more fun filled activities

DID YOU KNOW?



► There are more than 1,300 bat species distributed across six continents.

Source: <https://www.livescience.com/28272-bats.html>

-Tanvi Prakash Zagade

Grade 8, S.S.M. Shivaji Vidyalaya



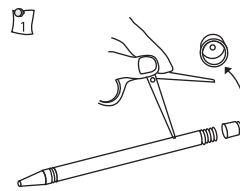
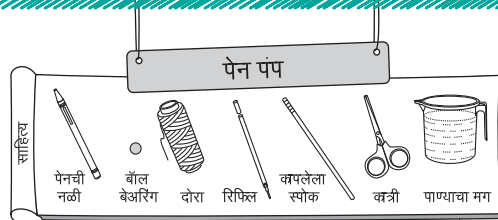
► Goldfish see more color than humans.

<https://economictimes.indiatimes.com/magazines/panache/your-goldfishs-memory-lasts-longer-than-3-seconds-amp-other-facts-about-the-popular-pet-not-just-three-seconds/>

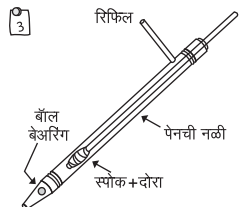
- Simran Pawar

Grade 8, S.S.M. Shivaji Vidyalaya

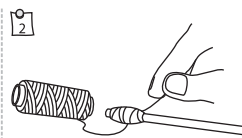
EXPERIMENT



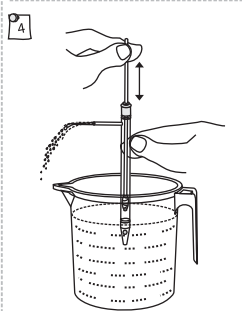
पेनमधे नळीच्या मागच्या कॅमधे एक भोक पाडा. त्यातून सायकलचा स्पोक सहजपणे गेला पाहिजे. नळीला वरून थोड्या अंतरावर आणखी एक भोक पाडा.



पेनमधे बॉल बेअरिंगचा बॉल टाक. मग दोरा गुंडाळलेली स्पोकची बाजू त्यात घुसवून, पेनची मागची कॅम बसवा. नळीच्या वरील भोकानुन रिफिलचा तुकडा आत घट्ट बसवा.



सायकलचा स्पोकच्या एक टोकला दोरा घट्ट गुंडाळून त्याचा दट्टा बनवा.



पंप पाण्याच्या भांड्यात बुडवा. सायकल स्पोकचा दट्टा खाली - वर करा. थोड्या स्ट्रोकनंतर बाजूच्या रिफिलमधून पाणी जोरात बाहेर येईल.

Source: <http://www.arvindguptatoys.com/arvindgupta/kachiyatun%20kamaal-marathi.pdf>

MATHS TRICK FOR 2 DIGIT NUMBER TABLES

Do you know the times table for 24? No? Here's a helpful trick: You can easily write the table of 24 with the tables of 2 and 4.

Step 1. Write tables of both digits, '2' and '4' side by side

2X	4X	2X	4X
02	04	12	24
04	08	14	28
06	12	16	32
08	16	18	36
10	20	20	40

Step 2. Bring the table of 2 and table of 4 together like this!

2X	4X	24X
02	04	→ (02+0)4 = 24
04	08	→ (04+0)8 = 48
06	12	→ (06+1)2 = 72
08	16	→ (08+1)6 = 96
10	20	→ (10+2)0 = 120
12	24	→ (12+2)4 = 144
14	28	→ (14+2)8 = 168
16	32	→ (16+3)2 = 192
18	36	→ (18+3)6 = 216
20	40	→ (20+4)0 = 240

- Devkar Shraddha Suresh

Grade 8 B, SSM Shivaji Vidyalaya

Source: <https://npt solutions/blog/2016/09/14/two-digit-number-table-easy-math-trick/>



STEM Around the world...

Electricity (विद्युत) producing bacteria (जीवाणु) have been found in the human stomach. This bacteria transport electrons (इलेक्ट्रॉन) through their cell wall into the environment as tiny currents, assisted by molecules (रेणु). This could prove to be a useful technology to generate electricity from bacteria in waste treatment

Source: <https://phys.org/news/2018-09-hundreds-electricity-generating-bacteria-pathogenic-probiotic.html>

-Namira Yusuf Saudagar

Grade 6 B, Guru Nanak High School

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OR

United Way Mumbai

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Students' Contributions

February 2019

Do you know?

On average, Cats spend
2/3 of every day sleeping
That means a nine year-old
Cat has been awake for only three
years of its life.



Elephants do forget, but it
takes years. An elephant can
remember its mother's scent, the
call of close female family members,
relationships with human, and migratory
routes to food and water resources
for decades at a time.



These interesting snippets were
shared with us by Tanvi Prakash
Zagade from Grade 8, S.S.M. M.C.M
Girls' High School

Science article for Reptile

Reptiles are tetrapod animals in the class
Reptiles, comprising today's turtles, crocodilians,
snakes, amphisbaenians, lizards, tuatara, and their
extinct relatives. The study of these traditional
reptile orders, historically combined with that of
modern amphibians, is called herpetology.

Reptiles are air-breathing vertebrates
covered in special skin made up of scales, bony
plates, or a combination of both. They include crocodiles,
snakes, lizards, turtles, and tortoises. All regularly
shed the outer layer of their skin. Their metabolism
depends on the temperature of their environment.

Reptiles are cold-blooded vertebrates
(Vertebrates have backbones.) They have dry skin
covered with scales or bony plates and usually
lay soft-shelled eggs. Want to see other animals?
Check out mammals, birds, amphibians, fish, insects
and dinosaurs too!

Name - Laksha Dhiraj Solanki

Std - VI / A

Roll No - 37

Classmate

Laksha Dhiraj Solanki from Grade 6A,
Gurunank High School is an expert on
Reptiles

STEM HeadStarters

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DID YOU KNOW?



▶ A group of owls is called a "parliament"

Source: <https://grammar.yourdictionary.com/word-lists/list-of-names-for-groups-of-animals.html>



▶ The largest kangaroo in the world is the Red Kangaroo

Source: <https://www.nationalgeographic.com/animals/mammals/r/red-kangaroo/>

- Namira Yusuf Sadagar

Grade 7, Guru Nanak High School



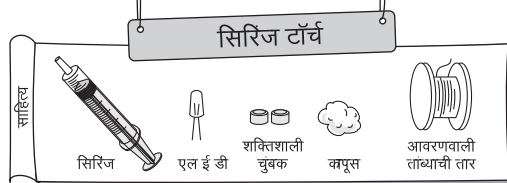
▶ On an average, Cats spend 2/3rds of every day sleeping

Source: <https://www.care2.com/greenliving/how-much-do-cats-sleep.html>

-Tanvi Prakash Zagade

Grade 8, S.S.M.M.C.M. Girls High School

EXPERIMENT



1

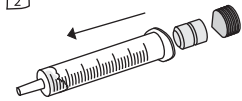


सिरिजच्या नळीमध्ये कापसाचा बोंळा घाला. दट्ट्याचे रबर काढून घ्या.

3



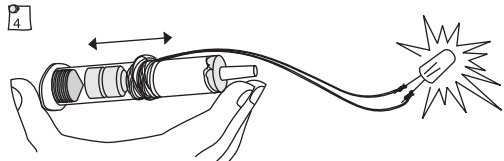
2



सिरिजमध्ये दोन शक्तिशाली चुंबक घाला व दट्ट्याचे रबर बसवा.

सिरिजवर मोटर रिवाइंडिंगच्या आवरण असलेल्या तांब्याच्या तारेचे 500 वेळे घाला. तारेच्या टोकचे आवरण काढून तो एल ई डी ला जोडा.

4



सिरिजची नळी हातात धरून पुढे मागे हलविली असता, चुंबकही हलतील, त्यामुळे तारेत विद्युत प्रवाह तयार होईल व एल ई डी प्रकाशित होईल.

Source: <http://www.arvindguptatoys.com/arvindgupta/kachryatun%20kamaal-marathi.pdf>

MATHS TRICK FOR CALCULATING PERCENTAGE

Let's calculate any percentage in your head with this simple trick

Let's try it with 5% of 235

Step 1.

Divide the number 235 by 10, which gives 23.5.

Step 2.

Divide the answer 23.5 by 2, which gives 11.75.

Step 3.

11.75 is the answer to 5% of 235

-Tanvi Prakash Zagade
Grade 8 B, SSM Shivaji Vidyalaya



REPTILES

Reptiles are tetrapod animals in the class Reptilia, comprising today's turtles, crocodilians, snakes, amphisbaenians, lizards, tuatara, and their extinct relatives. Reptiles are air-breathing vertebrates covered in a special skin made up of scales, bony plates, or a combination of both. Reptiles include crocodiles, snakes, turtles, tortoises and lizards.

-Laksha Dhiraj Solanki
Grade 6A, Gurunank High School

Source: <https://phys.org/news/2018-09-hundreds-electricity-generating-bacteria-pathogenic-probiotic.html>

Attention Everybody!!!

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OR

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Students' Contributions

March and April 2019

Esha Rupesh Chavan. 7th/A

Maths Trick

Multiply 32×11

Step 1	Step 2
$\begin{array}{r} 32 \\ 32 \\ \hline 32 \end{array}$	$\begin{array}{r} 32 \\ 32 \\ \hline 352 \end{array}$

43 X 11

1) number	43
2) add	4+3
3) stick it in the middle	473

Cool math Trick

Step 1 = Think of a number

Step 2 = Multiply it by 3

Step 3 = add 6

Step 4 = Divide by 3

Step 5 = Subtract the number chosen in step 1 from your answer in step 4.

And the answer is **2**

We got this cool Maths trick from Sakshi Ambekar, Grade 9, Ahilya Vidya Mandir


School Name - S.S.M.C. Girls School

Simran Shashikant Pawar


MORE STEM

Do you know

1) Venus is the only planet that Rotates clock wise




2) Panda bears spend up to 16 hours a day eating



Introduction Scientist

J.J. Thomson

Sir Joseph John Thomson 1856 - 29 August 1940 was an English physicist and Nobel Laureate in physics, credited with the discovery and identification of the electron and with the discovery of the first subatomic particle, the electron, in 1897. Thomson showed that cathode rays were composed of previously unknown negatively charged particles, which he calculated must have bodies much smaller than atoms and very large, Thomson



विज्ञान कविता

मनुष्य की सबसे बड़ी पहचान
हो आई है विज्ञान
इसी विज्ञान से हुए अविष्कार
और हुआ जीव उपकार
आसमा में है उड़ना जहाज
जमीं पर चलनी मोटार कार
मशीन की लगे पेसी लगे
हुए सब इन्सान बेकार
रोबोट से होना है काम

छटा रहा है रोजगार
कंप्यूटर ने भाकर लूया
आसमान कर दिया अरिष कास
इसी विज्ञान से आपदा उन्नति का
इसी विज्ञान से आपदा भी भारी
करो बुद्धि से इसका प्रयोग
मानव विकास में लगा कर
जन्म करो सब अरिष रोग
- अमृतका सूरि

Simran Pawar from S.S.M. M.C.M. Girls' High School shared this amazing information

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- And many more fun filled activities

DID YOU KNOW?



▶ A snail can sleep for 3 years

- Shraddha Devkar
Grade 8, S.S.M. M.C.M. Girls' High School



▶ Venus is the only planet that rotates clock-wise

Source: <https://spaceplace.nasa.gov/all-about-venus/en/>
- Simran Pawar
S.S.M. M.C.M. Girls' High School



▶ Houseflies taste with their feet, which are 10 million times more sensitive than our tongue

Source: <https://www.pinterest.com/pin/10-million-times-more-sensitive-than-our-tongue/>
- Namira Yusuf Sadagar
Grade 7, Guru Nanak High School



▶ A cracked egg makes a mess on land, but 18 metres below the surface of the ocean, the pressure on the egg is 2.8 times the atmospheric pressure, holding it together like an invisible eggshell

Source: <https://www.pinterest.com/pin/2-8-times-the-atmospheric-pressure-holding-it-together-like-an-invisible-eggshell/>
- Kashish Katore
Grade 8 B, S.S.M. M.C.M. Girls' High School



▶ Your fingernails grow faster in summer than they do during any other season

Source: <https://www.aad.org/public/kids/nails/how-nails-grow>
- Varsha Tiwari
Grade 9 A, Ahilya Vidya Mandir

Study more effectively for your exams:

Semester examinations are around the corner. Here are some tips to help you study better...



Start studying from the beginning



Rework book examples



Make a list of important concepts/formulae



Write a practice exam



Get a good night's sleep before the day of the exam

- Diksha Kolte
Grade 9 A, Ahilya Vidya Mandir

Fun Maths Tricks

1. An easy way to multiply any number by 11

Example- 32×11

Step 1. 32

Step 2. $3 + 2$

3 5 2

And the answer is 352!

- Esha Chavan
Grade 7 A, S.S.M. M.C.M. Girls' High School

2. The answer will always be 37!

Step 1. Choose a 3 digit number with the same digits.

Let's go with 333.

Step 2. Add the digits together.

So $3 + 3 + 3 = 9$

Step 3. Divide the original number with this sum.

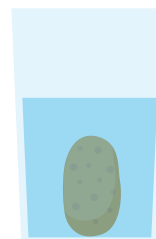
So $333 \div 9 = 37$

This works every single time.
Try it out with your friends!

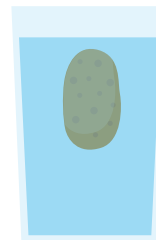
- Sakshi Ambekar,
Grade 9, Ahilya Vidya Mandir

घनतेचा परिणाम

पाणी



मीठाचा पाणी



साहित्य: दोन पाण्याचे पेटे, मीठ, पाणी, बटाटा

कृती:

- दोन मोठे पेटे घ्या आणि त्यात पाणी ओता.
- एका पेट्यातील पाण्यात ४ - ५ चमचे मीठ घालून पूर्णपणे विरघळून टाका.
- आता त्या पेट्यात एक बटाटा टाका व निरीक्षण करा.
- नंतर त्या पेट्यातून बटाटा बाहेर काढून दुसऱ्या पेट्यात टाका व निरीक्षण करा.

काय दिसतय तुम्हाला?

बटाटा मीठाच्या पाण्यात तरंगतो व साध्या पाण्यात बुडतो.

असे का घडते?

मीठ पाण्यात विरघळले असल्याने त्या पेट्यातली पाण्याची घनता वाढली व त्या वाढलेल्या घनतेमुळेच बटाटा पाण्यात तरंगू लागला. ह्यामुळेच तलावाच्या पाण्यामध्ये पोहण्यापेक्षा समुद्रात पोहणे सोपे आहे.

Community Newspaper

Conducted by "The Pomegranate Workshop"

The children's summer vacation was made more fun with an engaging activity to transform their classroom space by integrating multiple arts. Children enjoyed a day out in the community and were then given the task of reporting what they thought about the world around. A clear success, the activity not only made the students aware of various reporting styles, but also gave them a platform to express themselves. Through the reporting format, the students were able to give voice to their problems and insights regarding the community.



Visual Arts and Narrative

Conducted by "The Pomegranate Workshop"

Another fun filled activity that enriched the students' vacations was the picture-book making workshop. Coinciding with "World Creativity and Innovation Week" and "World Book Day", the workshop gave students the opportunity to create a picture book detailing their ideas of the adventures of different characters from the community. In addition to being able to creatively express themselves through art and narrative, students also looked at various picture books and artwork. Through the activity they could comprehend the concepts of plot, setting and character, helping them create their own storybooks.



About United Way Mumbai

United Way Mumbai is part of the 130+ year old United Way movement spanning 41 countries worldwide. Our mission is to improve lives by mobilising the caring power of communities to advance the common good.

WHO WE ARE

UNITED WAY MUMBAI

At United Way Mumbai, we strive to address social challenges that are too large or complex for any one organization to solve alone.

Our role is that of the catalyst that drives social change and the glue that binds together the many stakeholders needed to create it.



400+ NGOs
PAN INDIA NETWORK



TRUSTED PARTNER
OF GOVERNMENT & CIVIC BODIES



1,00,000+
INDIVIDUAL
DONORS



300+
CORPORATE
PARTNERSHIPS



INR 390+ CR. INVESTED
IN COMMUNITY DEVELOPMENT

MISSION

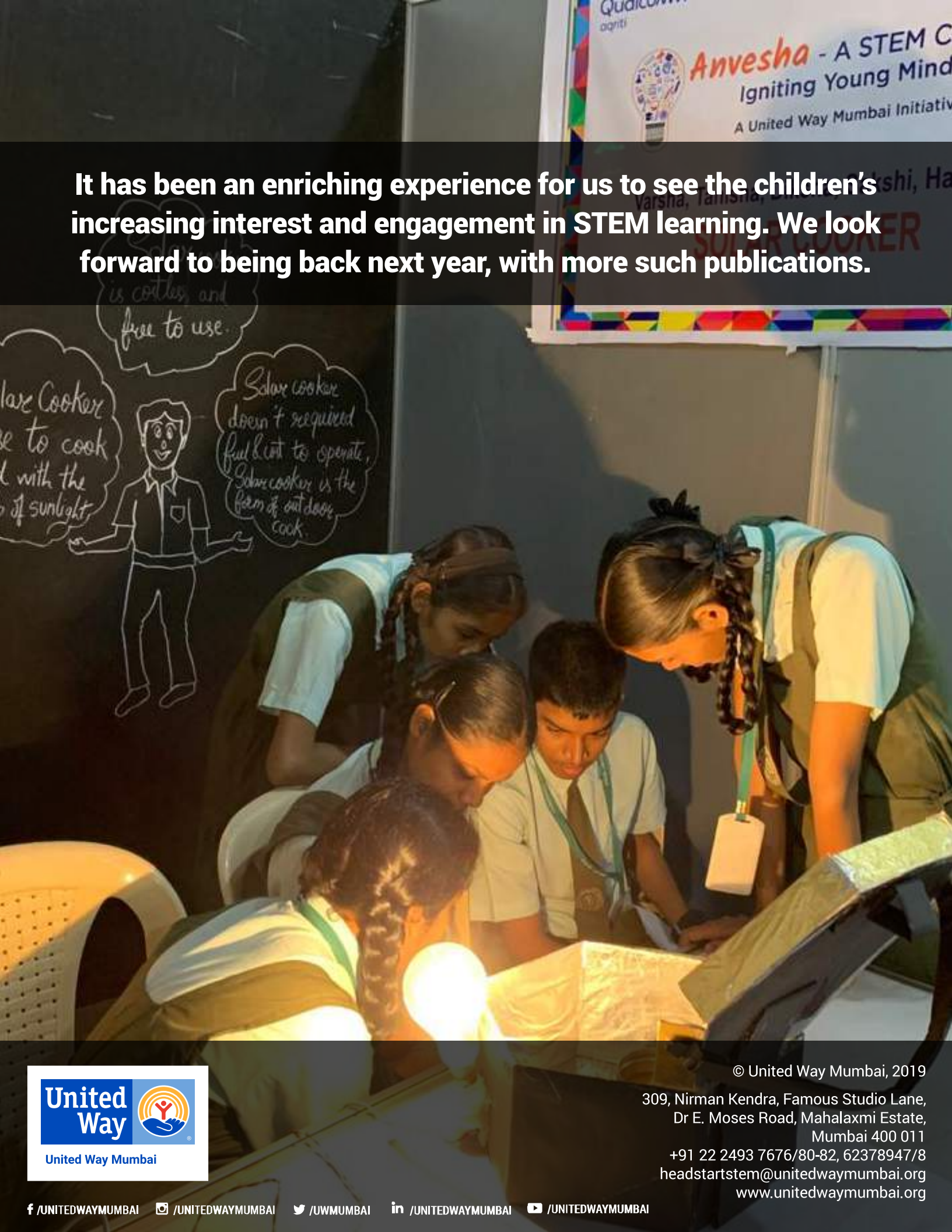


United Way Mumbai improves lives by mobilizing the caring power of communities to advance the common good.



Our work includes projects dealing with Education, Health, Income, Environment, Public Safety and Social Inclusion in urban and rural communities, pan India. We are also the official philanthropy partner of the Tata Mumbai Marathon.

It has been an enriching experience for us to see the children's increasing interest and engagement in STEM learning. We look forward to being back next year, with more such publications.



**United
Way**



United Way Mumbai

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