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EMPOWERING YOUNG MINDS:

"OVERCOMING MATHEMATICS PHOBIA IN CHILDREN"

SKILLING UP FOR THE FUTURE:

How Square Grid Notebook, Puzzles Cubes, Colour pens
And
Online Resources Are Transforming Teaching And Learning.

Presenting By:

Mallikarjun Bangargi M.Tech

Gnyana Chiguru Seva Samsthe(R.) Kalaburgi

GNYANA CHIGURU SEVA SAMSTHE(R.)KALBURGI

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Respected sir,
Department of Public Education kalaburgi

I hope this email finds you well. My name is Mallikarjun Bangargi, representing Gnyana Chiguru Seva Samiti in Kalaburgi. Our organization is deeply committed to the holistic development of students in our community.

One significant concern that we have identified is the prevalent mathematics phobia among budding children. Recognizing the importance of mathematics in academic and cognitive development, we propose a collaborative initiative with the Department of Public Education to address and alleviate this phobia.

Our proposal includes organizing workshops, interactive sessions, and resource development to make mathematics more engaging and accessible for students. We believe that by fostering a positive learning environment and employing innovative teaching methods, we can significantly reduce anxiety related to mathematics.

We kindly request an opportunity to discuss this proposal further and explore potential avenues for collaboration. Our aim is to work together to ensure that every child in Kalaburgi can approach mathematics with confidence and enthusiasm.

Thank you for considering our proposal. We look forward to the possibility of making a positive impact on the education landscape in our community.

Best Regards,
Mallikarjun Bangargi
9343855177
Gnyana Chiguru Seva Samiti Kalaburgi

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INTRODUCTION:

I'm Mallikarjun G Bangargi. I finished my M.Tech at PES College in Bangalore. I grew up in Gunj Bablad Tq, Aland Dist, Kalaburagi. I work as a freelancer in Kalaburagi, aiming to provide quality education to our community. Learning is different in various places. It's not just about memorizing facts; it's about understanding the knowledge and using it in the future. Schooling is even more important than higher education. My main focus is on our strengths, and getting ready to take action. In the 21st century, we need modern learning to keep up with the changing world. I believe in learning from the basics and analyzing from the details. I'm dedicated to shaping students' lives at the school level, preparing them for the modern world.

Problem statement:

Many students (around 60-70%) find math hard. The way we teach math now isn't helping them learn. It just throws formulas and rules at them without explaining why they work. This makes things confusing and doesn't help students really understand math.

Solving long, complicated problems isn't a good way to learn either. It's just frustrating and doesn't make math enjoyable.

We also need to show students how math is used in real life. Not everyone will be a mathematician, but everyone uses math every day! Showing how math connects to the real world will make it more interesting and relevant to students.

In short, the way we're teaching math now isn't working. We need to change things up and make math more fun, clear, and connected to the real world.

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There can be several reasons why students may not be interested in studying mathematics:

1. Perception of Difficulty: Some students may view mathematics as a challenging and intimidating subject, leading to a lack of interest.

2. Lack of Relevance: If students fail to see the practical applications of math in real life, they might question its relevance, reducing their motivation to study it.

3. Teaching Methods: Traditional teaching methods that focus on rote memorization and lack of interactive learning experiences can make math seem dull and uninteresting.

4. Negative Experiences: Past negative experiences or struggles with mathematics may discourage students from engaging with the subject.

5. Anxiety and Fear: Math anxiety can hinder students' confidence and enthusiasm, leading to a reluctance to study the subject.

6. Curriculum Issues: A rigid and overwhelming curriculum might leave little room for exploration or personalized learning, affecting students' interest in math.
7. Lack of Support: Inadequate support from teachers or peers can contribute to disinterest and disengagement in math.

8. Limited Resources: Lack of access to supplementary resources, tutoring, or technology could hinder students' understanding and interest in math.

9. Focus on Grades: When the emphasis is solely on achieving high grades rather than understanding concepts, students may lose intrinsic motivation to learn math.
10. Stereotypes and Social Stigma: Cultural or societal stereotypes that portray math as a subject for specific groups may discourage some students from pursuing it.

Addressing these issues requires a combination of effective teaching methods, relevant and engaging curriculum, individualized support, and efforts to cultivate a positive and inclusive learning environment for mathematics

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1. Direct Introduction Of Formulas And Theorems, No Root Learning & Not Explaining Derivation Of Formulas.
2. Slow Learner Or Failure Students Are Not Considered As Learners Of The Present Class Because Teachers Are Focused On Talented Students And The Syllabus Present Class.
3. Complexity of Solving Lengthy Processes and Methods.
4. Not Practical Classes or Implementation.
5. Not an Easy Explanation.
6. Losing Focus While Explaining the Length Method.
7. Not Relating Previous Class Knowledge.
8. Not Explaining The Introduction Of The Chapter And Solved Examples And Solving Direct Exercise.
9. Lack of Resources.
10. Lack Of Resource Persons.
11. Not Aware Of What Is Important.
12. Focus On Syllabus And Completing Syllabus In Given Time.
13. Writing And Remembering Methods Is Not Easy.
14. Internal Questions Paper Or Not Standard And Only Exercise Questions.
15. Least Interested In Teaching Staff.
16. Not Having Proper Guidance.

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PROPOSED SOLUTIONS :

"**Maths Made Approachable:** Mastering Concepts with the **Square Grid** Notebook Method" In this abstract, we propose an alternate solution to address the challenges faced by students in learning mathematics.

We present the Square Grid Notebook method, designed to transform students' perception of the subject. Our program focuses on utilizing the square grid notebook to facilitate quick and effective mathematical comprehension. This innovative approach covers a majority of concepts found in the mathematics syllabus and can be taught through real-life experiments and practical applications, promoting a creative learning environment.

Particularly beneficial for slow learners, the Square Grid Notebook method fosters easy retention and understanding. Its user-friendly design ensures a seamless learning experience for all students, making mathematics more approachable and enjoyable.

In the context of mathematics, understanding the meaning of problems and the reasons behind each step is essential, not just memorizing formulas or procedures without grasping the author's intentions.

Many students can solve given problems, but they might miss the actual knowledge and deeper understanding of the concepts. Interlinking knowledge and recognizing the flow of information unit-wise are crucial aspects of learning.

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OTHER SOLUTION ARE :

1. Square grids: These are like big checkerboards that can help you see how numbers work together.

2. Puzzle cubes: These colorful blocks can help you learn about shapes and patterns.

3. Geoboards: These boards have pegs that you can stretch rubber bands around to make shapes. They're great for learning about angles and geometry.

4. Color pens: Make math more exciting by using different colors to write and draw.

5. Write clear explanations: Use simple words and sentences, and break down big ideas into smaller steps.

6. Break down problems into smaller parts: This makes them less overwhelming and easier to tackle.

7. Use pictures and diagrams: These can help students visualize what's going on.

8. **One problem many solution and one problem all concepts .**

9**. Break down each step with pictures**: This helps students see how the problem is solved, one step at a time

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SQUARE GRIDS:

1. Page layout specialty includes **utilizing free space** for repetitions, revisions, and practice.

2. The page is divided into four parts: **four borders and four corners.**

3. The borders serve as different scales for measurement, such as **measuring scale, Fraction, decimal, comparison of quantities, integers, coordinates, and mixed scale.**

4. The corners are used for **summarizing chapters, covering formulas, Theorems, rules, tricks, hints, and angles.**

5. The left side of the page is designed with a square grid of 1 cm 1 cm, enabling **accurate diagrams, practical explanations, and precise calculations.**

It facilitates step-by-step learning and correct digit placement. The right side of the page remains blank for simplifying problems and rough work.

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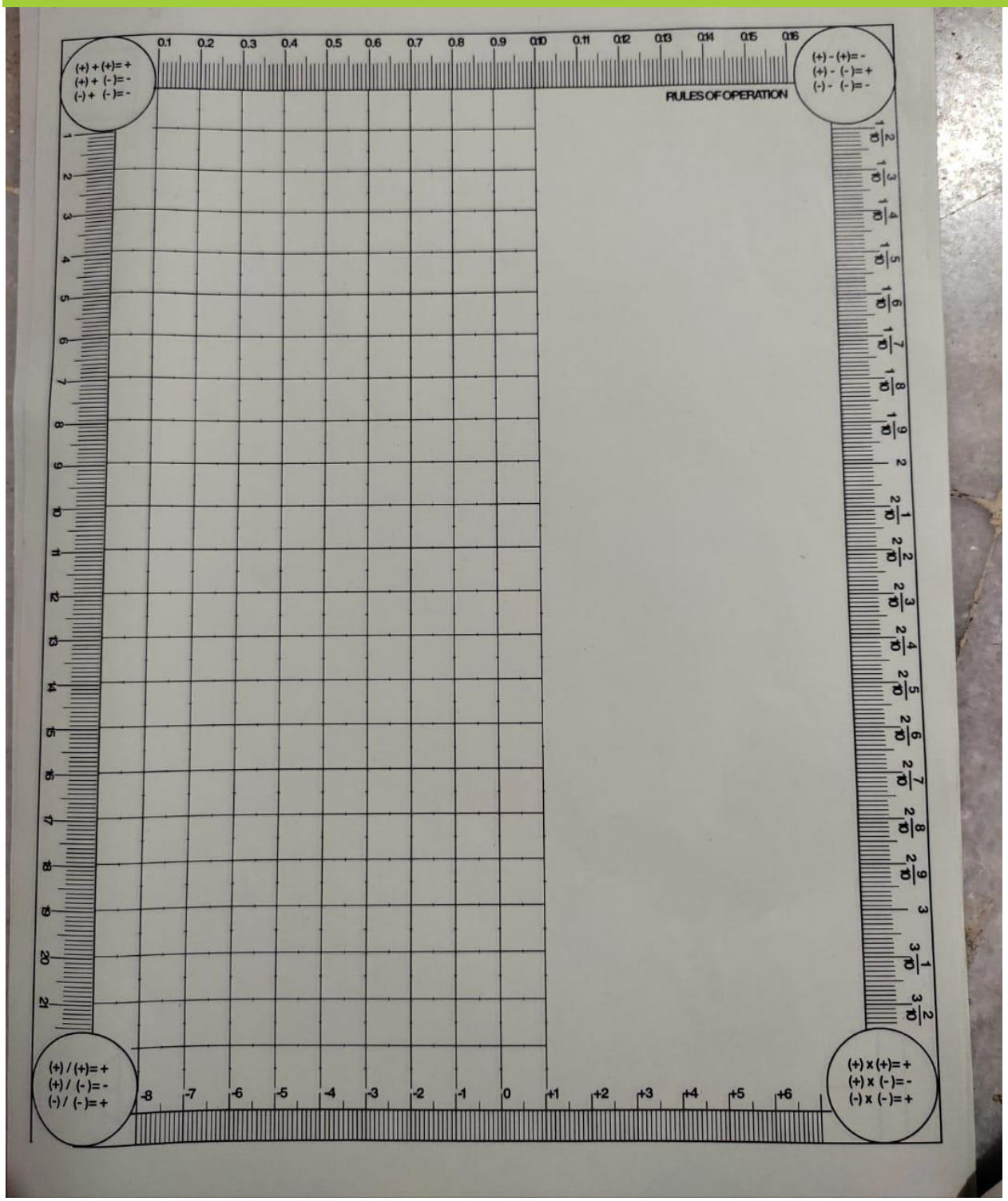

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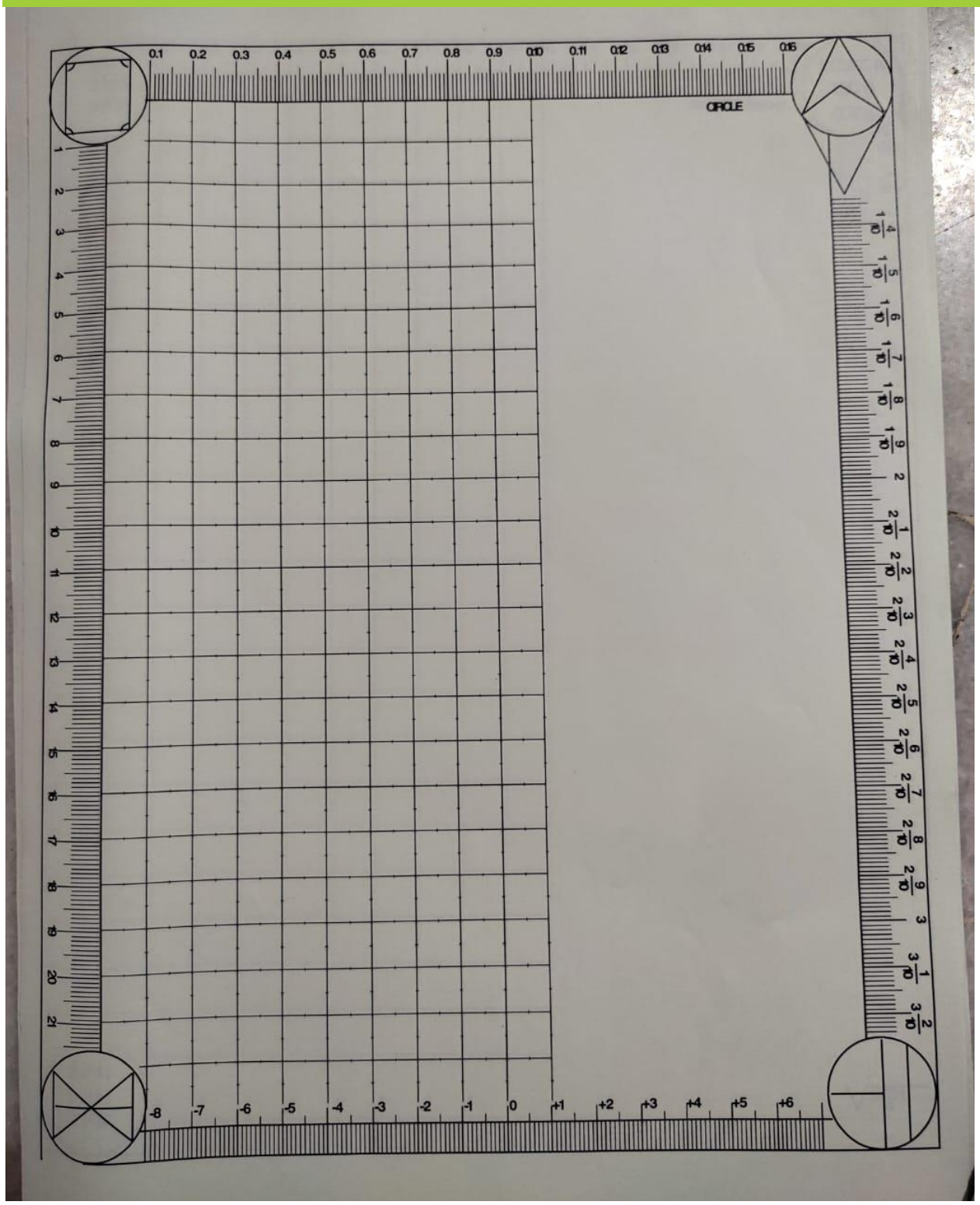

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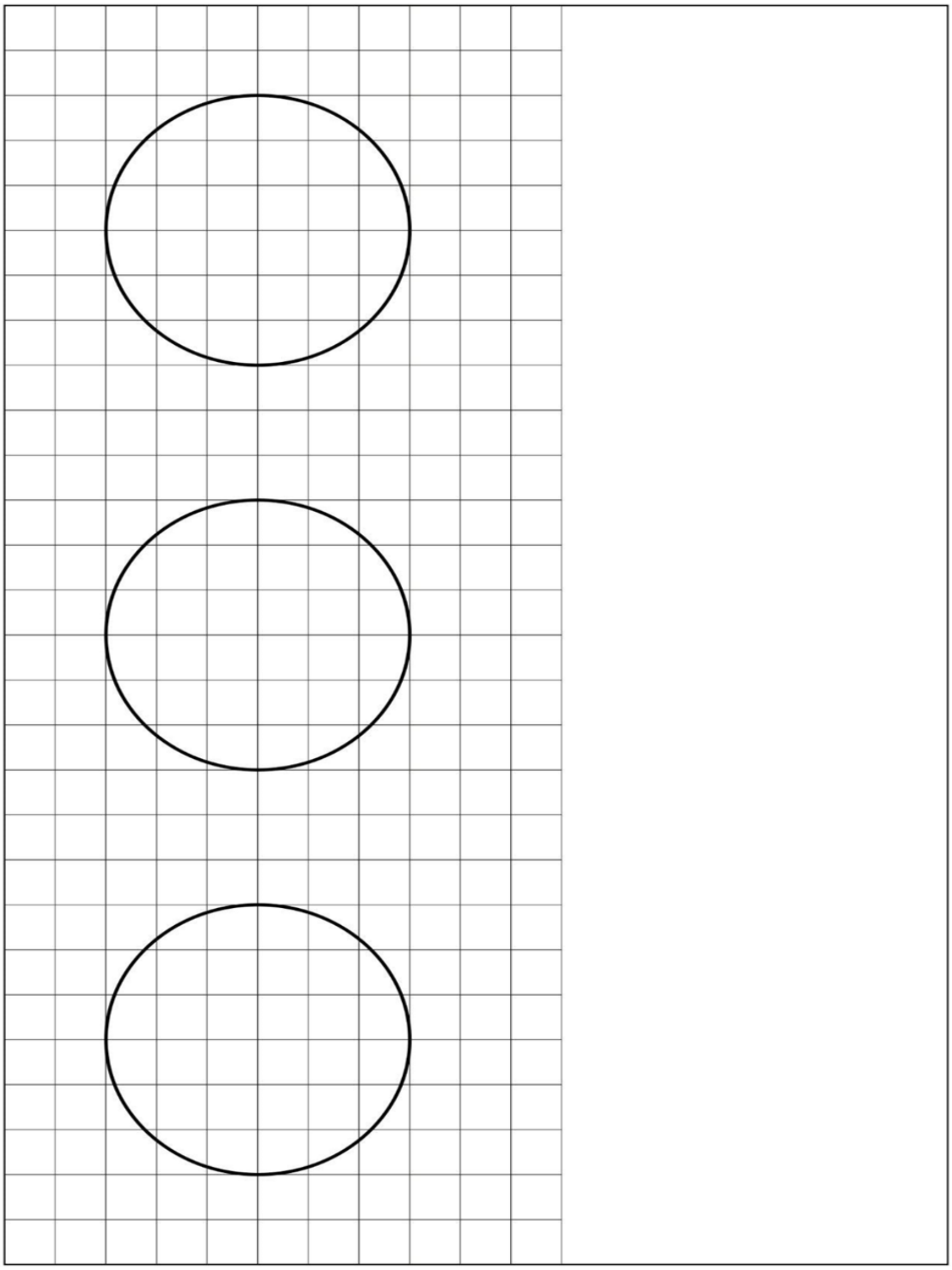

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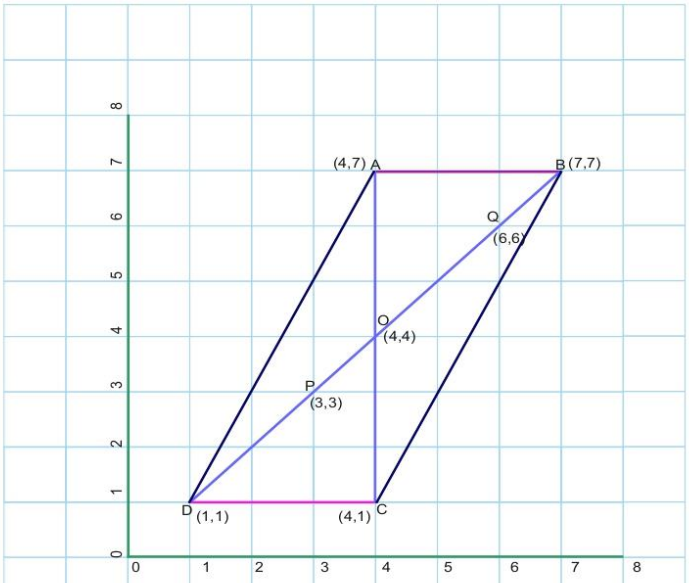
Co-Ordinate Geometry



Distance Formula

Distance between two poin ts (x_1,y_1) and (x_2,y_2) is

$D = \sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2]}$

Distance between AC is = $\sqrt{[(4-4)^2 + (1-7)^2} = 6$ CM

Mid Point Formula

O is the mid point of AC & BD

$= \frac{4+4}{2}, \frac{1+7}{2} = (4, 4)$

Section Formula

Point P (3,3) & Q(6,6) divides line BD 1:2 & 5:1 ratio

Area of Triangle Formula

Area of Triangle DOC= ½ $(x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2))$ =4.5 Sq. Cm

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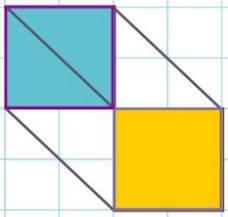

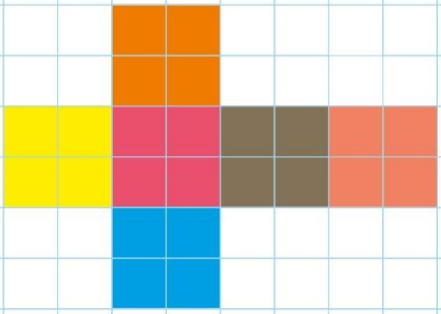

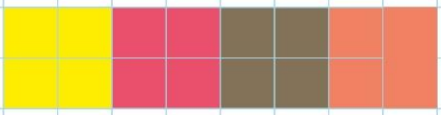

Cube
Volume Formula

Cube side=2cm
volume= $a^3 = 2^3 = 8cm^3$

Cube
Total Surface Area Formula

TSA= $6x\ a^2 = 6x2^2$
$= 6x4 = 24cm^2$

Cube
Lateral Surface Area Formula

LAS= $4Xa^2 =$
$4x\ 2^2 = 4x4 = 16cm^2$

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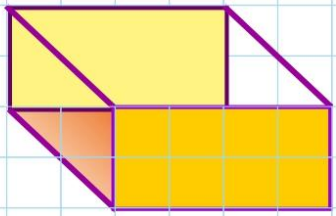

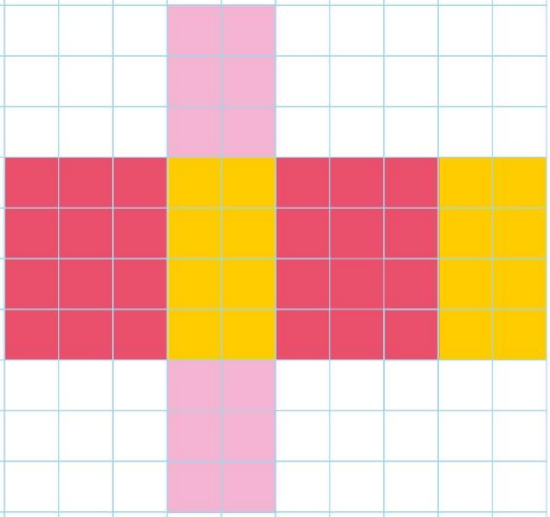

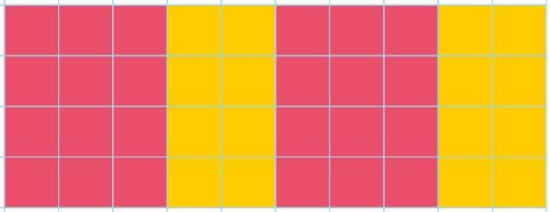

Cuboid
Volume Formula

Cuboid lxbxh
= 2cm X3cmX4
Volume = lxbxh
$=2x3x4=24cm^3$

Cuboid
Total Surface Area Formula

TSA= 2(lb+bh+lh)=
$2(2x3+3x4+4x2)=52cm^2$

Cuboid
Lateral Surface Area Formula

LSA=2h(l+h)=
$2x4(3+2)=4x7=40cm^2$

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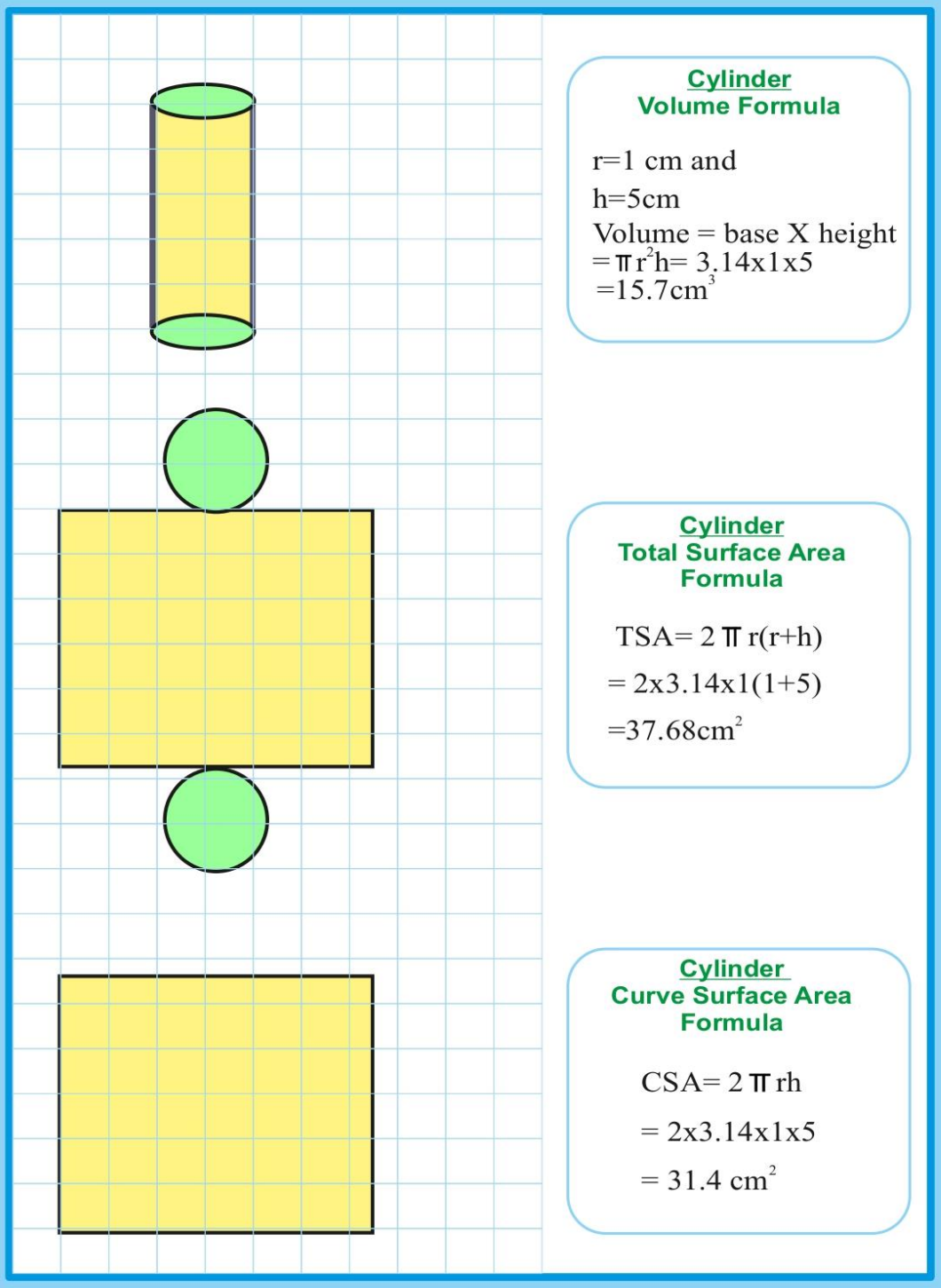

Cylinder
Volume Formula

r=1 cm and
h=5cm
Volume = base X height
$= \pi r^2 h = 3.14 \times 1 \times 5$
$= 15.7 cm^3$

Cylinder
Total Surface Area Formula

$TSA = 2 \pi r(r+h)$
$= 2 \times 3.14 \times 1(1+5)$
$= 37.68 cm^2$

Cylinder
Curve Surface Area Formula

$CSA = 2 \pi rh$
$= 2 \times 3.14 \times 1 \times 5$
$= 31.4\ cm^2$

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Using Grid Square Grid We Can Easily Exaplain Following Chapter:

1. Number Line
2. Number System
3. Lines And Angles
4. Without Using Protractor Constructing Angles
5. Without Using Scale Construction
6. Circle
7. Surface Area and Perimeter.
8. Algebra

Advantages of using a squared book for writing math work:

1. Enhanced understanding of concepts.
2. Easy identification of mistakes.
3. Convenient for writing and usage.
4. Simple measurement, direct measurement, and utilization of different scales.
5. Effortless figure drawing.
6. The satisfaction of comprehending the value of a problem.
7. Improved recall and easy retention.
8. Heightened interest in the subject.

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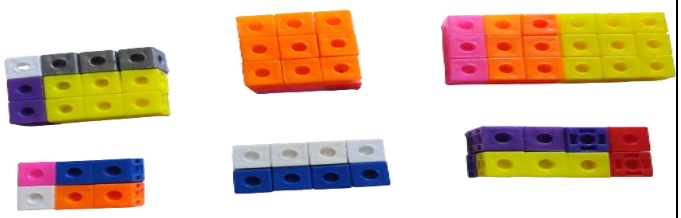
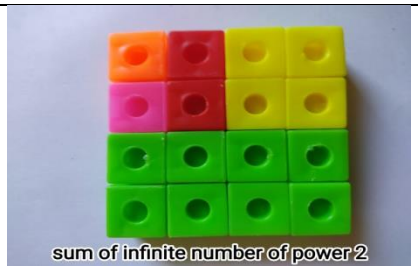
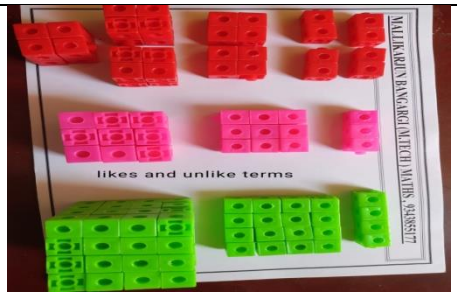
PAZZLE CUBES:







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What Are The Chapters We Can Teach By Cubes?

ARITHMETICS	ALGEBRA	GEOMETRY
Number , Even Odd, Increasing And Decreasing Etc Basic. All Four Operation Fraction All Concepts Decimal Square And Cube	Like And Unlike Terms Addition And Subtraction Multiplication Algebra Identities Quadratic And Cubic Equation	Area And Perimeter Volume TSA & LSA Cube And Cuboid 1D 2D 3D

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PARALLEL AND COMPARISON :

Studying parallel and comparing multiple content sources can enhance critical thinking skills, deepen understanding, and provide a well-rounded perspective on a topic.

It allows for comprehensive analysis, identification of patterns, and the synthesis of information from diverse sources, fostering a more holistic view of the subject matter.

Additionally, this approach promotes effective decision-making and encourages students to evaluate information critically

1. Teaching number system whole number, integer, fraction, decimal, irrational number: number line and all operation .
2. Converting higher units of measurement: meter, litre, gram, time, year and day, cm sq to metre sq, cm cube to meter cube. Same concepts multiplication and division.
3. Place value and measurements
4. All graphs of statistics
5. Taking one problem solve it multiple way .

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Number system							
Name	Sense	Place vale	Comparing <>=	Locating on number line	Maths operation	Shortcubs	Application
	Meaning	Find the value	Increase and decr	Performance maths operation	Addition	Tricks	
	Properties				Multiplication	Tips	
	Negative				Subtraction	Alternate method	
	Positive				Division		
					Percentage		
					Average		
whole number							
Integer							
Fraction							
Decimals							
Irrational							
Square and cube							
Exponents							
Ratio propotion							
Probability							
Statistics							
Commercial arithmetic							

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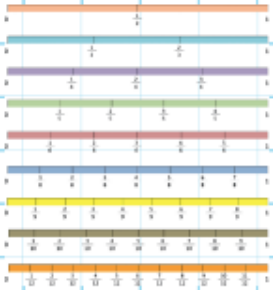
NUMBER SYSTEM :

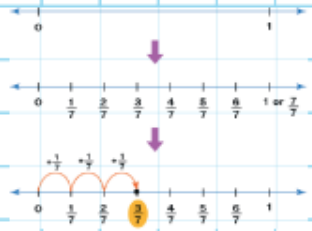
FRACTION

FRACTION NUMBER LINES 0 TO 1



Equivalent Fractions on Number Line

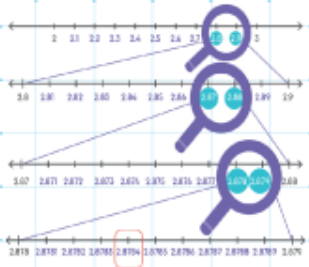
Plotting Fractions on Number Line



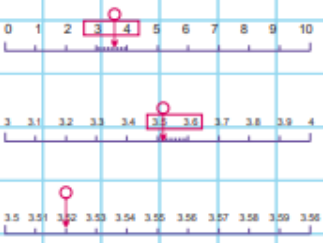
Number Line Model

Fractions

DECIMAL



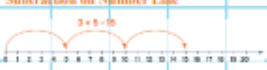
Decimal Representation On Number Line



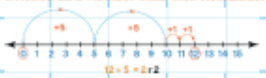
Whole number and INTEGER

Multiplication on Number Line

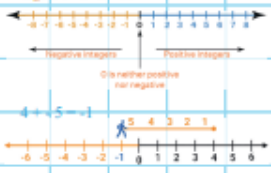
Subtraction on Number Line



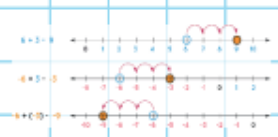
Division on a Number Line with Remainders

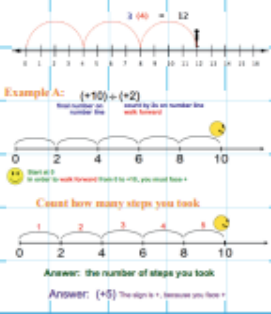


Integers on a Number Line



Addition Rules for Integers





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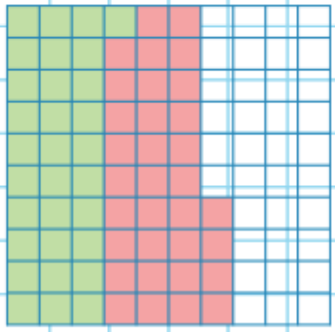
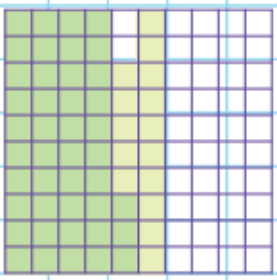
Like Fraction Addition

Like Decimal Addition



0.31 + 0.33 = 0.64

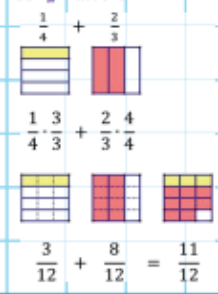


Use the tens and ones blocks to solve the problem.

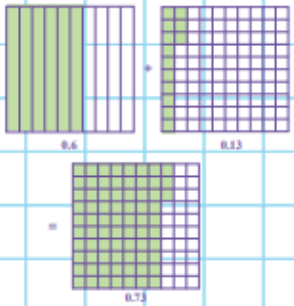
43+15 = 58 Example

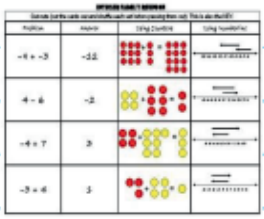
Unlike Fraction Addition

Adding Fractions

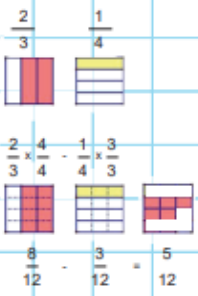


Unlike Decimal Addition

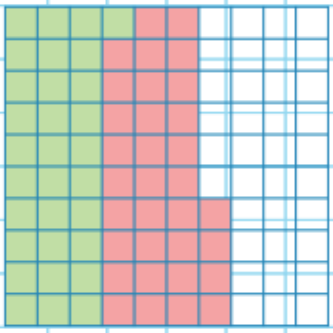




Unlike Fraction Subtraction



Like Decimal Subtractions



0.64 - 0.31 = 0.33

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COLOUR PENS

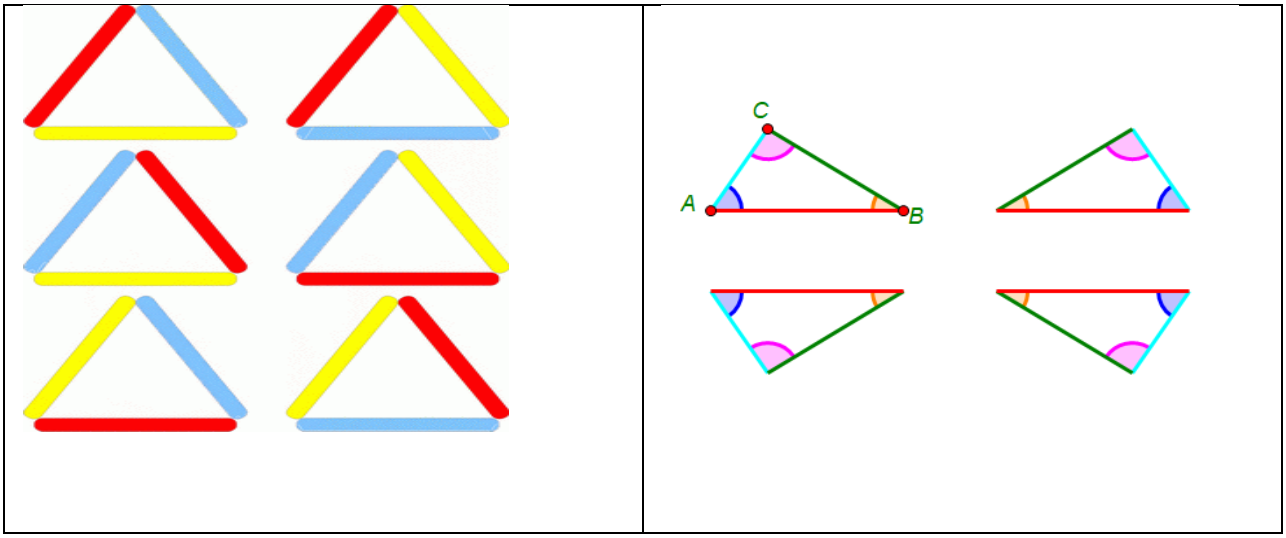
1. Identify and mark **corresponding angles and sides with the same colour** to indicate congruence or similarity. (This works well if you're talking about geometry.)

2. Use colour coding to highlight **matching angles and sides, as** explained in the next chapter. (This makes the connection to the following chapter clearer.)

3. **Colour-code angles and sides that are equal or proportional,** as detailed in the following chapter. (This emphasizes the mathematical concept.)

4. In the next chapter, we'll learn how marking **congruent triangles** with the same colour simplifies our proofs. (This assumes you're discussing congruent triangles.)

5. **Colour-coding matching sides and angles on polygons help** visualize their similarities, as we'll see in the next chapter. (This focuses on similar polygons.)



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WRITING SKILLS :

Example 7 : A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy. If a right circular cylinder circumscribes the toy, find the difference of the volumes of the cylinder and the toy. (Take $\pi = 3.14$)

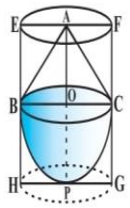


Fig. 13.14

Solution : Let BPC be the hemisphere and ABC be the cone standing on the base of the hemisphere (see Fig. 13.14). The radius BO of the hemisphere (as well as of the cone) $= \frac{1}{2} \times 4 \text{ cm} = 2 \text{ cm}$.

So, volume of the toy $= \frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h$

$$= \left[\frac{2}{3} \times 3.14 \times (2)^3 + \frac{1}{3} \times 3.14 \times (2)^2 \times 2\right] \text{cm}^3 = 25.12 \text{ cm}^3$$

Now, let the right circular cylinder EFGH circumscribe the given solid. The radius of the base of the right circular cylinder = HP = BO = 2 cm, and its height is

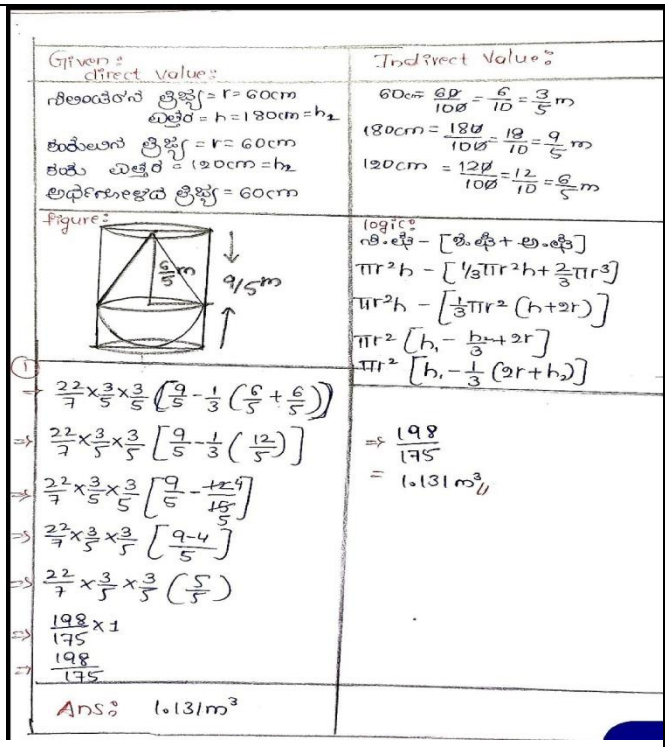
$$EH = AO + OP = (2 + 2) \text{ cm} = 4 \text{ cm}$$

So, the volume required = volume of the right circular cylinder – volume of the toy

$$= (3.14 \times 2^2 \times 4 - 25.12) \text{ cm}^3$$

$$= 25.12 \text{ cm}^3$$

Hence, the required difference of the two volumes = 25.12 cm^3.



Theorem 6.1 : *If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.*

Proof : We are given a triangle ABC in which a line parallel to side BC intersects other two sides AB and AC at D and E respectively (see Fig. 6.10).

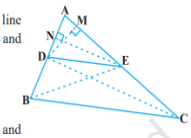


Fig. 6.10

We need to prove that $\frac{AD}{DB} = \frac{AE}{EC}$.

Let us join BE and CD and then draw DM ⊥ AC and EN ⊥ AB.

Now, area of Δ ADE $(= \frac{1}{2}$ base × height$) = \frac{1}{2}$ AD × EN.

Recall from Class IX, that area of Δ ADE is denoted as ar(ADE).

So, $\text{ar(ADE)} = \frac{1}{2}$ AD × EN

Similarly, $\text{ar(BDE)} = \frac{1}{2}$ DB × EN,

$\text{ar(ADE)} = \frac{1}{2}$ AE × DM and $\text{ar(DEC)} = \frac{1}{2}$ EC × DM.

Therefore, $$\frac{\text{ar(ADE)}}{\text{ar(BDE)}} = \frac{\frac{1}{2}\text{AD} \times \text{EN}}{\frac{1}{2}\text{DB} \times \text{EN}} = \frac{\text{AD}}{\text{DB}} \quad (1)$$

and $$\frac{\text{ar(ADE)}}{\text{ar(DEC)}} = \frac{\frac{1}{2}\text{AE} \times \text{DM}}{\frac{1}{2}\text{EC} \times \text{DM}} = \frac{\text{AE}}{\text{EC}} \quad (2)$$

Note that Δ BDE and DEC are on the same base DE and between the same parallels BC and DE.

So, $\text{ar(BDE)} = \text{ar(DEC)}$ (3)

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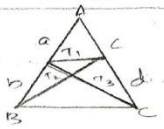
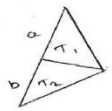
$AT_2 = AT_3$



$AT_1 = \frac{1}{2} \times a \times h$

$AT_2 = \frac{1}{2} \times b \times h$

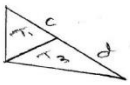
$\frac{AT_1}{AT_2} = \frac{a}{b} \longrightarrow (1)$



$AT_1 = \frac{1}{2} \times a \times h$

$AT_2 = \frac{1}{2} \times d \times h$

$\frac{AT_1}{AT_2} = \frac{c}{d} \longrightarrow (2)$



Compare (1), (2) & (3)

$\frac{AT_1}{AT_2} = \frac{a}{b}$

$\frac{AT_1}{AT_3} = \frac{c}{d}$

$\therefore \frac{a}{b} = \frac{c}{d}$

Theorem 6.8 : *In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.*

Proof : We are given a right triangle ABC right angled at B.

We need to prove that $AC^2 = AB^2 + BC^2$

Let us draw $BD \perp AC$ (see Fig. 6.46).

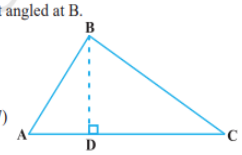


Fig. 6.46

Now, $\Delta ADB \sim \Delta ABC$ (Theorem 6.7)

So, $\frac{AD}{AB} = \frac{AB}{AC}$ (Sides are proportional)

or, $AD \cdot AC = AB^2$ (1)

Also, $\Delta BDC \sim \Delta ABC$ (Theorem 6.7)

So, $\frac{CD}{BC} = \frac{BC}{AC}$

or, $CD \cdot AC = BC^2$ (2)

2015-16 (11-11-2014)

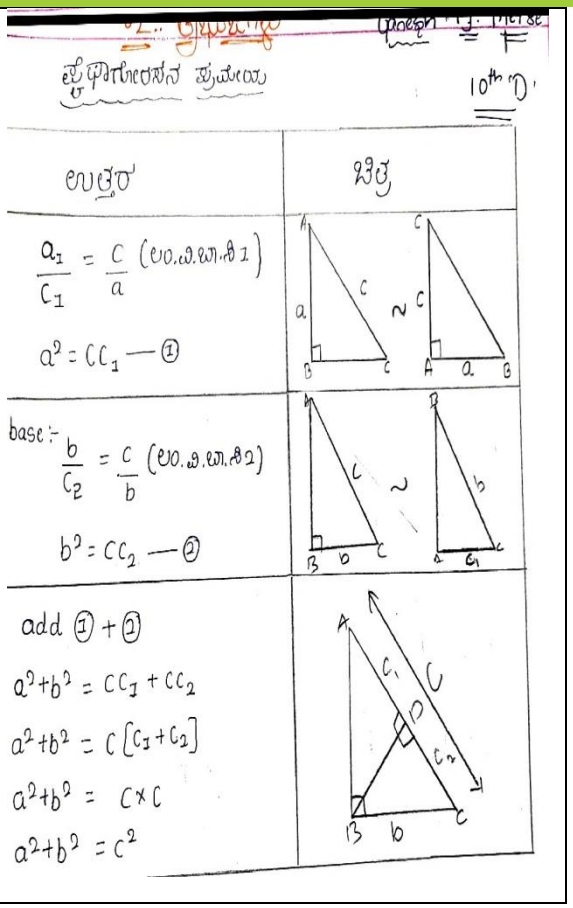
Adding (1) and (2),

$AD \cdot AC + CD \cdot AC = AB^2 + BC^2$

or, $AC\,(AD + CD) = AB^2 + BC^2$

or, $AC \cdot AC = AB^2 + BC^2$

or, $AC^2 = AB^2 + BC^2$ ■



GNYANA CHIGURU INSTITUTE

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Recognised by Govt. of Karnataka
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Ph. 08472 - 245934 - E-mail : principalcpps@gmail.com

To,
The Commissioner,
Department of Education
Kalaburagi.

Date: 18/01/2020

Subject:- Attempt to get rid of Math Phobia – Reg.

Respected sir,

Mr. Mallikarjun Bangargi conducted a Mathematics workshop for nearly 100 plus slow learners of our three schools, namely :

- Chandrakant Patil Public School, Tilak Nagar, Kusnoor Road.
- Amit Patil Central School, Kapnoor Industrial Area.
- Chandrakant Patil Central School, Karuneshwar Nagar.

It was found that, his approach of teaching Mathematics concepts was much more easier and innovative which created interest among the children in learning the concepts in a joy full way.

The note books which were used helped the pupils to understand the topic with strong basic skill involved in it.

The 3 Principals and 20 Teachers also attended the workshop and expressed their opinion that Mr. Mallikarjun's ideology of teaching Mathematics in play way method was extremely appreciable.

His ambition of removing Math Phobia from the minds of the budding students of "Kalyana Karnataka" is praise worthy. Wishing him all the very best to achieve his ambition,

18/01/20

Principal

PRINCIPAL
Chandrakant Patil Public School
Tilak Nagar, Kusnoor road,
KALABURAGI.

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apskalaburagi2010@gmail.com
Website : www.appacbseglb.org

To Whomsoever Concerned

Letter of Appreciation

This is to certify that the Workshop on Math was conducted by Mr. Mallikarjun Bangargi, (M.Tech.) of *Chiguru* - Helping Hands Organization, Kalaburagi on 28-01-2020 for 30 students of Class VIII and 4 staff at our institution.

The workshop provided insights into the basic concepts of Math, which was more helpful to the slow-learners, especially, the concept of square grid visualization that makes it easily intelligible to students. It reinforced the basic concepts of Math, which are quite essential towards the consolidation of the subject from the application perspective.

We appreciate the pain-staking effort of the Resource person Mr. Mallikarjun, who conducted the workshop with a missionary zeal.

Place: Kalaburagi
Date: 04-02-2020

APPA PUBLIC SCHOOL (CBSE) KALABURAGI

Principal
PRINCIPAL
Appa Public School
Affiliated to CBSE, New Delhi No. 830397)
Sharan Nagar, KALABURAGI - 03.

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CREATING PLAYLIST AND COLLECTING FREE RESOURCE FROM BEST CREATOR

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