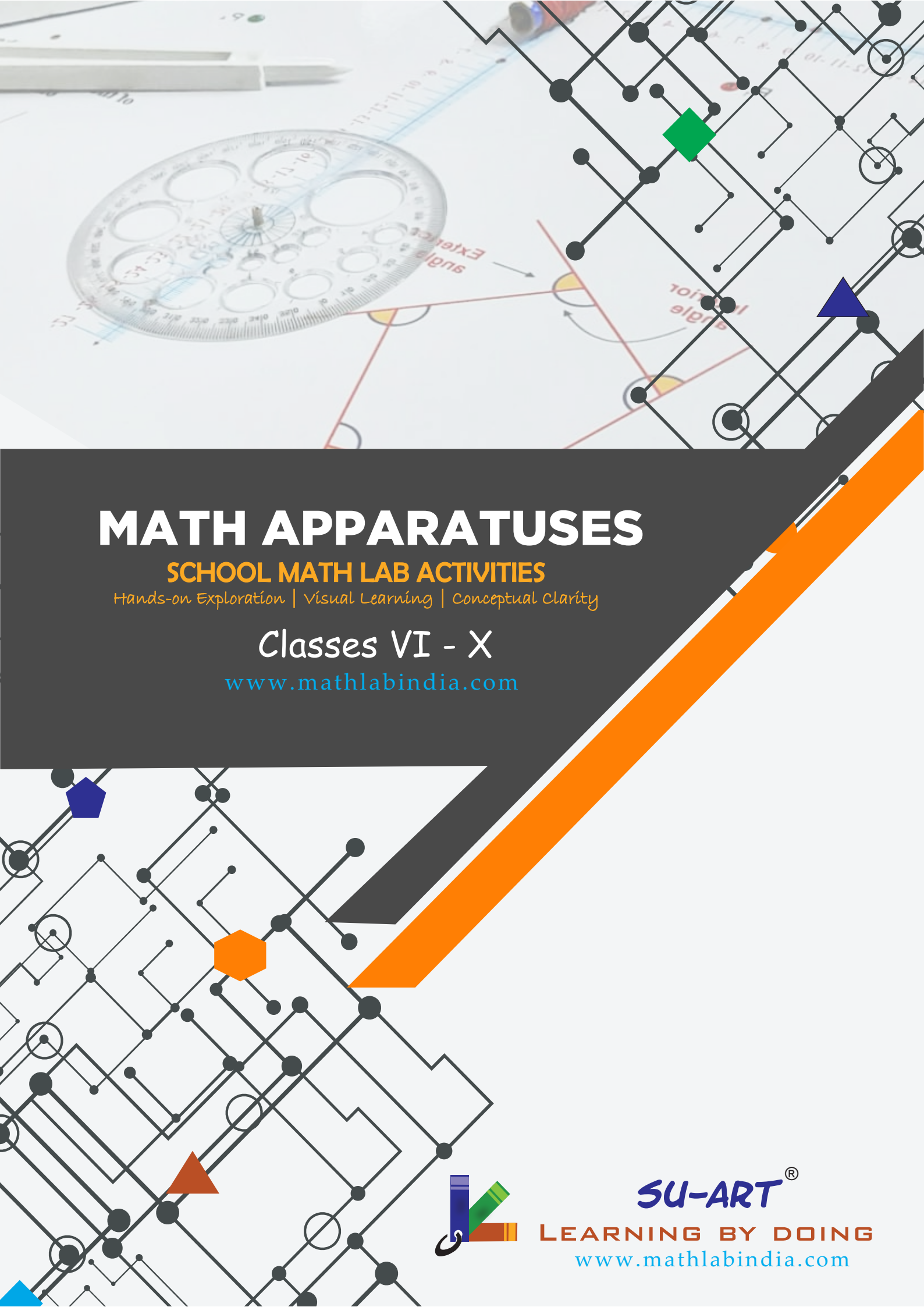




MATH APPARATUSES

SCHOOL MATH LAB ACTIVITIES

Hands-on Exploration | Visual Learning | Conceptual Clarity

Classes VI - X

www.mathlabindia.com



SU-ART[®]

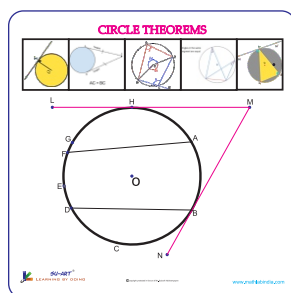
LEARNING BY DOING

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List of Apparatuses

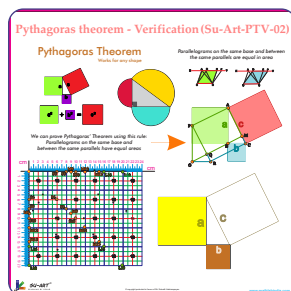
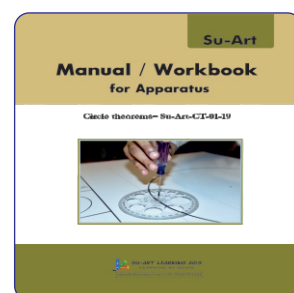
S.No.	Apparatus Name	Apparatus Code	No. of Activities
1	Circle Theorems	Su-Art-CT-01	9
2	Pythagoras Theorem Verification	Su-Art-PTV-02	4
3	Estimating 'Pi'	Su-Art-PI-03	3
4	Parallel Lines / Triangle Properties	Su-Art-PLTP-04	5
5	Representing Root 'x'	Su-Art-RX-05	2
6	Similarity Vs Congruence	Su-Art-SC-06	10
7	Triangle Theorems	Su-Art-TT-07	6
8	Arithmetic Progression	Su-Art-AP-08	3
9	Trigonometry Properties	Su-Art-TP-09	6
10	Number Operations	Su-Art-NO-10	6
11	Polygons / Quadrilateral Properties	Su-Art-PQP-11	6
12	Algebraic Identities	Su-Art-AI-12	6
13	Fraction Operations	Su-Art-FO-13	6
14	Triangle Centers	Su-Art-TC-14	6
15	Direct / Inverse Proportion	Su-Art-DIP-15	4
16	Simple Interest / Compound Interest	Su-Art-SCI-16	2
17	Trigonometry Properties - 2	Su-Art-TPT-17	3
18	Perimeter and Area Explorer	Su-Art-PAE-18	6
19	Quadrilateral Area Explorer, Theorems	Su-Art-QAE-19	7
20	HCF/GCD Vs LCM	Su-Art-HL-20	2
21	Central Tendency- Mean Median Mode	Su-Art-CTV-21	6

Apparatus Description



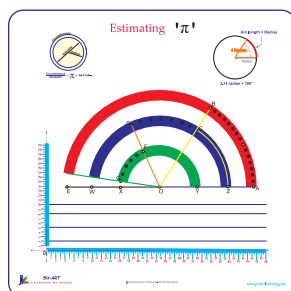
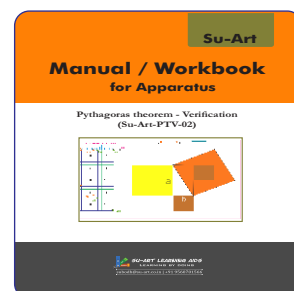
Circle Theorems Su-Art-CT-01

Apparatus to verify / validate the circle theorems



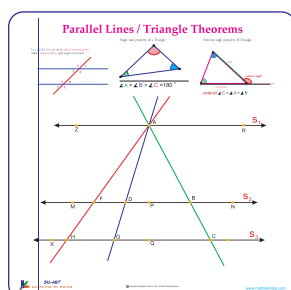
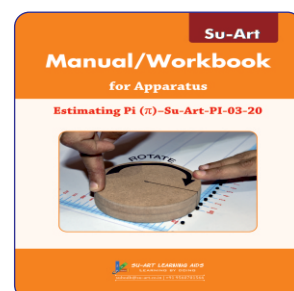
Pythagoras Theorem Verification Su-Art-PTV-02

Apparatus to verify / validate Pythagoras Theorem
Four methods



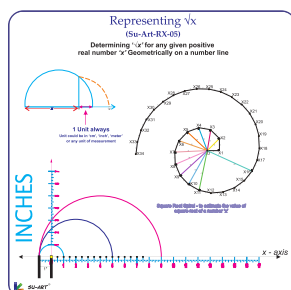
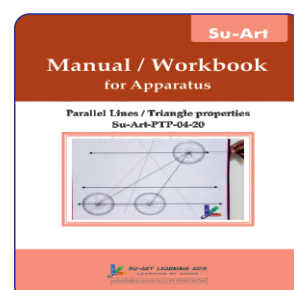
Estimating 'π' Su-Art-Pi-03

Apparatus to estimate the value of 'π'
Three methods



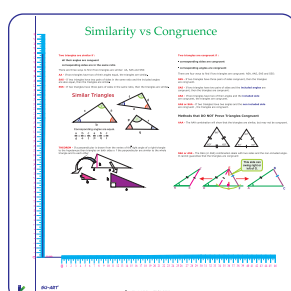
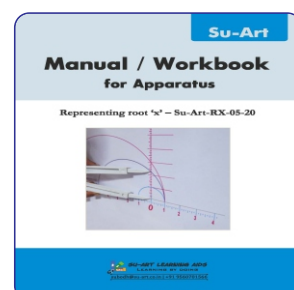
Parallel Lines / Triangle Properties Su-Art-PTP-04

Apparatus to verify / validate Parallel line theorems and
validate some triangle properties



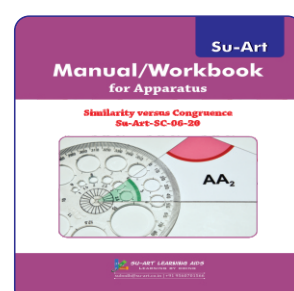
Representing $\sqrt{x}$ Su-Art-RX-05

Apparatus to determine $\sqrt{x}$
Two methods

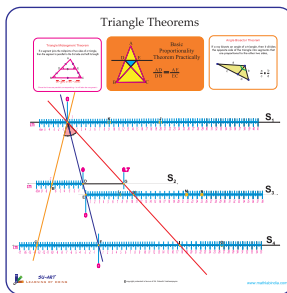


Similarity Vs Congruence Su-Art-SC-06

Apparatus to verify similarity and congruence of triangles

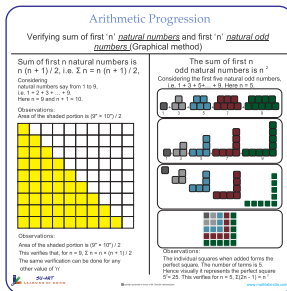
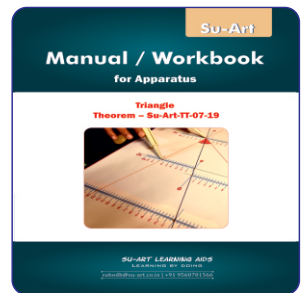


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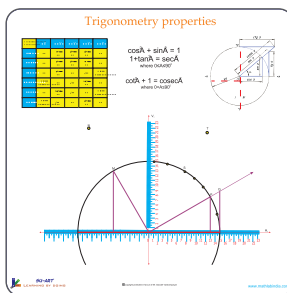
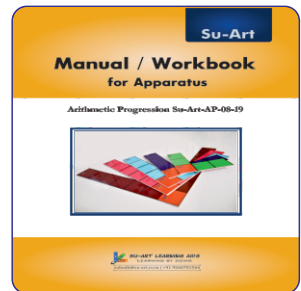
Triangle Theorems Su-Art-TT-07

Apparatus to verify / validate the triangle theorems



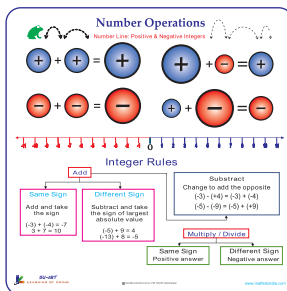
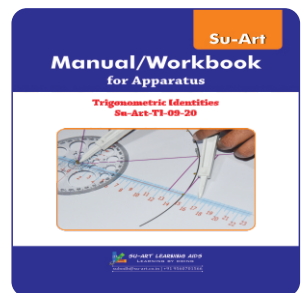
Arithmetic Progression Su-Art-AP-08

Apparatus to model Arithmetic progression geometrically



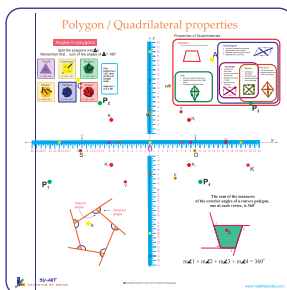
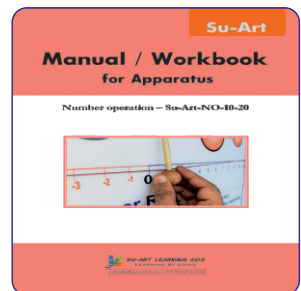
Trigonometry Properties Su-Art-TP-09

Apparatus to verify / validate trigonometry properties



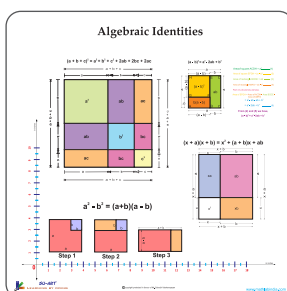
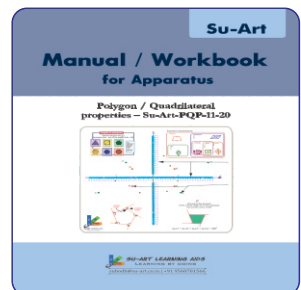
Number Operations Su-Art-NO-10

Apparatus to operate summation, subtraction, multiplication, and division on integers



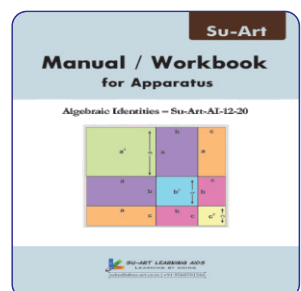
Polygon / Quadrilateral Properties Su-Art-PQP-11

Apparatus to verify / validate Polygon and Quadrilateral Properties

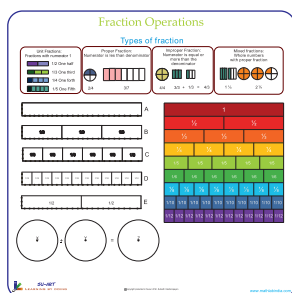


Algebraic Identities Su-Art-AI-12

Apparatus to model Algebraic Identities geometrically

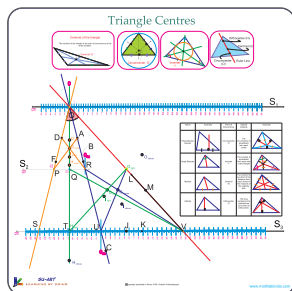
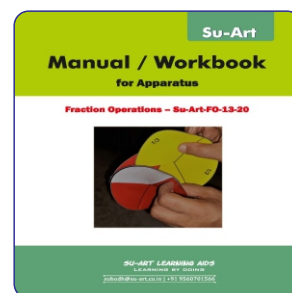


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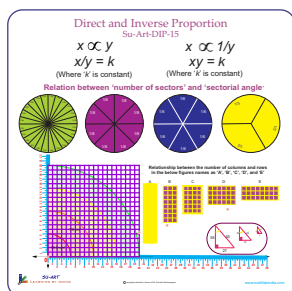
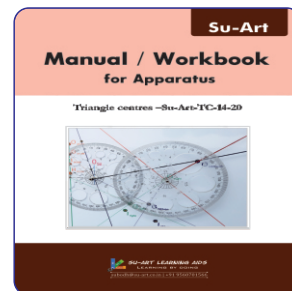
Fraction Operations Su-Art-FO-13

Apparatus to model Fractions using bars and circular discs



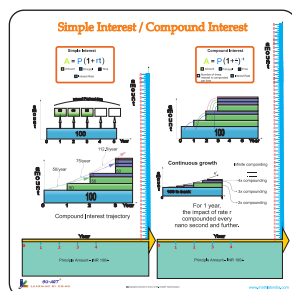
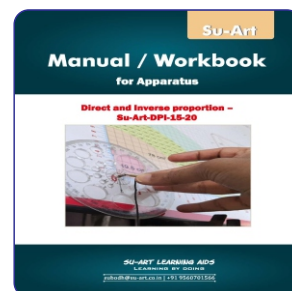
Triangle Centers Su-Art-TC-14

Apparatus to identify triangle centers and verify its properties



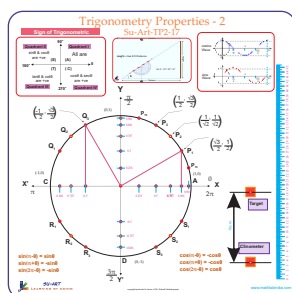
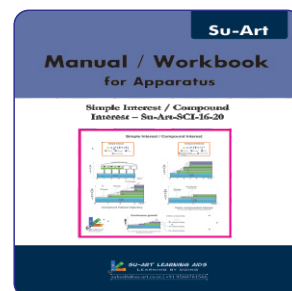
Direct and Inverse Proportion Su-Art-DIP-15

Apparatus to verify Direct and Inverse proportion



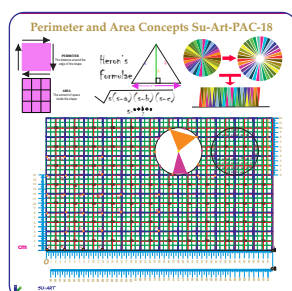
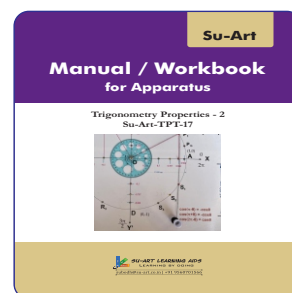
Simple Interest / Compound Interest Su-Art-SCI-16

Apparatus to model Simple Interest and compound interest geometrically



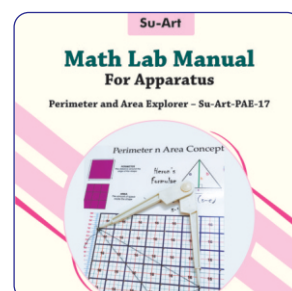
Trigonometry Properties - 2 Su-Art-TPT-17

Apparatus to verify additional trigonometry properties

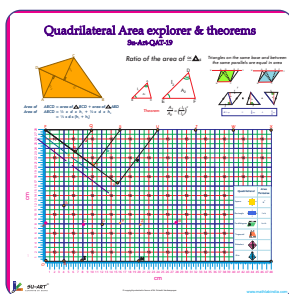


Perimeter and Area Explorer Su-Art-PAE-18

Apparatus to understand the perimeter and area. Further to verify Heron's formulae and derive Area of the circle

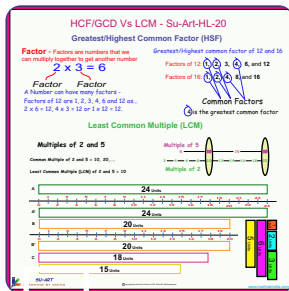
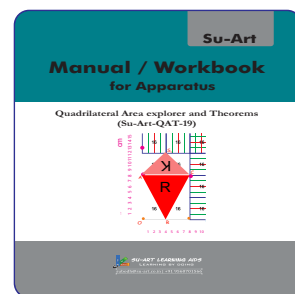


Apparatus Description



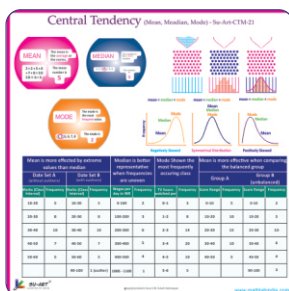
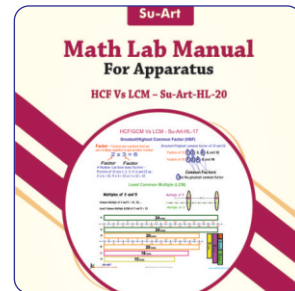
Quadrilateral Area Explorer & Theorems Su-Art-QAT-19

Apparatus to explore quadrilateral area and verify other area theorems



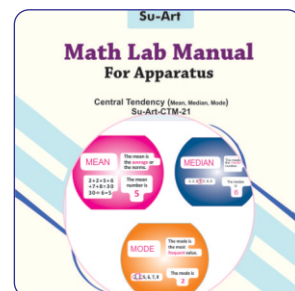
HCF/GCD Vs LCM Su-Art-HL-20

Apparatus to model and understand HCF and LCM



Central Tendency (Mean, Median, Mode) Su-Art-CTM-21

Apparatus to model and understand HCF and LCM



Exploration / Verification / Validation process



Making the hypothesis

Collecting the data, organizing and tabulation



Performing math lab activities

Making a note of observation and inference



Verification of the hypothesis

Impact Study of Su-Art Math Lab

Study Snapshot:

Location	Schools	Students	Concepts
Mehbubnagar (Telangana)	10 Government ZP schools	508 (Grade VI to VIII)	19 key topics

Study Method: Learn - Test - Experience - Test again

Step 1: **Traditional Teaching**

Step 2: **Pre Test**

Step 3: **Su-Art** Lab Activity

Step 4: **Post Test**

Step 5: Performance compared (**t-test analysis**)

Result at a Glance:

- **89% students improved** in post test scores.
- **0% Showed Decline**
- All 19 concepts showed **Statistically Significant Gains** ($p < 0.05$).

Teachers observed

- *Higher engagement*
- *Conceptual Clarity*
- *Reduced Math anxiety*

What Changed?:

Before

Passive Listening
Math anxiety
Abstract Struggle

After

Active Experimentation
Math Curiosity
Tangible understanding

Testimonials

- "Sir ur activity based models are very good Children performed activities using them and learnt in an enjoying way. Thank you sir for the wonderful activity based models"
TGT Math, JNV Raigarh
- "Great execution of theory in practical form"
Tekanpur
- PGT Math, KV
- "They are good."
- DCRO KVS Jammu
- "We at Mukangan Exploratory are very much interested in having such useful models in our mathematics laboratory."
• The mathematical kits that were presented are quite useful, practical and should serve well to achieve the objectives. 🍌🍌🍌
Training Head, Bharati Foundation
- This concept is such an interesting one, when i use to study maths as a subject I didn't like it at all but this concept is definitely going to turn a boring subject into scoring and interesting subject. Innovation is today's need



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