OFFICE OF THE STATE PROJECT DIRECTOR
HARYANA SCHOOL SHIKSHA PARIYOJNA PARISHAD
SHIKSHA SADAN, SECTOR 5, PANCHKULA

INVITATION FOR EXPRESSION OF INTEREST

(EOI)

For

"MATH LAB" PROJECT

By

GOVERNMENT OF HARYANA SCHOOL EDUCATION DEPARTMENT

ON

TURN-KEY BASIS i.e. DESIGNING, INSTALLATION, TRAINING, MAINTENANCE AND UPGRADATION

STATE PROJECT DIRECTOR
HARYANA SCHOOL SHIKSHA PARIYOJNA PARISHAD
SHIKSHA SADAN, SECTOR 5,
PANCHKULA

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HARYANA SCHOOL SHIKSHA PARIYOJNA PARISHAD
SHIKSHA SADAN, SECTOR 5, PANCHKULA

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DETAILED NOTICE INVITE

Tender Fee : Rs. 500

EMD : Rs. 1,00,000/- **"Expression of Interest"**

Haryana School Shiksha Pariyojna Parishad invites "Expression of Interest" (EOI) from Registered Firm/Organization /Vendors of proven track record to establish Maths Labs in 119 Blocks in the State of Haryana @ a cost Rs. 3 lakh per block. The number of Math Labs to be established may increase or decrease. The tender document can be downloaded from website www.hsspp.in.

The Bidder will submit their detailed design and specification alongwith detailed costing of the proposal equipment etc to be installed in a Math Labs. The Bid complete in all respect is required to reach office of the State Project Director, HSSPP, Panchkula by 8.02.2018 upto 1100 hours alongwith Demand draft of Rs. 1,00,000/- (Rs. One Lakh only) as earnest money and another DD for Rs. 500/- for tender fee in favour of State Project Director, HSSPP, Panchkula payable at Panchkula in a large sealed envelope addressed to State Project Director, HSSPP, Sector 5, Panchkula, Haryana.

The project is being offered is on design, Build and install on turnkey basis for a period of 5 years. The 5 years period shall start from the date of signing of the agreement and receipt of security deposit/ Bank Guarantee on receipt of which Notice to Proceed will be given.

The Authorized Registered Firms/Vendors/Experts Organizations/ firms/ vendors will be invited on a fixed date which will be intimated later by the competent authority for pre-bid discussion and presentation on the scope of work and layout plan of Math Labs by the bidders alongwith their models. A committee of experts constituted by State Project Director, HSSPP, Panchkula will finalize the number of models and their specifications. Models approved by the committee will be installed in Math labs. The selected models will be kept as a sample and verify the specification and comparison with other QR the supplied/installed models. A committee will verify all these specifications quality and quantity of these models.

Minimum rates will be invited the firms for the selected models in a separate sealed envelope and these rates should reach the office of undersigned on or before 20th February 2018 upto 2:00 PM which will be opened on the same day at 3:00 PM in the presence of applicants or their duly authorized representatives.

HSSPP reserves all the rights to accept/reject any or all bids received without assigning any reason whatsoever. For any other details the office of State Project Director, HSSPP can be contacted on all working day form Monday to Friday is between 9.00 AM to 3.00 PM.

State Project Director,
HSSPP, Shiksha Sadan
Sector 5, Panchkula

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<u>Establishment of Mathematic Laboratories</u>

1. General

The mathematics process is both creative and explorative process and is the most important facet of Mathematics. It is the fountain head from which mathematic knowledge flows and a central component of the infrastructure that makes today technological and informational world.

Every student of Mathematics needs to learn the mathematics process. The best way to learn the process is to practice. This is possible where students are giver chance to experience the full process of creating and exploring mathematic.

119 Maths labs are required to be established @ one lab per school per block in all districts of Haryana. The motive of establishing math labs is to make study of mathematic interesting and practical which will be achieved by establishing math labs at block level and equipped with working models wherein students learning/studying Mathematics at school level are exposed to various mathematical concepts through these models.

A tentative list of models alongwith their specification required to equip math labs are as at Annexure I to IV. The tentative cost of the math lab equipped with these models should not exceed Rs. 3,00,000/- per lab. Also it may be noted that the number of Math Labs may increase or decrease at the sole discretions of the competent authority.

2. The Primary Requirement

2.1   The developing of Math lab should be based on learning by doing and should be cost effective.
2.2   Students should have access to all the possible model and modules to understand the Math concept and take advantage of the same.
2.3   The models developed should be handy so that they can be used as teaching aids in a regular classroom too.
2.4   Each model should be used for explaining multiple concepts.
2.5   Various theorems should be visualized and learnt using the self-made models**.**
2.6   Entire concept based Math Lab should be developed so as to save time and energy of the teachers and the students.
2.7   The models should be durable and the materials used should be of high quality acrylic, wood and rubber foams.

3. Technical Requirements

3.1   The Math Lab will be set up and established at a centralized location.

3.2   Math Lab will include Proper working condition models to solve problems in a demonstrative manner, which will enable the sessions to emulate a traditional classroom-like atmosphere, which the students are familiar and comfortable and help students to understand the concept easily.

3.3   Math Lab will include Trained Teachers at all levels to promote learning through interaction and the use of innovative technology for teaching.

3.4   Math Lab must have capability to incorporate suitable educational content to match State, CBSE and NCERT Syllabus.

3.5   The solution offered must include all the items/models mentioned at **Annexure-I to IV**.

3.6   Math Lab must have capability to show Practical Demonstration of each and every Model and simultaneously create interaction between Trainers, Teachers and Students.

3.7   Prior Training sessions to be conducted, in order to maximize effectiveness of the Teachers.

4. Operational Requirements and Methodology

4.1   The Bidder shall ensure a professional skill and expertise to the Teachers.

4.2   The Bidder shall use the services of qualified and technical experts having experience of Mathematics to provide the best quality Models.

4.3   The Bidder shall provide one time training to teachers in the beginning and up gradation by using qualified Trainers and professional experts.

4.4   The Bidder shall make the teachers aware about the use of practical educational material through various models and equipments to make the teaching more interesting and increase the efficacy of the medium.

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TERMS & CONDITIONS

5. RESPONSIBILITIES OF GOVT. OF HARYANA/HSSPP

5.1   To invest in equipments/models required to set-up the Math Lab.

5.2   To provide safe and secure place and required infrastructure free of cost, to the successful Bidder for installation of equipment/ models for setting up of the math Labs.

5.3   Nominate teacher at each of the centers for training the students in proper and effective use of equipment.

5.4   Designing the syllabus and preparation of content.

5.5   Ensure that each Math Lab is utilized for specified level of classes as equipped.

5.6   Extend necessary policy level support and guidance, approvals and suggestions as and when required.

5.7   Nominate lab in-charge who shall be responsible for the safety and security of the equipment/models/lab.

6. RESPONSIBILITY OF BIDDER

6.1   The Bidder shall be required to Train the entire designated faculty for the project on turnkey basis.

6.2   The bidder shall provide Trainers to train the Teachers at different levels.

6.3   The Bidder will appoint a Project Manager as nodal point for coordination with HSSPP.

6.4   The Bidder will arrange and install equipment for delivery as may be required and approved.

6.5   The Bidder is solely responsible for managing the activities of its personnel and will hold itself responsible for any misdemeanors.

6.6   Provide technical assistance for effective implementation of the project.

7. ELIGIBILITY TO BID

For the purpose of this EOI, any Bidder which satisfies the following requirements is eligible to participate in this tender process and to submit Bids :

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S.No.	Check List of Annexure	Y/N	Pg. No.
(a)	Letter for acceptance of all Terms and Conditions		
(b)	Tender document fee (Rs. 500 DD No…………………)		
(c)	The DD of Earnest Money Deposit (EMD) (DD No……………, Rs. 1,00,000/-)		
(d)	The bidder should be a Business Entity which would mean that the company is registered in India under the Companies Act 1956, and operating for the last 3 (Three) years in similar field as of March 31, 2017. The certificate of incorporation should be submitted for the same.		
(e)	GST registration certificate valid as on date of tender.		
(f)	A certificate by self that the company has been in business for last three years.		
(g)	Copy of Audited Balance sheet along with Profit and Loss account for the financial year 2014-15, 2015-16 and 2016-17.		
(h)	The bidder should give an undertaking to open office in Haryana at the time of accepting the award.		
(i)	A self certificate by company to be submitted that company has not been blacklisted in any state Govt./Central Government/PSUs.		

Note: No extra documents should be annexed with the tender.

7.1   Bidder by itself or its associate companies shall have a combined minimum turnover of INR 5,00,00,000 per annum. A CA certificate should be given as a proof by the bidder.

7.2   HSSPP will require the technically qualified bidder to demonstrate if required technical prowess to deliver and exhibit in a safe and secure manner which is to the satisfaction of HSSPP, and in this regard the decision of Additional Chief Secretary School Education, HSSPP shall be final and binding on all Bidders.

7.3   The Bidder shall provide a technical help if required by HSSPP.

7.4 The Bidder should have the capability and suggest a technological solution for mobile Math Labs which can be deployed as and when required. The bidder will have to demonstrate mobile Math Lab capabilities if required.

7.5 The Bidder must have implemented and conducted similar technological Project for any Central/State/Govt. Educational Institutions in at least one State in India.

7.6 The Bidder, either directly or through its associate companies, must have executed or managed a Math Lab.

7.7 The Math Lab must be Equipped with efficient model to cater to all levels of Primary, Middle, Higher/Secondary Student.

7.8 The Bidder, either on its own or through its associate companies, must have the capability to acquire and/or train the requisite manpower for professionally managing and moderating sessions, anchoring lectures, Training sessions and handling of equipment etc.

7.9 Bidder must provide not just the manipulative and static models but these models shall be WORKING models to understand the concept of mathematics.

7.10 The Bidder shall use mainly acrylic and other durable with non toxic vegetable dies and safe-to use materials.

7.11 The Bidder shall provide Teacher training, student training regularly and Math Lab should be developed with their involvement.

7.12 The bidder shall provide Math lab manual, MP4, High Definition and self explanatory DVDs to explain the applications of each model.

7.13 Cost shall include teacher training, student training, manual and DVD.

7.14 After Sales service shall be Immediate and continuous.

7.15 The Bidder shall provide effective tool kit with various components and sub components.

7.16 The Bidder shall provide effective mapping parameters and formats to teachers and train them on usage of the same.

7.17 The models provided by the bidder shall be designed keeping in mind all four kinds of learners in the classroom (Auditory, Visual, Read/Write and Kinesthetic.)

8. BID DOCUMENTS

The Bidder shall submit the following documents along with the bid.

8.1 Tender Document Fee : Rs. 500/- (Rupees five hundred only)

8.2 Security Deposit (Earnest Money deposit) Rs. 1,00,000/- (Rupees one lakh only)

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9. TECHNICAL BID

Technology support agreements for the provisioning of setting up a Math Lab with specification of the models required.

Specifications for Complete Math Lab

General Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Total 102 Math models i. Primary – 37 models ii. Middle School – 38 models iii. High School - 27 models	Comprises of a. Working models b. Demonstration models c. Static models	Learner centered Easy to use Colorful Safe Durable and User-friendly.
(b)	Videos	a. Videos for all models b. Self- explanatory videos c. Comes with LMS d. Can be played on both TV and computer e. Includes actual model explanation by experts, appropriate animations and graphics	Self -explanatory videos
(c)	User Manual	i. Easy to read and understand manual ii. Attractive user friendly manual iii. Manual for all the 100 models iv. English/ Hindi version	Step by step instructions to use the models effectively.
(d)	Tool kit	i. 12 components ii. Around 461 sub components iii. Durable, Long lasting iv. Safe v. Eco friendly vi. Attractive	accessories of math models

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Academic Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Learning material	All the models can also be used as teaching aids	
(b)	Curriculum Map - Completely aligned with the syllabus	Aligned with State, CBSE and NCERT syllabus.	printed book comes with the product
(c)	Teacher Training	Three times in a year teacher training shall be imparted for effective usage of models and Math Lab.	
(d)	Each model can be used to teach multiple concepts.	The concept details are listed in the manual and videos.	
(e)	Academic performance of the students can be measured.	The required parameters and formats are given to schools.	
(f)	Evaluation of effective usage of Math Lab by the teachers in Classroom	Classroom Observation is done twice in a year on the set parameters and report is shared with the school.	

Technical Specification

Sl.No.	Specifications	Description	Remarks
(a)	Material	Acrylic Thickness – ranging from 3mm to 6mm	
(b)	Dimensions	Ranging from 200 * 150 * 3 mm to 450 * 350 * 150 mm	
(c)	Colour	Transparent, Green, Red	
(d)	Sticker / Printing	Vinyl Clear Printing sticker in aesthetic colours	
(e)	Acrylic Cutting	Manual and Laser	
(f)	Edges	Rounded edges for safe handling	
(g)	Weight	Ranging from 100 gm to 1000gm.	
(h)	Assembly	Non – toxic screws, nut & bolts, rivet etc.	
(i)	Videos	Video in high definition (HD), MP4 format for ease of use.	For all the models, with the LMS

(j)	Manual	High Quality printing on glossy paper	Comprehensive manual to understand in English & Hindi languages with clear picture of the model
(k)	Tool Kit	PVC box of size - 38 X 30 X 12 cm	Contains components and sub components.
(l)	Packing	All the models dispatched in carton boxes of size Maximum 1.6 X 1.6 X 1.6 feet	Each model packed separately in bubble wrap.

10. FINANCIAL BID

10.1   Cost of setting up Math Lab with all required equipments/models and its installation (as per Annexure I to IV. The rates e quoted should be including all taxes.

10.2   Payment Schedule:-

(a)	Upon supply of Math Lab Equipment	50 %
(b)	On installation and integration of Math Lab	40 %
(c)	On 6 months post installation	10%
	TOTAL	**100%**

NOTE :

i.   HSSPP shall not pay anything over and above the quoted bid amount.

ii.   The payment to the Bidder will be released within 20 days from the date of submission of bills by the Bidder.

iii. HSSPP reserves the right to invite Bidders for discussions for better understanding of the Bidder's capabilities and on the technological and qualitative aspects of the bid before declaring the successful Bidder.

iv.   Bidder must furnish his GST registration certificate. (This would be required since GST will be paid by HSSPP.

v.   Bidder must furnish the PAN card copy.

11. BID EVALUTION CRITERIA

The responsive bids will be evaluated further under the following broad head:

Sr. No.	Particulars/Parameter's	Weight-age
1	Organization & General Capability	10%
2	Technical Capability (Key personnel)	25%
3	Approach & methodology and understanding of project Requirements and Compliance with Technical requirement	25%
4	Technology Solution Proposed	25%
5	Relevant Experience	15%
	Total	100%
6	Financial Bid	100%

For qualifying, a Bidder has to score at least 60% in each category and 80% in total.

12. SUB-CONTRACTING

The Bidder can involve sub-contractors in the implementation of this project. However, the Bidder will have the prime and sole responsibility for the execution of the project.

13. AGREEMENT

The Successful Bidder will enter into an agreement with HSSPP detailing the schedule of installation and other terms and conditions.

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Annexure-I

Primary School Math Labs

General Specifications

Sl.No.	Specifications	Description	Remarks

(a)	Total 100 Math models
	  iv. Primary – 37 models
	  v. Middle School – 38 models
	  vi. High School - 27 models
		Comprises of
		  a. Working models
		  b. Demonstration models
		  c. Static models
			Learner centred
			Easy to use
			Colorful
			Safe
			Durable and User-friendly.

(b)	Videos	a. Videos for all the 100 models b. Self- explanatory videos c. Comes with LMS d. Can be played on both TV and computer e. Includes actual model explanation by experts, appropriate animations and graphics	Self -explanatory videos
(c)	User Manual	a. Easy to read and understand manual b. Attractive user friendly manual c. Manual for all the 100 models d. English/ Hindi version	Step by step instructions to use the models effectively.
(d)	Tool kit	a. 12 components b. Around 461 sub components c. Durable, Long lasting d. Safe e. Eco friendly f. Attractive	Contains accessories of math models

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Academic Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Learning material	All the models can also be used as teaching aids	
(b)	Curriculum Map - Completely aligned with the syllabus	Aligned with State, CBSE and NCERTsyllabus.	A printed book comes with the product
(c)	Teacher Training	Three times in a year teacher training is imparted for effective usage of models and Math Lab.	
(d)	Each model can be used to teach multiple concepts.	The concept details are listed in the manual and videos.	
(e)	Academic performance of the students can be measured.	The required parameters and formats are given to schools.	
(f)	Evaluation of effective usage of Math Lab by the teachers in Classroom	Classroom Observation is done twice in a year on the set parameters and report is shared with the school.	

Technical Specification

Sl.No.	Specifications	Description	Remarks
01	Material	Acrylic Thickness – ranging from 3mm to 6mm	
02	Dimensions	Ranging from 200 * 150 * 3 mm to 450 * 350 * 150 mm	
03	Colour	Transparent, Green, Red	
04	Sticker / Printing	Vinyl Clear Printing sticker in aesthetic colours	
05	Acrylic Cutting	Manual and Laser	
06	Edges	Rounded edges for safe handling	
07	Weight	Ranging from 100 gm	

		to 1000gm.	
08	Assembly	Non – toxic screws, nut & bolts, rivet etc.	
09	Videos	Video in high definition (HD), MP4 format for ease of use.	For all the 100 models, with the LMS
10	Manual	High Quality printing on glossy paper	Comprehensive manual in easy to understand languages (English & Hindi) with clear picture of the model
11	Tool Kit	PVC box of size - 38 * 30 * 12 cm	Components and sub components.
12	Packing	All the 100 models are dispatched in carton boxes of size not more than 1.6 * 1.6 * 1.6 feet	Each model packed separately in bubble wrap.

Measurement of the models (Primary School)

SL No	Model Name	Code	Dimension (Cm)	Thickness
1	Board Division	IMPA002	30x30 cm	5mm
2	Plus and minus on wheels	IMPA003	Same	3mm +3mm=6
3	Place value-blocks and strips	IMPA004	30x15 a.10x10 cm b.10x10cm c. 1x1cm	8mm board
4	Multi wheel	IMPA006	30x30	5mm
5	Small to big candy	IMPA006	34x15x26	6mm, 5mm
6	Sum up	IMPA019	30x20x8	3mm
7	Composing Numbers	IMPA021	b-15,h-40	6mm-base, 5mm

8	Addition Board	IMPA022	30x30	5mm
9	Prime and Composite Numbers	IMPA026	33X35	5mm
10	Multiplication Board	IMPA027	30x30	5mm
11	whole Number Laws Board	IMPA028	30x30	5mm
12	Factors and Multiples	IMPA029	40x30	5mm
13	Angle Clock (P)	IMPG001	30 diameter	5mm
14	Exploring area using dice	IMPG004	30x30	5mm
15	Place value Expanded Notation	IMPA020	32x10x5 cm, rod-25cm	3mm
16	Fraction of a Set	IMPA008	30x25 cm	(2mm+3mm)
17	Data Handling-pi chart	IMPA016	30x25 cm	2mm+3mm
18	Indian and International System	IMPA010	30x25 cm ,25x6 cm-2 Nos	5mm
19	Addition and Subtraction	IMPA024	25x30 cm	5mm
20	Division Box	IMPA001	22x25cm	4mm cm
21	Formation of bigger numbers	IMPA025	30x20 cm	5mm
22	Abacus division	IMPA011	30-base,rod height-25cm, rod-1cm dia	5mm
23	Symmetrical shapes	IMPG004	10x10-8 nos (MDF)	5mm
24	Greater and lesser than	IMPA035	30x20 cm	5mm
25	Predecessor and Successor	IMPA036	30x10 cm	5mm
26	Multiplication table	IMPA033	30x30 cm	4mm board, strips-5mm
27	Peek A Boo	IMPA015	28x10 cm	
28	Addition Tree	IMPA030	30x40 cm	5mm
29	Fly and slide board	IMPA007	40x40 cm	5mm

30	Aliguli mane Division	IMPA013		
31	Pattern Completion	IMPA017	5x5cm-39pieces,4x3-10 pieces, 15x10cm -2 Nos	5mm
32	Series Completion	IMPA018	20x8-2 stands, pipe-2 nos,10cm,15cm	5mm
33	Tally Train	IMPA023	overall size-40x15,engine 7x5x5cm, 12x5-2nd bos,10x5cm-6 boxes, wheel-3cm dia-16 wheels, rod-0.5cm	5mm
34	Commutative Property	IMPA031	30x30 cm	5mm
35	Real Number House	IMPA032	Stand-10x9,Outer circle-18cm, ii-circle with stand-7x11cm, base-30x10	5mm
36	Roman Numerals Calendar	IMPA034	30x20 cm	5mm
37	Multiplying Rollers	IMPA005		

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Annexure-II

Middle Math Lab

General Specifications

Sl.No.	Specifications	Description	Remarks

01	Total 100 Math models
	  vii. Primary – 37 models
	  viii. Middle School – 38 models
	  ix. High School - 27 models
		Comprises of
		  d. Working models
		  e. Demonstration models
		  f. Static models
			Learner centered Colorful
			Safe
			Durable and User-friendly.

02	Videos	f. Videos for all the 100 models g. Self- explanatory videos h. Comes with LMS i. Can be played on both TV and computer j. Includes actual model explanation by experts, appropriate animations and graphics	Self -explanatory videos
03	User Manual	v. Easy to read and understand manual vi. Attractive user friendly manual vii. Manual for all the 100 models viii. English/ Hindi version	Step by step instructions to use the models effectively.
04	Tool kit	all components and all sub components Durable, Long lasting Safe Eco friendly Attractive	accessories of math models

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Academic Specifications

Sl.No.	Specifications	Description	Remarks
01	Learning material	All the models can also be used as teaching aids	
02	Curriculum Map - Completely aligned with the syllabus	Aligned with state, CBSE and NCERTsyllabus.	printed book for reference
03	Teacher Training	Three times in a year teacher training is given for effective usage of models and Math Lab.	
04	Each model can be used to teach multiple concepts.	The concept details are listed in the manual and videos.	
05	Academic performance of the students can be measured.	The required parameters and formats are given to schools.	
06	Evaluation of effective usage of Math Lab by the teachers in Classroom	Classroom Observation is done twice in a year on the set parameters and report is shared with the school.	

Technical Specification

Sl.No.	Specifications	Description	Remarks
01	Material	Acrylic Thickness – ranging from 3mm to 6mm	
02	Dimensions	Ranging from 200 * 150 * 3 mm to 450 * 350 * 150 mm	
03	Colour	Transparent, Green, Red	
04	Sticker / Printing	Vinyl Clear Printing sticker in aesthetic colours	
05	Acrylic Cutting	Manual and Laser	
06	Edges	Rounded edges for safe handling	
07	Weight	Ranging from 100 gm to 1000gm.	
08	Assembly	Non – toxic screws, nut & bolts, rivet etc.	

09	Videos	Video in high definition (HD), MP4 format for ease of use.	For all the 100 models, with the LMS
10	Manual	High Quality printing on glossy paper	Comprehensive manual to understand languages(English & Hindi) with clear picture of the model
11	Tool Kit	PVC box of size - 38 * 30 * 12 cm	Contains components and sub components.
12	Packing	All the 100 models are dispatched in carton boxes of size not more than 1.6 * 1.6 * 1.6 feet	Each model packed separately in bubble wrap.

Measurement of the models (Middle School)

SL No	Model Name	Code	Dimension (Cm)	Thickness
01	VM Multiplication	IMMA001	40x30 MDF sheet	5mm
02	Clock operations	IMMA013	30 diameter	5mm
03	AST-Triangle	IMMG002	Base- 30, H-30	5mm
04	AST-Rectangle	IMMG003	30x20	3mm +3mm=6
05	Angle Clock (M)	IMMG009	30 diameter	5mm
06	Chart Based Fractions	IMMA002	30x32 cm	5mm, 3mm
07	Data Handling-bar Graph	IMMA007	30x5, rod-25cm height	5mm, rod-8mm
08	Parallel and Transversal Line	IMMG010	30x3-2Nos, 40x3-1nos, protractor-8 dia	5mm, protractor-2mm
09	Coin Probability	IMMA005	30x2.5- 3Nos, coins-8dia- 7 Nos	5mm
10	Ratio	IMMA021	30x10x6 cm, rod20cm height	3mm

11	Linear equation Board	IMMZ001	30x20 cm	5mm
12	Rounding Off	IMMA018	40x40 cm	5mm
13	Exponents Board	IMMA012	20x20 cm	3mm+2mm
14	Decimal Multiplication	IMMA004	35x35 cm	5mm
15	Properties of Whole number	IMMA008	30x30 cm	5mm
16	SSS Congruency	IMMG011	30x16.5 cm	3mm +3mm,
17	SAS Congruency	IMMG013	30x22cm	3mm +3mm,
18	ASA Congruency	IMMG012	30x22cm	3mm +3mm,
19	Classification of triangles based on Sides	IMMG015	30x20 cm	5mm
20	Classification of triangles based on Angles	IMMG016	30x20 cm	5mm
21	Average 6 number	IMMA017	30x30 cm	5mm
22	Number Line	IMMA025	40x24 cm	5mm
23	Fraction to decimal chart	IMMA024	30x30 cm	5mm
24	Decimal Division	IMMA026	30x30 cm	5mm
25	LCM and HCF board	IMMA022	30x20 cm	5mm
26	Finding Angles in India Map	IMMG014	50x50cm	5mm
27	LSA and TSA	IMMG017	45x35 (MDF)	5mm
28	Operation on Integers(puzzle)	IMMA019	30x30 cm	5mm
29	Ratio and Proportion	IMMA023	30x20cm	5mm
30	Profit and Loss	IMMA011	overall-22x34, top box- 15x2.5- 2 Nos, 15x5-1 Nos, Middle part -15x16cm,Base- 20x5x3cm	4mm

31	Equivalent Fractions and Decimals	IMMA020	1st roller-24cm,12cm-2nos, 8cm-3Nos,6cm-4Nos,4 cm-6 Nos,3cm-8cm	PVC pipe
32	Parts of a Circle	IMMG004	20x20 cm circle-15dia-2Nos, 1 semi circle-15dia	2+3mm-Board, circles-3mm
33	Metric Conversion	IMMG018	km-15x14,m-15x12,cm-15x10,mm15x8	3mm
34	Properties of rational Numbers	IMMA016	30x40 cm	5mm
35	Dice probability	IMMA006	30x30 cm	5mm
36	Circular fractions	IMM003	Board-15x15cm,5 circles-10dia	2+3mm-Board, circles-3mm
37	Net shapes	IMMG008	Cube-10x10 cm, cuboid-15x 10 cm, square based prism-base10, triangular based prism-15cm base, cone-8cm, Cylinder-5dia, 10cm height	3mm
38	π value	IMMG007	40x20 cm, circle-13 cm	3mm+2mm

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Annexure-III

High School Math Lab

General Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Total 100 Math models x. Primary – 37 models xi. Middle School – 38 models xii. High School - 27 models	Comprises of a. Working models b. Demonstration models c. Static models	Learner centred Easy to use Colourful Safe Durable and User-friendly.
(b)	Videos	a. Videos for all the 100 models b. Self- explanatory videos c. Comes with LMS d. Can be played on both TV and computer e. Includes actual model explanation by experts, appropriate animations and graphics	Self -explanatory videos
(c)	User Manual	a. Easy to read and understand manual b. Attractive user friendly manual c. Manual for all the 100 models d. English/ Hindi version	Step by step instructions to use the models effectively.
(d)	Tool kit	All components and all sub components Durable, Long lasting Safe Eco friendly Attractive	accessories of math models

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Academic Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Learning material	All the models can also be used as teaching aids	
(b)	Curriculum Map - Completely aligned with the syllabus	Aligned with State, CBSE and NCERTsyllabus.	printed book with the product
(a)	Teacher Training	Three times in a year teacher training is imparted for effective usage of models and Math Lab.	
(a)	Each model can be used to teach multiple concepts.	The concept details are listed in the manual and videos.	
(a)	Academic performance of the students can be measured.	The required parameters and formats are given to schools.	
(a)	Evaluation of effective usage of Math Lab by the teachers in Classroom	Classroom Observation is done twice in a year on the set parameters and report is shared with the school.	

Technical Specification

Sl.No.	Specifications	Description	Remarks
(a)	Material	Acrylic Thickness – ranging from 3mm to 6mm	
(b)	Dimensions	Ranging from 200 * 150 * 3 mm to 450 * 350 * 150 mm	
(c)	Colour	Transparent, Green, Red	
(d)	Sticker / Printing	Vinyl Clear Printing sticker in aesthetic colours	
(e)	Acrylic Cutting	Manual and Laser	
(f)	Edges	Rounded edges for safe handling	
(g)	Weight	Ranging from 100 gm to 1000gm.	
(h)	Assembly	Non – toxic screws, nut & bolts, rivet etc.	

(i)	Videos	Video in high definition (HD), MP4 format for ease of use.	For all the 100 models, with the LMS
(j)	Manual	High Quality printing on glossy paper	Comprehensive manual to understand languages(English & Hindi) with clear picture of the model
(k)	Tool Kit	PVC box of size - 38 * 30 * 12 cm	Contains components and sub components.
(l)	Packing	All the models are dispatched in carton boxes of size maximum 1.6 * 1.6 * 1.6 feet	Each model packed separately in bubble wrap.

Measurement of the models

SL No	Model Name	Code	Dimension (Cm)	Thickness
01	Geo Board	IMCG001	32x35 cm	4+4+4 foam Sun board and MDF
02	Cube Roots	IMHA004	30 x35 cm	5mm
03	Divisions of Polynomials	IMHZ002	30x30	5mm
04	(a+b)2 Identity	IMHZ003	32x32 with beading, a. 10x10 b. 10x20 (2 No s) c. 20x20	3mm +3mm=6
05	Properties of circles	IMHG001	33 cmx43	4+4+4 foam Sun board and MDF
06	Trigonometry Circle	IMHT003	30 diameter	5mm
07	Moving quadrilateral	IMHG002	30x30 dia, Protractor-8 dia, Centre protractor-13	3mm +3mm,

			cm dia	Protractor-2mm
08	Moving Pythagoras	IMHG003	25x25cm	3mm,Protractor-2mm
09	Factorization Board	IMHZ007	30x30 cm	5mm
10	Algebraic Multiplication	IMHZ006	30x30 cm	5mm
11	Derivation of Quadratic formula	IMHZ005	x^2-16x16,x/2a-4x16-2Nos, c/-19.2x16,b^2/4a^2-4x4, b^2/4a^2-.8x16	3mm
19	Trapezium transformation	IMHG010	27x35 cm	5 mm
12	α= 2 β	IMHG008	30x30 cm	5mm
13	Trigonometric Board	IMHT002		5mm
14	Clinometers	IMHT001	10x10cm	5mm
15	Magic hexagon	IMHT004	30x25 cm	5mm
16	Octant	IMHG009	28x28 cm	5mm
17	Pythagoras Transformation	IMHG011		
18	Co-ordinate Geometry	IMHG004	30x30 cm	5mm
20	Union And Intersection of Sets	IMHA001	30x20x5 cm-Box, Circles-12cm-dia- 2 Nos, handle-7x2-2 Nos	4mm, 3mm
21	Combination Board	IMHA003	30x30 cm	5mm
22	Conversion of Irrational Number to Decimal Number	IMHA005	40x30cm	5mm

23	$(a+b+c)^2$	IMHZ004	30x30-Board,a^2-4.5x4.5,ab-4.5x9-2Nos, b^2-9x9cm,ac-4.5x13.5-2nos,bc-9x13.5-2Nos,c^2-13.5x13.5	3mm,
24	Auto compass	IMHG007	9x5.5cm-2Nos,9x2.5-2 Nos	3mm
25	$(a+b)^3$	IMHZ001	a3-3x3x3cm, b3-6x6x6cm,a2b-3x6x3, ab2-6x3x6	3mm

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Annexure-IV

Technical Specifications for Complete Math Lab

General Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Total 102 Math models i. Primary – 37 models ii. Middle School – 38 models iii. High School - 27 models	Comprises of a. Working models b. Demonstration models c. Static models	Learner centered Easy to use Colorful Safe Durable and User-friendly.
(b)	Videos	a. Videos for all models b. Self- explanatory videos c. Comes with LMS d. Can be played on both TV and computer e. Includes actual model explanation by experts, appropriate animations and graphics	Self -explanatory videos
(c)	User Manual	a. Easy to read and understand manual b. Attractive user friendly manual c. Manual for all the 100 models d. English/ Hindi version	Step by step instructions to use the models effectively.
(d)	Tool kit	a. 12 components b. Around 461 sub components c. Durable, Long lasting d. Safe e. Eco friendly f. Attractive	accessories of math models

Academic Specifications

Sl.No.	Specifications	Description	Remarks
(a)	Learning material	All the models can also be used as teaching aids	
(b)	Curriculum Map - Completely aligned with the syllabus	Aligned with State, CBSE and NCERTsyllabus.	printed book comes with the product
(c)	Teacher Training	Three times in a year teacher training shall be imparted for effective usage of models and Math Lab.	
(d)	Each model can be used to teach multiple concepts.	The concept details are listed in the manual and videos.	
(e)	Academic performance of the students can be measured.	The required parameters and formats are given to schools.	
(f)	Evaluation of effective usage of Math Lab by the teachers in Classroom	Classroom Observation is done twice in a year on the set parameters and report is shared with the school.	

Technical Specification

Sl.No.	Specifications	Description	Remarks
(a)	Material	Acrylic Thickness – ranging from 3mm to 6mm	
(b)	Dimensions	Ranging from 200 * 150 * 3 mm to 450 * 350 * 150 mm	
(c)	Colour	Transparent, Green, Red	
(d)	Sticker / Printing	Vinyl Clear Printing sticker in aesthetic colours	
(e)	Acrylic Cutting	Manual and Laser	
(f)	Edges	Rounded edges for safe handling	
(g)	Weight	Ranging from 100 gm to 1000gm.	
(h)	Assembly	Non – toxic screws, nut & bolts, rivet etc.	
(i)	Videos	Video in high definition (HD), MP4 format for ease of use.	For all the models, with the LMS

(j)	Manual	High Quality printing on glossy paper	Comprehensive manual to understand in English & Hindi languages with clear picture of the model
(k)	Tool Kit	PVC box of size - 38 X 30 X 12 cm	Contains components and sub components.
(l)	Packing	All the models dispatched in carton boxes of size Maximum 1.6 X 1.6 X 1.6 feet	Each model packed separately in bubble wrap.

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Annexure-V

Measurement of the models

Sr.no	Model Name	Dimension (Cm)	Thickness
1	π value	40x20 cm, circle-13 cm	3mm+2mm
2	$(a+b)^2$ Identity	32x32 with beading, a. 10x10 b. 10x20 (2 Nos) c. 20x20	3mm +3mm=6
3	$(a+b)^3$	a3-3x3x3cm, b3-6x6x6cm,a^2b-3x6x3, ab^2-6x3x6	3mm
4	$(a+b+c)^2$	30x30-Board,a^2-4.5x4.5,ab-4.5x9-2Nos, b^2-9x9cm,ac-4.5x13.5-2nos,bc-9x13.5-2Nos,c^2-13.5x13.5	3mm,
5	Abacus division	30-base,rod height-25cm, rod-1cm dia	5mm
6	Addition and Subtraction	25x30 cm	5mm
7	Addition Board	30x30	5mm
8	Addition Tree	30x40 cm	5mm
9	Algebraic Multiplication	30x30 cm	5mm
10	Aliguli mane Division	Wooden model	
11	Angle Clock (M)	30 diameter	5mm
12	Angle Clock (P)	30 diameter	5mm
13	ASA Congruency	30x22cm	3mm +3mm,
14	AST-Rectangle, with movable angles	30x20	3mm +3mm=6
15	AST-Triangle	Base- 30, H-30	5mm
16	Auto compass	9x5.5cm-2Nos,9x2.5-2 Nos	3mm
17	Average 6 number	30x30 cm	5mm
18	Board Division – for easy understanding of division	30x30	5mm
19	Chart Based Fractions	30x32 cm	5mm, 3mm
20	Circular fractions	Board-15x15cm,5 circles-10dia	2+3mm-Board, circles-3mm
21	Classification of triangles based on Angles	30x20 cm	5mm
22	Classification of triangles based on Sides	30x20 cm	5mm
23	Clinometers	10x10cm	5mm

24	Clock operations	30 diameter	5mm
25	Coin Probability	30x2.5- 3Nos, coins-8dia- 7 Nos	5mm
26	Combination Board	30x30 cm	5mm
27	Commutative Property	30x30 cm	5mm
28	Composing Numbers	b-15,h-40	6mm-base, 5mm
29	Conversion of Irrational Number to Decimal Number	40x30cm	5mm
30	Co-ordinate Geometry	30x30 cm	5mm
31	Cube Roots	30 x35 cm	5mm
32	Data Handling-bar Graph	30x5, rod-25cm height	5mm, rod-8mm
33	Data Handling-pi chart	30x25 cm	2mm+3mm
34	Decimal Division	30x30 cm	5mm
35	Decimal Multiplication	35x35 cm	5mm
36	Derivation of Quadratic formula	x^2-16x16,x/2a-4x16-2Nos, c/-19.2x16,b^2/$4a^2$-4x4, b^2/$4a^2$-.8x16	3mm
37	Dice probability	30x30 cm	5mm
38	Division Box	22x25cm	4mm cm
39	Divisions of Polynomials	30x30	5mm
40	Equivalent Fractions and Decimals	1st roller-24cm,12cm-2nos, 8cm-3Nos,6cm-4Nos,4 cm-6 Nos,3cm-8cm	PVC pipe
41	Exploring area using dice	30x30	5mm
42	Exponents Board	20x20 cm	3mm+2mm
43	Factorization Board	30x30 cm	5mm
44	Factors and Multiples	40x30	5mm
45	Finding Angles in India Map	50x50cm	5mm
46	Fly and slide board	40x40 cm	5mm
47	Formation of bigger numbers	30x20 cm	5mm
48	Fraction of a Set	30x25 cm	(2mm+3mm)
49	Fraction to decimal chart	30x30 cm	5mm
50	Geo Board	32x35 cm	4+4+4 foam Sun board and MDF / Acrylic
51	Greater and lesser than	30x20 cm	5mm

52	Indian and International number System	30x25 cm ,25x6 cm-2 Nos	5mm
53	LCM and HCF board	30x20 cm	5mm
54	Linear equation Board	30x20 cm	5mm
55	LSA and TSA	45x35 (MDF)	5mm
56	Magic hexagon	30x25 cm	5mm
57	Metric Conversion	km-15x14,m-15x12,cm-15x10,mm15x8	3mm
58	Moving Pythagoras	25x25cm	3mm,Protractor-2mm
59	Moving quadrilateral	30x30 dia, Protractor-8 dia,Center protractor-13 cm dia	3mm +3mm, Protractor-2mm
60	Multiplication Board	30x30	5mm
61	Multiplication table	30x30 cm	4mm board,strips-5mm
62	Multiplying Rollers		
63	Multiwheel	30x30	5mm
64	Net shapes	Cube-10x10 cm, cuboid-15x 10 cm, square based prism-base10, triangular based prism-15cm base, cone-8cm, Cylinder-5dia, 10cm height	3mm
65	Number Line	40x24 cm	5mm
66	Octants – Coordinate geometry	28x28 cm	5mm
67	Operation on Integers(puzzle)	30x30 cm	5mm
68	Parallel and Transversal Line	30x3-2Nos, 40x3-1nos, protractor-8 dia	5mm, protractor-2mm
69	Parts of a Circle	20x20 cm circle-15dia-2Nos, 1 semi circle-15dia	2+3mm-Board, circles-3mm
70	Pattern Completion	5x5cm-39pieces,4x3-10 pieces, 15x10cm -2 Nos	5mm

71	Peek A Boo	28x10 cm	
72	Place value-blocks and strips	30x15 a.10x10 cm b.10x10cm c. 1x1cm	8mm board
73	Placevalue Expanded Notation	32x10x5 cm, rod-25cm	3mm
74	Plus and minus on wheels - For easy understanding of addition and subtraction	Out sidedia 30 cm and inside dia 20 cm	3mm +3mm=6
75	Predecessor and Successor	30x10 cm	5mm
76	Prime and Composite Numbers	33X35	5mm
77	Profit and Loss	overall-22x34, top box-15x2.5- 2 Nos, 15x5-1 Nos, Middle part -15x16cm,Base-20x5x3cm	4mm
78	Properties of circles	33 cmx43 cm	4+4+4 foam Sun board and MDF / Acrylic
79	Properties of rational Numbers	30x40 cm	5mm
80	Properties of Whole number	30x30 cm	5mm
81	Pythagoras Transformation		
82	Ratio	30x10x6 cm, rod20cm height	3mm
83	Ratio and Proportion	30x20cm	5mm
84	Real Number House	Stand-10x9,Outer circle-18cm, ii-circle with stand-7x11cm, base-30x10	5mm
85	Roman Numerals Calendar	30x20 cm	5mm
86	Rounding Off	40x40 cm	5mm
87	SAS Congruency	30x22cm	3mm +3mm,
88	Series Completion	20x8-2 stands, pipe-2 nos,10cm,15cm	5mm
89	Small to big candy – for concept of ascending and descending order of numbers	34x15x26	6mm, 5mm
90	SSS Congruency	30x16.5 cm	3mm +3mm,
91	Sum up – for easy understanding of various ways of addition and subtraction	30x20x8	3mm
92	Symmetrical shapes	10x10-8 nos (MDF)	5mm

93	Tally Train	overall size-40x15,engine 7x5x5cm, 12x5-2nd bos,10x5cm-6 boxes, wheel-3cm dia-16 wheels, rod-0.5cm	5mm
94	Trapezium transformation	27x35 cm	5 mm
95	Trigonometric Board	30cm dia	5mm
96	Trigonometry Circle – for easy understanding of basic trigonometric ratios	30 diameter	5mm
97	Union And Intersection of Sets	30x20x5 cm-Box, Circles-12cm-dia- 2 Nos, handle-7x2- 2 Nos	4mm, 3mm
98	VM Multiplication	40x30 MDF sheet/ Acrylic	5mm
99	whole Number Laws Board	30x30	5mm
100	$\alpha= 2\beta$, to prove theorems on triangles	30x30 cm	5mm
101	24 hour clock	Non Toxic Plastic Standard size for laboratories Alphabet & Number Alogrithum Time management with conversion worksheet. Movable hands of hour and minutes	-
102	Physical Balance	Metallic Standard Size Balance mark used for daily usage of weighing	-