

MATHSTICKS

December 2022, Issue 4

Monthly Newsletter dedicated to Primary and Elementary teachers
Mathematics Education Department, SCERT, Haryana

Special Features of this Newsletter –

- **Learnings from the Research**

new aspects of the research will be shared to deepen your understandings of Mathematics learning.

- **To do in the Classroom**

In each issue, you will get some suggestions to improve the maths learning process which will be based on research.

- **Take the challenge**

Each issue will provide a challenging and exploratory task/ problem that can be attempted by any level of teacher or learner. You can share your solution with us at mathsedu.scert@gmail.com.

- **Learning from the classroom experiences**

In each issue, classroom experiences shared by teachers will be published.

You can share your comments/experiences with us at

<https://forms.gle/Xdq7zP4UYz2kFBgV7>

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In this Issue

- Growth Mind Set messages for students for all levels
- Visual Challenge Explorations for all Levels
- Harbans Puzzles for all levels
- Classroom Experience on the concept of Measurement
- Research work based approaches for teaching Multiplication facts (Tables)

upcoming Events

International
Mathematics
Day
(14 March 2023)

Designing and Language

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Growth Mind Set Messages



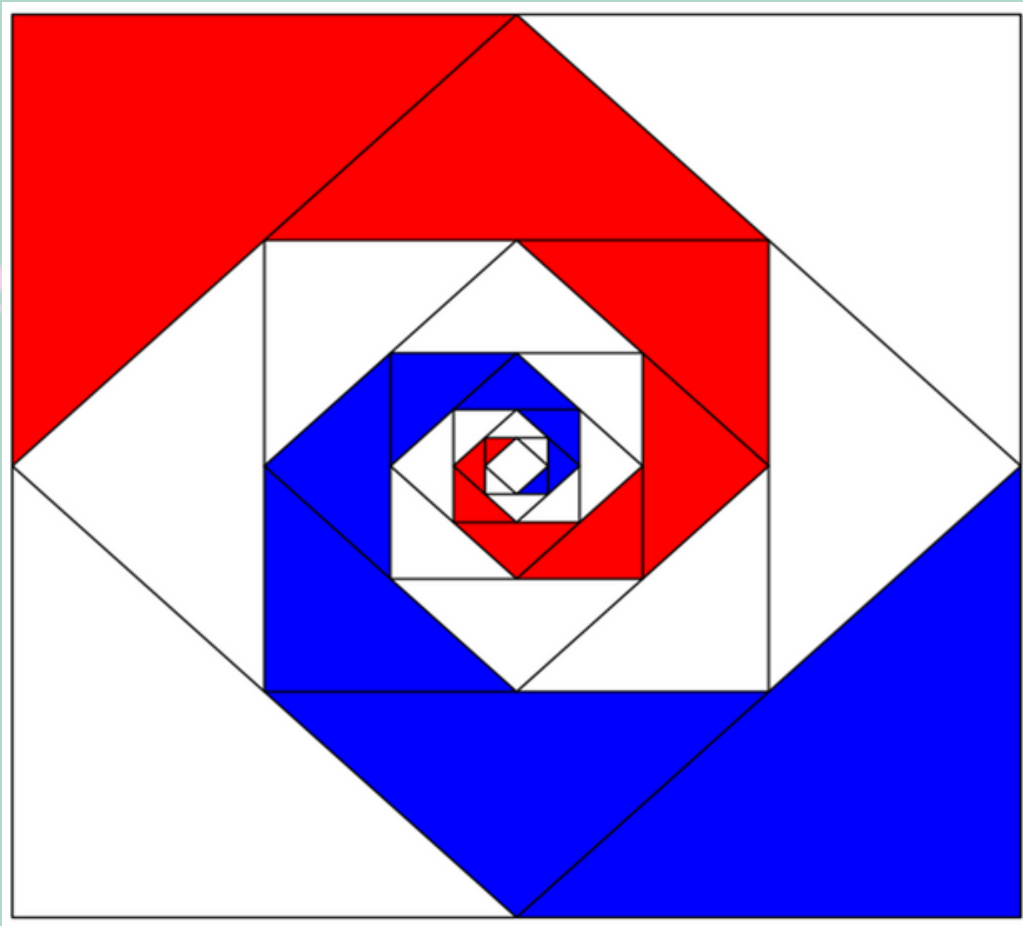
What can I say to myself?

Instead of this	Try thinking
 <p>I must give up.</p>	 <p>I must use some another strategy I have learnt.</p>
<p>I am not good at this.</p>	<p>What I am missing?</p>
<p>This is too hard !!</p>	<p>This may take some time and more efforts.</p>
<p>Not possible for me to put more efforts.</p>	<p>I can always improve so I will keep trying.</p>
<p>I just can't do Maths .</p>	<p>I am going to train my brain in Maths.</p>
<p>Ohh !! I made a mistake.</p>	<p>Mistakes always help me to learn better.</p>
<p>He/she is so smart.I will never be that smart.</p>	<p>I am going to figure out how he/ she did it.</p>
<p>On no. Plan A didn't work.</p>	<p>Good thing! Still so many plans left- Plan B,Plan C....</p>



TAKE THE CHALLENGE

Anjali has come up with a design using geometric shapes. Look at her design carefully.



Can you draw the same design as Anjali without seeing it. Try !!

Explain the design verbally to your friend and discuss about the pattern.

What mathematical questions would you like to ask ?

What did you notice in the design?



Why this Challenge ?

The purpose of using this image is to stimulate the discussion about different ways of seeing and to ask questions that become the focus of further explorations.

Examples of such questions -

- How much fraction of the total design is coloured red , blue or white ?
- Can you continue the pattern inwards or outwards? How ?



Harbans Puzzle

You must have heard about Harbans Puzzle. If not, then know through the link of this video that how Harbans Puzzle is played?



[See here how Harbans Puzzle is played?](#)

2	9+	
11+		
	1-	



3-	0x	
a	b	c
	(-7)+	
d	e	f
1-		
g	h	i

1. How many steps were taken to solve the problem?

2. What can be the minimum number of steps to solve the puzzle?

Can the puzzle have more than one solution?

These type of mathematical puzzles are helpful for the development of mathematical explorations and logical reasoning besides being interesting to the learners.

[click here to visit the article on Harbans Puzzle](#)

Learnings from the classroom experiences

"Know metre and kilometre using steps"

When the concept of metre and kilometre was introduced in the class, most of the students were only able to tell that there are 1000 m in a km but they were not aware of how much is a metre and kilometre actually in daily life. When they were asked what would be the approximate distance of their home from the school or what is the distance between the office and their classroom, they were not able to answer the questions.

I felt that until they do not learn all this by themselves they will not understand the concept of metre and kilometre. I got the idea of an activity. I asked the children to walk in the classroom by drawing a line of 1 m on the floor. Most of the children have three steps on that line.

Then I said, "How much is the distance between our classroom and the office?" The students were very excited and they started moving towards office and were counting their steps also. It was about 300 steps for almost students. Now the problem was to tell the distance in meters.

I was not expecting the exact answer from them but suddenly a student said, "Mam If 3 steps count one meter, **300 steps mean the distance is 100 meter.**"

Students were very excited about their calculations. Next day they measured the distance between their home and the school. They enjoyed a lot and learnt the concept of measurement.

[Classroom Activity Video Clip](#)



Fluency with Numbers Using Flexibility



We mentioned in the previous issue that rote or drill of mathematical facts is very difficult for most students. It creates Maths anxiety among them. The limitations of rote memorization have been shown by researchers also (e.g. Barudi - 2006)

Inability - There are too many facts to learn.

Unfair Application - Students misuse the facts and even never cross - check the rote facts.

Inflexibility - Students don't learn flexible strategies such as for $9+5$, they prefer counting on fingers but not the way $9+1$ and then adding 4 to this.. Similarly for 2×9 , they use the rote skill but don't do it by 2×10 and then subtracting 2 from it.

Learning tables is more difficult for CWSN students.

The simplest way to introduce tables is with the help of patterns.

If you want to connect with your surroundings , then ask the children to tell the names of animals with two feet. For example if the child says - a bird , then what about the number of its feet can be discussed . If two birds are sitting , then how many feet do both of them have ? If 5 birds are there , how many feet are there ?

When students give their answers , discuss about their way of finding the number of feet. The methods told by them should be written on the blackboard. If a child says - If there are 5 birds , number of feet is 10. If there are 4 birds , number of feet is 8. As a bird is less , 2 feet will be less . Here he is subtracting 2 from 10, instead of doing 2×4 .

Here, use of such methods promotes the flexible use of numbers in Mathematics. This type of conversation is called Maths Talk.

Now we will introduce you with few very important strategies that can be used by children to get fluency in multiplication facts –

Commutative Property -This is a very important point to be understood by students. For example- 2×8 can be explained as a pattern of 8 lines of 2 or 2 lines of 8. The answer is 16 in both the cases.

Using Doubles - Give some story based problem to students like- Raju and Rani are making dolls with stockings. 2 buttons are required for making eyes of each doll. They are making 7 dolls. How many buttons will be required ?

This problem has 7 set of 2s.

Can you think of some other problem having 2 sets with _____no. of objects ?

When students solve such type of problems , they develop the concept of double. It will be helpful in developing reasonable thinking among them.

More Reasoning Strategies will be discussed in next issue.....

