UNIT 14 BUILDING AN ENGAGING LEARNING CLASSROOM

Structure

14.1 INTRODUCTION

We all know some children and/or adults who do not like one or the other subject. A subject that is commonly feared and disliked by many from very early in the school years is mathematics. Have you ever thought about what could be the reason for disliking mathematics? Is it that mathematics is not interesting? Or is it that children do not understand it? Or is it that they are not able to relate it to day-to-day life and do not see its relevance? Perhaps, they find mathematics to be full of rules and procedures that they have to remember. Teaching mathematics in such a way that children have to only memorize and recall facts and procedures makes it dull, boring, and monotonous. Children then do not realize that mathematics can be interesting or exciting. **A large number of children who do not like mathematics have not been able to engage with mathematics and the way it works.** This Unit asserts that creating an effective learning environment is crucial to address this issue and explains the principles that can be used to create an engaging learning environment for the learning of mathematics.

Objectives

After reading this Unit, you will be able to:

- explain what it means to be 'involved' or 'engaged' with mathematics or with any other subject;
- discuss the need to be engaged with a subject;
- know the principles using which the teacher can create engagement with mathematics and lead the children to enjoy it; and
- explain what are the main elements of an engaging maths classroom.

14.2 WHAT DO WE MEAN BY 'ENGAGEMENT'?

Recall some activities that you find interesting and enjoyable – things that you do not want to leave mid-way and wish you could spend more time on. Why do you find these activities interesting? You find these activities interesting because you find them meaningful. In other words, these activities 'engage' or 'involve' you.

Interest and enjoyment are the first signs of engagement. You will notice that some children and adults like to explore nature and know more about it. Some of us are interested in knowing more about the history of our local area and our country; others like to read storybooks, play sports and games, draw and paint, or cook. We do these activities because they interest us and we enjoy doing them. Thus, when we do something that interests us, we can say that we are engaged with it.

If we see the above discussion with respect to mathematics, then this means that **children will engage with mathematics when**:

- they can relate what is taught in the mathematics classroom with their experiences – in other words, they find it meaningful;
- can see it as doable and fun;
- they find learning mathematics interesting.

14.2.1 Need for Engagement

Why do we need to create situations where children engage with mathematics? The simple answer to this is that engagement is needed so that:

- children learn to like the subject; and
- understand the relevance of mathematics to everyday life.

Let us discuss the first point first. We know that some children start to dislike the subject as early as in primary school because they are not able to relate to it and the number of such children becomes larger as mathematics becomes more abstract in higher classes. We also know that before these children joined the school, all of them were able to use some mathematics during their daily activities and play. They were enthusiastic to play games that required some mathematics. For example, forming groups of the number called out when the music stops (such as groups of 3 or 4), tracing shapes, drawing patterns, etc. They did not join the school with the idea that mathematics is boring. However, the way they were taught mathematics resulted in their dislike and fear of the subject.

With respect to the second point, children need to engage with mathematics as it is necessary for their daily lives. You may recall from the previous Unit 13 that children engage in mathematical activities in their daily lives. For young children, mathematics largely means observing closely, classifying, sorting, counting, exploring and creating patterns, basic operations of addition and subtraction, estimating small quantities, and thinking of and using some basic ways of organizing information (data) they see around

them. This understanding and engagement needs to be further strengthened. In other words, the subject matter of mathematics during the early years needs to nurture these concepts and skills, and also develop higher-order thinking skills through engaging with this subject matter content meaningfully. Doing so results in developing and nurturing children's reasoning and thinking abilities, and understanding of the world around us. It helps children to organize their thoughts and ideas and become more capable of building logical arguments and handling questions. Children begin to use reasoning as a part of their daily experience and it is this capability that is needed to be made stronger. The reasoning and thinking opportunities that the child encounters in mathematics build her capabilities further. The task of the teacher and the classroom is to create such opportunities for reasoning and thinking while doing mathematics.

In the following Sections, we will learn how one can create a classroom environment that helps young children engage with mathematics as opposed to simply memorizing formulae, using algorithms mechanically without understanding.

14.3 PRINCIPLES OF BUILDING AN ENGAGING CLASSROOM

You may recall from Unit 13 of this Course wherein we discussed how mathematics should be introduced to young children so that they find it meaningful and enjoy it. The following Section further builds on that discussion.

14.3.1 Use Children's Prior Knowledge for Teaching in the Classroom

We know that children begin to explore the environment and organize their knowledge about it very early on in their lives and much before they come to school. You may recall from MCD-001, exploration begins soon after their birth. The implication of this is that when children come to school, they have had many experiences and have formed many mathematical ideas that they can express. **These ideas about mathematics that children have formed before they join the school are referred to as 'prior knowledge'.** When children join school or when they move from one class to another, the teacher's role is to first establish what learning the children bring with them and then plan activities that help children to develop these abilities further and develop new abilities and concepts based on these. For example, when children join preschool, they can classify objects (into big and small, long and short); arrange 3 or 4 objects by size (shortest to longest, also called seriation); identify the location of objects (above-below, up-down which involves the use of space); match similar shapes; imagine transformations (changes); choose a certain type of objects from a collection of various objects (involves classification); set up a one-to-one correspondence and can count 3 to 4 objects correctly. Can you think of some everyday situations where children's use of these abilities and conceptual knowledge can be seen?

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Examples of children demonstrating these abilities and concepts in day-to-day life include:

- Helping parents put the right number of plates for dinner (one-to-one correspondence and counting);
- Sorting cards for a game based on pattern(classifying objects);
- Choosing fruits from a collection of different vegetables and fruits (classifying objects);
- Finding and bringing something needed (Identifying location understanding of space);
- Creating structures with blocks, playing hide and seek, (visualizing shapes, imagining transformations); and
- Playing Ludo (counting).

All of these are meaningful situations (contexts) for the child because the activity has a purpose for the child. **Thus, the early mathematical concepts and ideas are acquired in meaningful and purposeful situations**.

Activities like the ones the child has already participated in at home can be easily carried into the preschool or the early primary classroom. This is what should be done in the initial couple of months. This will help children link new learning with what they already know, making the new learning meaningful and interesting for them. Some of the usual tasks at the school are similar to the tasks at home, in the sense that they are not consciously aimed at teaching mathematics but still manage to engage children in mathematics. For example, teachers often ask children to help them in collecting notebooks and counting the number collected or in distributing colours and checking how many children did not get the colours (these activities involve one-to-one correspondence and counting). Such tasks are a continuation of what children have done at home. **The next step is to create structured activities by using these tasks as a base. This is what is meant by 'using prior knowledge for teaching of new concepts'** For example, asking children to depict the numbers counted using counters, matchsticks, or beads. Then you can move on to carrying out simple manipulations on these groups of objects. For example, once children can do basic counting up to 10 or 20, you could plan tasks such as asking children to pick marbles from two different groups of marbles so that when put together they make a certain number (say, 8); or throwing two dice and picking the same number of stones as the numbers on the two dice together. Such tasks will lead the children to learn more about numbers and simple operations on them.

However, we often miss this resource (i.e., prior knowledge) which can be used to take children to the next level of concept development in mathematics, and focus on teaching children the algorithm as soon as they join the school. We fail to understand that algorithms are new and abstract for the child. The fear of performing the algorithm correctly simply takes away the joy and interest of children in learning mathematics. This does not mean that children should not be introduced to the algorithm at any stage, but not before children have acquired the mathematical concept through hands-on experiences and activities using concrete material.

Therefore, the teacher should begin with what children already know and help them to gradually construct further knowledge by providing structured experiences. When you begin from what the children already know, it shows that you are valuing children's prior learning.

Check Your Progress Exercise 1

1) Why do we need to create situations where children engage with mathematics?

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2) Young children often help their parents by laying plates, bowls, and glasses on the table for a meal. Can you think of the mathematics involved in it?

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14.3.2 Understand the Process of Learning Mathematics

It is also clear that mathematics, just like other subjects, cannot be learned by copying and memorizing. You may recall from Unit 13 that the **nature of mathematical ideas and concepts is such that they progress from concrete to abstract, from particular to general, and they form hierarchical structures**. These aspects should be taken into consideration while planning mathematics lessons for children.

Let us understand this with the help of the given example.

Seema showed her class of Grade 1 children the following photograph and asked them to create a pattern of their choice.

Hardly any child could understand the task and they drew different designs (not patterns).

Why do you think this could have happened?

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Clearly, there is something incorrect with the way teacher is teaching the concept of pattern. Children have not been given enough examples of patterns. They do not understand what makes a pattern and how it is different from design (refer to Unit 22 to know about patterns). Most importantly, children have not been given enough experience or creating patterns using actual objects. The teacher has not understood the learning process – i.e., **children learn better when they first explore concepts on their own, using concrete materials**. Children need to be first given opportunities to understand concepts of mathematics by manipulating objects instead of starting with oral and paper-pencil activities. Oral activities are abstract in nature and paper and pencil tasks are pictorial. When the teacher starts with these activities, she changes the order of concrete-pictorial-abstract. What she needs to do is to give sufficient experience with actual objects, then move on to using picture cards depicting a certain number of objects, and then move to the use of more abstract activities.

14.3.3 Make Mathematics Enjoyable for Children

One prime reason why mathematics becomes boring is that children have to simply listen to the teacher and receive information. They do not get the opportunity to think for themselves, reason and explore. There is no challenge, excitement, or participation. To be able to create interest and engagement in the classroom, we need to keep in mind children's capabilities and what they like doing with concentration. To make a classroom enjoyable, we can do the following:

- Give children the opportunity to be active and explore and observe various mathematical concepts (shape, size, pattern, number, etc.) in their daily lives.
- Use a variety of methods and materials for imparting concepts in the classroom – activities that require physical actions as well as mental actions through stories, songs, flashcards, etc. These give an idea of concreteness (tangibility) as well as abstraction and also provide variety.

14.3.4 Make Use of Talk

As children talk about what they are doing, they make sense of their actions. It is in this interaction that children construct the meaning of different mathematical concepts, rules, and procedures. This interaction makes learning meaningful and enjoyable. Often, we as teachers, do not permit the children to talk in class – we think that if children listen to our correct formulations and write that in their notebooks, they will learn; but this is just like copying from another person. It does not become a part of a child's mental framework. Children learn that which they understand by doing themselves and talking about what they are doing is important for them to understand what they are doing.

Talk in the classroom can be of various types:

- It could be a **discussion among children themselves** – for example, you could ask the children to add two numbers and then discuss amongst themselves whether their addition is correct.
- It could be **a discussion with the teacher** – with the teacher asking questions about what the children have done and the children respond.
- It could be an **informal conversation between children** as they carry out the activity.

To help you understand what we mean by talk in the classroom, read the following example.

When children in Grade 2 are asked to show the number 13 using objects (say matchsticks), some children will show it using 13 loose matchsticks and some others will show it using a bundle of 10 matchsticks and 3 loose matchsticks. The important point now is to ask the children why they were representing the number '13' the way they did. When children share their responses with other children in the class, they come to know of different ways of representing the number using matchsticks. – counting matchsticks one by one up to 13 or arranging them by one bundle of the tens and three loose matchsticks –both lead to the same result. One way is more efficient than the other. This is an important idea for children to learn.

Children's talk also gives you an idea about where they are in terms of their understanding. A child who places 13 sticks separately one by one has not yet understood the concept of a bundle or grouping by ten. She has not yet understood place value.

So, use questioning and discussion about the task they are engaged in. These could be simple questions like how many children are wearing white today (involves both classification by colour and counting); how many children come from one colony (involves both classifications by residence and counting); which is the furthest colony (estimation of space); what is the quickest route (concepts of space, distance and time).

14.3.5 Link the Activity/ Experience with Mathematical Understanding

Many of us think that if children are repeatedly engaged in mathematical experiences and activities with concrete materials, they will identify and understand the mathematical concepts on their own. However, this does not happen every time. It is easy to miss the mathematical pattern or relationship in the activity. **You, as the teacher, will have to direct children's attention to the mathematical concept that underlies the activities and experiences**. Else, children may simply attend to the colours of the objects and not the numerical relation/mathematical properties that we want them to learn. Such properties, such as place value, do not reside in the concrete material – in other words, just by looking at the objects placed in bundles of ten or creating such bundles of tens, we cannot understand the concept of place value. The children's attention has to be drawn to it. For example, if we want to show twenty-three and say a bigger block stands for tens and a smaller block stands for ones and show how 23 can be formed by joining two big blocks and three small blocks, we have to keep in mind that blocks (big or small) are a mere representation of tens and ones respectively, that we have made arbitrarily. Unless the child has numerous experiences with such representations, they mean nothing to her. So, merely doing the activity does not guarantee that the child has grasped the mathematical idea behind it. The teacher has to make conscious efforts to ensure that the child has also acquired the related mathematical concept.

14.3.6 Respect Children's Responses

The teacher must respect children's responses – correct or incorrect, and use these to build mathematical concepts. The way children respond to the tasks that you pose will tell you a great deal about their understanding. One should respect, analyze, and respond to children's responses, whether these are correct or not. Every child is different from the other and learns at a different pace and also in different situations. One should consider the responses of each child and use the response to understand how they are constructing the mathematical concept for themselves. For example, some children solved the following question in various ways:

$$\begin{array}{r} 32 \\ -\ 10 \\ \hline 22 \\ \hline \end{array}$$

a) $\begin{array}{r} 32 \\ -\ 10 \\ \hline 42 \\ \hline \end{array}$ b) $\begin{array}{r} 32 \\ -\ 10 \\ \hline 20 \\ \hline \end{array}$ c) $\begin{array}{r} 32 \\ -\ 10 \\ \hline 22 \\ \hline \end{array}$

After looking at the way answers have been given, can you tell what each child knows and what the child does not know? How would you analyze the responses and what may have been the logic the child used in each case?

The first child maybe because she got confused between the '+' and '-' symbols. Or maybe she understands addition to be the only operation

between numbers. The second child did subtraction but maybe was not aware of the meaning of subtracting zero and chose to write '0' at the unit's place. The third child did the subtraction correctly.

When children make errors, such as the above, our first response is to scold them for not "doing the sum correctly" and we start doubting their ability or sincerity. We may also begin to label them as 'weak'. We should, however, look at and find the reasons for the responses of the child. **Their errors tell us something about their way of understanding the concept and how they think, and this allows us to expand their thinking. Children's errors show us what is it that we need to change in our teaching so that children grasp the concept.** If we take children's errors as indicative of their way of understanding a particular concept, then we can see it as one more step in their process of understanding the concept, instead of labelling the child as one who is 'unable to learn the concept'. Moreover, if we constantly make the children feel that they make mistakes, they will not be able to do sums further.

The first thing to do, therefore, is to look at the child's response carefully and talk to the child to find out the way she has gone about it. Subsequently, we need to think of the experience we need to provide her so that she can understand the error. In the above example, we can give an opportunity to children to work with actual objects (matchsticks or beads) in bundles and groups of 10 as discussed in Unit 16. We should first build the concept of place value. This will help us to engage the child because if the concept is not clear to the child then the child will it find difficult to grasp the next concept.

Teachers usually want only one 'right' way of solving a mathematical problem. Even in mental computation, they want only one way, which cannot be the case. For example, one child may add 23 and 6 mentally, by adding the tens (20) and ones (3+6=9) separately and then adding the tens and ones. Another one may simply count on from 23 six times more – 24, 25, 26, 27, 28, 29 and tell that the sum of these two numbers is 29.

Sometimes, the child's response is incorrect but it maybe used as an alternate way of finding the solution. The strategy used by the child should be used by the teacher as an opportunity to widen the conceptual understanding. The error and its analysis can also help broaden the conceptual framework.

14.3.7 Enrich Your Content Knowledge

An important aspect of an engaging classroom is the teacher's knowledge of her subject. The teacher's sound knowledge of the content will enable her to:

- plan tasks that can hold children's attention and are meaningful for them;
- motivate children to engage with tasks and materials and talk about/discuss their findings/solutions;
- identify difficulties with the teaching and learning of a concept;
- identify the reason behind children's errors; and
- explore ways to correct them.

14.4 COMPONENTS OF AN ENGAGING CLASSROOM

A meaningful classroom interaction has to have as many of the following properties as it can.

a) The classroom should be **active, participative, explorative, and encourage discussion.** The classroom should not promote rote learning. Rote-learning means memorizing information by repeating it many times without understanding it. The child can repeat what she has learnt but she cannot apply it because she has not understood it. You may experience that when you ask a question, many children recite the whole answer the way they have learnt it – they cannot give you part of the answer without reciting the whole answer from the beginning. This shows that they have memorized the answer without understanding it. Tasks that only require rote memorization cannot be considered engaging activities. Rote memorizing is different from memorizing. Memorization is useful and necessary. We memorize the names of the capitals of countries. In the context of mathematics, we memorize multiplication tables upto 20 and some other mathematics facts. As the child grows older, the child will need to have some basic addition, subtraction and multiplication facts to use these in more complex problems. However, this does not mean these have to be learnt by rote. The child must understand the concept of multiplication and division before she memorizes the tables. The foundations of learning have to be built on a sound understanding of the concepts and procedures. Children, through exposure to a variety of tasks, can remember the information they need. Later children can practice for remembering facts.

b) **Activities in an engaging classroom should:**

- Make concepts interesting
- Make learning meaningful
- Provide an opportunity for exploring and experiencing mathematics
- Enable a deeper understanding of mathematical concepts and procedures
- Develop abilities to think and reason
- Promote practicing skills and understanding concepts.

The tasks/activities need to be according to the level of the children and based on the previous experiences/knowledge of the child. The tasks need to be challenging enough so that the child is involved with it.

c) **When planning an activity, keep the following points in mind:**

- The objective/ goal of the activity
- The content it covers and the concepts, rules, and procedures required
- Materials required to carry out the activity
- The classroom organization that is necessary for carrying out the task
- The kind of participation required from the children

d) **Various types of classroom arrangements** can be opted for to make the classroom engaging. Activities can be carried out by students individually or in groups. Some activities may require the whole class to participate together. Also, there are individual differences among children – some children do better when they are working with peers/ adults/ experts than when alone, while some others like to work alone.

You may need to rearrange the classroom setting as per the needs of the lesson/ task. Even though most of our classrooms are small with a large number of children, we can make efforts to engage children in group work. This enables children to develop collaborative and communication skills as they help each other understand and solve problems. Further, they develop mathematical skills while discussing and exploring solutions to problems, explaining their solutions, and developing an understanding of what are good and efficient solutions.

e) **Use a variety of activities to make a mathematics classroom engaging**:

- **Poem Recitation:** When dealing with the concept of subtraction, you can begin the class by singing a poem as an introductory activity. After singing the poem, the teacher can ask some questions (word problems) or ask children to do subtraction using picture cards or concrete materials.
- **Picture Making:** This can be used for teaching the skill of visualization. For example, the teacher may give children some cut-outs of shapes and ask them to combine two or more of these shapes to create a picture of an actual object. She may further state the rule that one picture or one shape can be used only once. For example, from 4 basic shapes – circle, square, triangle, and rectangle, we can make different figures.

  Another activity can be related to understanding symmetry. The teacher can take a picture and cut it in half along its line of symmetry. The child has to complete it or see it in the mirror, where the reflected half will be visible. Thread painting is another activity that can help in understanding symmetry.

- **Manipulating Objects**: In Unit 13, we have discussed that children should be first introduced to a concept by giving them opportunities to the use concrete material. For example, to help children understand the idea of shapes and the properties of different shapes the activity, "What rolls and what slides", can be carried out as described further:

To do this activity, you need a flat hardboard and several easily available objects of different shapes (e.g., pencils, small boxes, marbles or beads, sharpeners, books, pens, and balls). The board is placed in an inclined manner, like a slide, with the help of some books. With respect to each object, children are asked first to guess, whether it would roll or slide. Then children have to put each object on the inclined hardboard turn by turn, and see whether it rolls or slides. The teacher can depict the

following table on the blackboard and the children can call out the names of the objects under the relevant column and the teacher can write it.

Object	Only Slide	Only Roll	Slide and Roll
marble			
bead			
pencil			

At the end of the activity, the teacher can assist the children in analyzing the properties of the different shapes/surfaces of the objects. Objects with more than one surface may roll down or slide down, depending upon which surface is placed on the board.

- **Games**: Children love to play games and these are another way of creating engagement in class. Children can learn many basic mathematical concepts through games as these generate a good deal of mathematical activity spontaneously and enjoyably. New ideas and concepts can be introduced through games in a way that is enjoyable and non-threatening. For example, to introduce the concept of numbers, the game 'place as many stones as the number of dots' can be played as described further:

  Divide children into two groups. One member from team "A" will throw the dice and pick up from the pile of stones as many as the number/dots shown on the dice and will arrange the stones in the center in a row. Then one member from the other team will come and place as many stones as the first team placed. Then team "B" will throw the dice and the game will proceed in this way.

We can summarize the discussion of this Unit as follows:

- Engagement with mathematics can be possible through the use of concrete materials/ tools/situations and tasks together with a climate in the classroom where children's experiences are valued and they are free to express their views, their ideas, and their logical formulations.
- In such a classroom, the children's natural language is used for communicating and children are also helped to develop a vocabulary to communicate their understanding of concepts. The focus is not on the correct solution or the correct technical words but on conveying the ideas.
- The teacher-student relationship is non-authoritarian – this means that the teacher does not behave as if she knows the answers and the children know nothing. Children's understanding is respected and they are helped to achieve increasingly higher levels of understanding through activity and discussion. The teacher's role is that of a facilitator.
- The teacher does not give information, facts, or procedures to children to memorize but instead helps them discover concepts by carrying out activities themselves and then encouraging them to talk about what they have done. Of course, the teacher provides them tasks and activities that would help them engage with the concepts and eventually also explains and clarifies.

- The teacher has a sound knowledge of the content of mathematics that she is teaching. Besides, she also has a good understanding of the nature of children's thinking and reasoning processes and so can appropriately introduce concepts using appropriate tools and techniques.
- The teacher understands that children may be at different levels of understanding with respect to a particular concept. She respects the pace of learning of each child and does not compare children with each other. Thus, it will often be the case that you will see children working at various levels in such classrooms and the teacher's work will be to help each child to expand her/his understanding, reach a certain common level, and move ahead.

Check Your Progress Exercise 2

1) Think of any other mathematical concept and show how it can be taught to young children using the principle of 'concrete-pictorial-abstract'.

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2) What mathematical reasoning is used by children when they play hide and seek?

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14.5 SUMMING UP

An engaging classroom for mathematical learning includes the following:

- Children can relate what is taught in the mathematics classroom with their experiences – in other words, they find it meaningful;
- Children can see the tasks as doable and fun;
- Children find learning mathematics interesting.

The teacher's role in such a classroom is very important. She needs to design activities/ tasks in ways that allow all the children to participate in them. Asking children to share solutions, strategies, and reasons for answers gives

feedback to the teacher about their level of understanding. This is useful to prepare for further lessons. She will have to create opportunities for children to move beyond their existing capabilities and direct their attention to important mathematical ideas. Further, she will need to expose the children to the concepts, tools/ thinking aids to understand these concepts, and appropriate language and vocabulary to communicate one's understanding. It is the combination of these factors which will enable children to engage with mathematics meaningfully from the beginning.

14.6 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress Exercise 1

1) It is necessary to create situations where children engage with mathematics so that children learn to like the subject; and understand the relevance of mathematics to everyday life.

2) You may find several instances of mathematical reasoning by children when they have their meals. We have discussed some below:

   a) The table is being laid. There are eleven bowls. The child says we need three bowls more. This is because we have 7 people eating and each of us needs 2 bowls.

   b) A child does not want to drink milk but her mother insists. The girl says "I cannot, I am too full." The mother says, "Drink half a glass." The girl says, "No I would only have 10 sips." This shows she has reasoned that 10 sips are less than half a glass.

Check Your Progress Exercise 2

1) You can teach the addition of numbers by using the principle of concrete-pictorial-abstract as follows:

   You can first show children four toffees. Ask the children to count them. Then, you can add five more toffees and ask them to count the total number of toffees. Then, you can draw four toffees on the blackboard, help children count these, and then write the number '4' below these. Then you can put a '+' sign and then draw five more toffees, help children count them, and write the number '5' below it. Then you can ask children to count the total number of toffees and then write the total number of toffees i.e. number '9'.

   $$4 + 5 = 9$$

   Similarly, you may then draw several other items children are familiar with on the blackboard and help children count and add them. You can draw five houses first, help children count them, and write the number '5' below them when children have counted. Then draw six more and help the children count them. Then ask them to count the total number of houses and then write the total number. You can also draw candles, cakes, ducks, etc., or any other thing children ask you to draw and then ask them to count and add.

Thereafter, you can simply write the numbers on the blackboard and ask children to draw as many dots/lines below each number and then add and tell the total number. You can write on the blackboard:

5 + 5=

And help children draw,

5	+	5
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Thereafter, when children have done many such exercises, you can help children count on their fingers and tell the total number after adding.

2) The mathematics used by children while playing hide and seek is understanding of space and location of objects in space. When children hide in space they try to hide in such a place where the child who is 'den' may not find them. Then the child who is 'Den' locates all the children who are hiding at different places. It also requires systematically examining a space, creating a mental map of the space, then mentally eliminating areas where you do not find children, and also mentally identifying areas that are reachable and good for hiding, etc.