

C. B. R.

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LEARNING MATHS FROM THE ENVIRONMENT

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REFERENCE

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Play is an important part of the child's world. In the formative age of two to five years play, if structured, can help build a strong base for future learning.

The three R's (reading, writing and arithmetic) can be introduced in a meaningful and interesting manner through play.

Children, usually find arithmetic difficult to comprehend and slowly develop a dislike for it. But it can be made not only easy but also enjoyable through play.

Before launching a child on the homework-textbook-sums bandwagon, it is essential to familiarise him/her with certain basic pre-maths concepts. While doing this, use of real objects and practical experiences with things from the environment help him to relate better.

The Pre-Maths concepts are:

- Shapes
- Sizes
- Weights

- Serialisation
- Grouping and Matching
- Sequencing

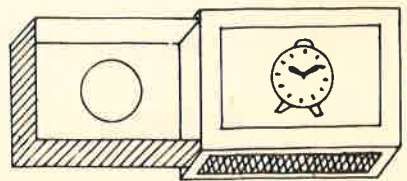
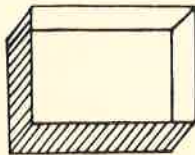
Shapes

Shapes help the child in understanding and differentiating numbers and words. On the basis of shapes, a child forms a mental picture of the environment around him.

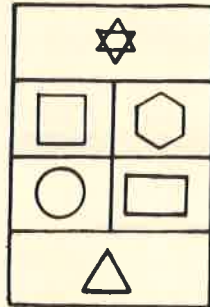
Objects like kitchen utensils can be used to trace outlines, with tins and boxes being used to differentiate shapes. Tracing shapes in mud or sand, can be reinforced by glueing, colouring or painting a shape. Biscuits and empty cartons can also be used for shape discrimination.

Exercise

- Draw on the inside of a matchbox different shapes and on the cover everyday objects corresponding to the shape drawn inside. In the beginning, only the three basic shapes can be taken, followed by more complex ones later on.



- b) Tracing shapes and figures with pebbles, seeds or grains. The child can also make shapes with dough, rope or matchsticks.



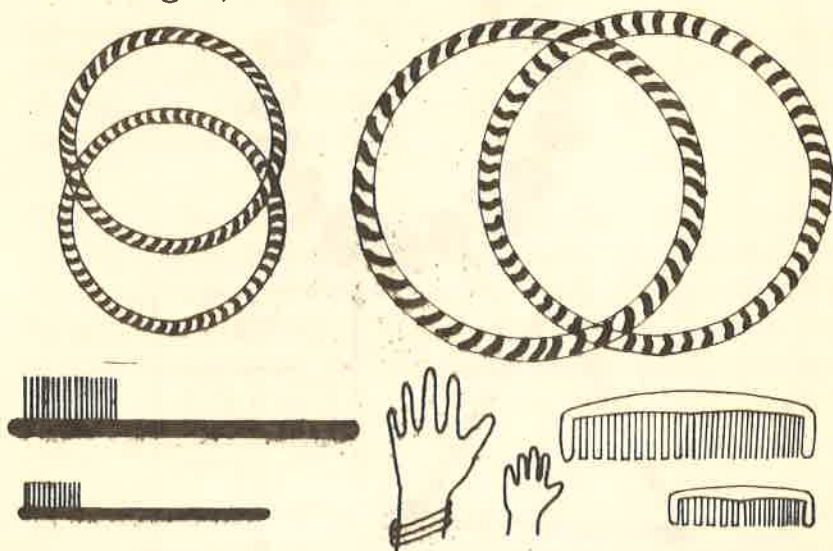
SIZES:

Concepts of length - of long and short, number values of more and less, big and small and use of a ruler come more easily by tracing different sizes as a pre-maths concept.

Everyday kitchen utensils like plates, watis(bowls), spoons, glasses. Leaves, twigs and buttons, etc. can also be used.

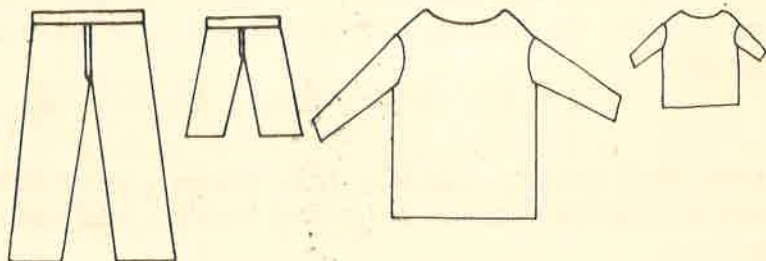
Exercise:

- a) Printing the feet and hands of the mother and child on paper and comparing their sizes. Collecting the mother's and child's own articles which are used everyday, like a toothbrush, comb, bangles, etc.



- b) Sorting his own clothes and those of his father, on the basis of size, eg. shirt, pants, banian, socks.

Match the father's clothes and the child's.



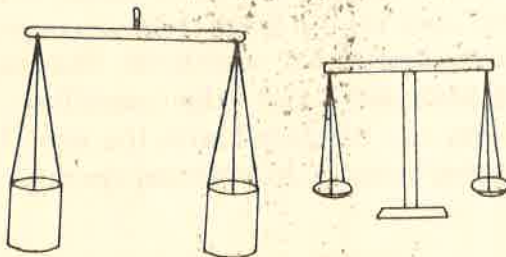
WEIGHTS:

Concepts like greater than / less than, addition and subtraction become easier to learn if the child is able to differentiate more / less and heavy / light objects.

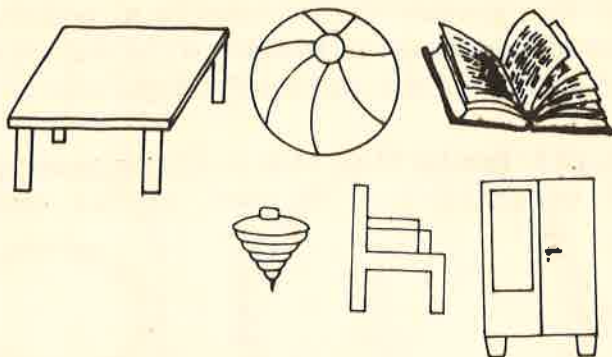
Plastic bags or bottles filled with mud, grains or water in different quantities can be used, as can cotton or feathers.

Exercise:

- a) Make a weighing-scale with two plastic milk-bags sewn with thread on to a wooden stick. Show the child how a heavy object tilts that side of the scale down. This can be later used to play 'shop' where the child balances grains against stones in the other plastic bag. This activity can also be done using liquids.



- b) Which of the following objects can you lift in your class?

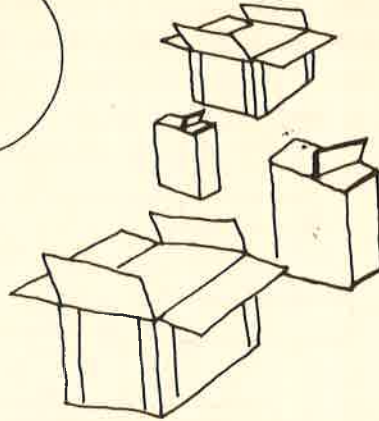


SERIALISATION:

Realising money value and classifying time are concepts which are strengthened if the child is taught to seriate at an early age. Clothes, sticks, kitchen utensils, shape cutouts and chalk pieces of different sizes can be used.

Exercise:

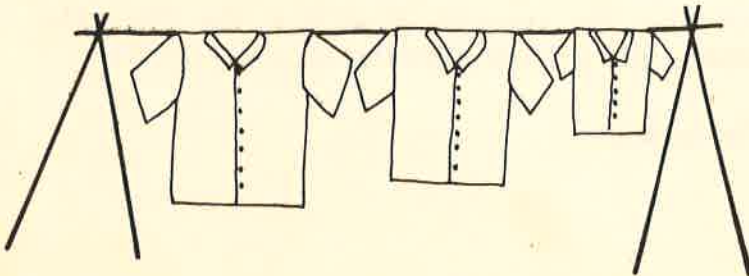
- a) Give the child bangles of three different sizes. Ask him to trace them on paper. Ask him to tell you which is the biggest, medium-sized and the smallest. This activity can be played with the use of coins, buttons, biscuits, leaves, empty cartons, etc.



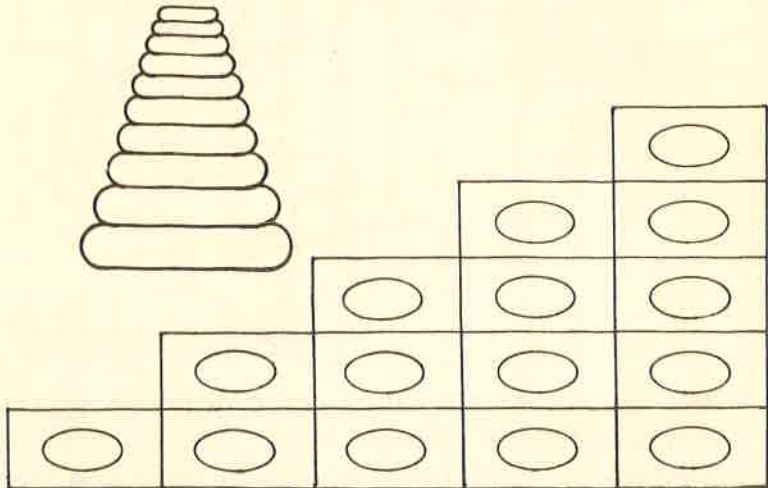
- b) Ask the child to arrange three different sets of utensils of three different sizes. The child has to keep the big plate then the smaller plate and then the smallest plate in a row. Then he has to lay the table by keeping a big wati on the big plate, the smaller wati in the smaller plate, etc.



This can also be done, in a similar way, with clothes of various sizes belonging to the family members.



Outdoor games like 'lagori' - played with seven stones and staircase-building are other activities which children enjoy.



MATCHING AND GROUPING:

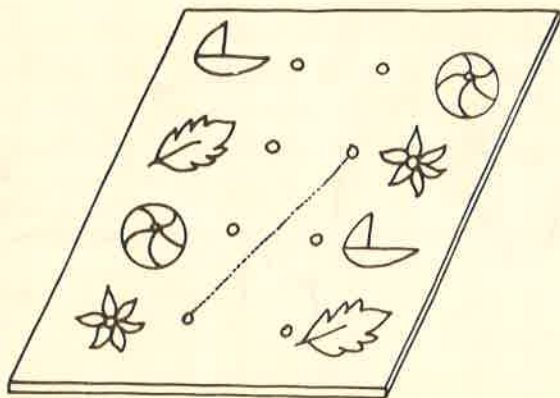
This helps the child in understanding one to one correspondence, forming collective groups and in classification of numbers and figures later on.

Playing-cards, marbles, flowers, leaves, buttons, bottle-caps, lids of tins and boxes, biscuits, coins, sticks, a comb or brush, etc. This will help teach the child not only the one to one correspondence, but also the concept of sorting the dissimilar objects and grouping similar objects together.

For example:

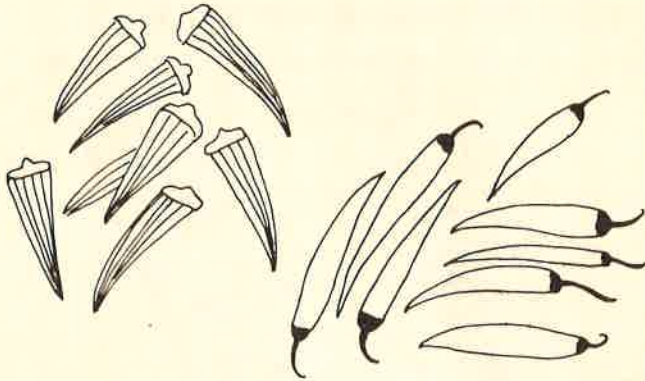
Exercise:

- a) On a piece of cardboard draw pictures of objects vertically at both the ends and make a hole near every object. Give the child a thread and ask him to join the similar picture with it.



- b) Ask the child to arrange the mess in the house by keeping all things to wear in one corner, all things to eat in another, all things to play with in yet another and all things to cook with in the fourth corner. Give the child grains to clean, vegetables to sort and utensils and clothes to sort, everyday.

Vegetables sorting/pulse sorting.



SEQUENCING:

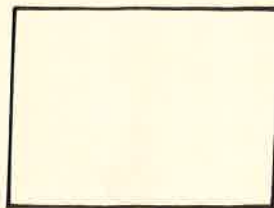
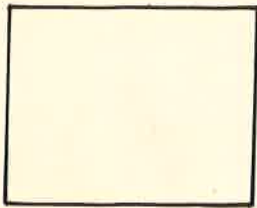
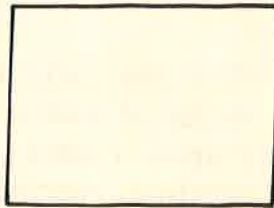
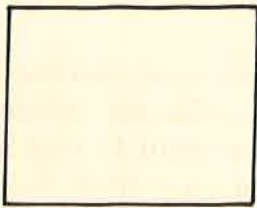
Sequencing helps develop a systematic approach to learning. It helps in learning numbers, the alphabet and language later on.

Ribbons, coins, biscuits, clothes-pegs, stones, leaves, flowers, utensils, etc. can be used. Sequencing can be taught on the basis of shape, size and colour.

It begins early by telling stories to the child and asking him to relate it back. Everyday experiences can be the starting point for this, for example, repared.

Exercise:

a) Ask what the child has done since waking up in the morning; ask the child how to make chapattis. He has to repeat the entire process, step by step, from dough-making to cooking. Sequence cards for the same could be made.



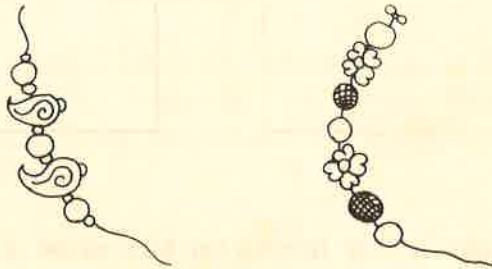
b) Take a few leaves (of the same kind) and some sticks or petals. Arrange them in an order and ask the child to continue the order similarly.



This can be done using other objects as well. The sequential order can be made more difficult by adding more objects or by changing the ratio of the objects, i.e.



- c) Give the child beads, flowers, leaves or shells of two or more different colours, shapes or sizes. Ask the child to make a necklace, earrings and a ring from them. Give him a particular pattern to follow while stringing the beads.



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