

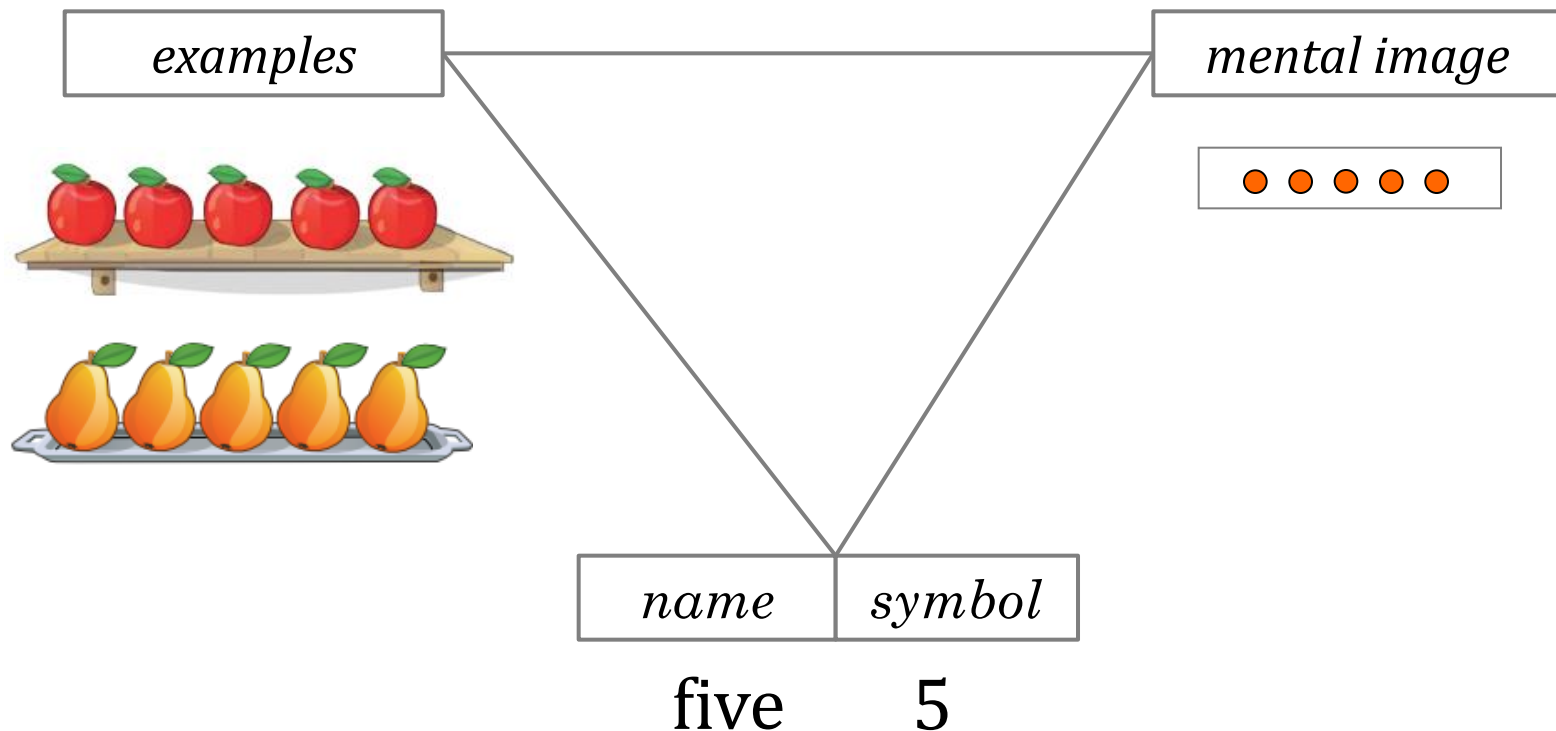
SOME IMPROVEMENTS IN DIDACTICS OF MATHEMATICS AT THE PRESCHOOL TEACHER TRAINING COLLEGES

Preschool Teacher Training College, Vrsac, Serbia

Aleksandra Mandic

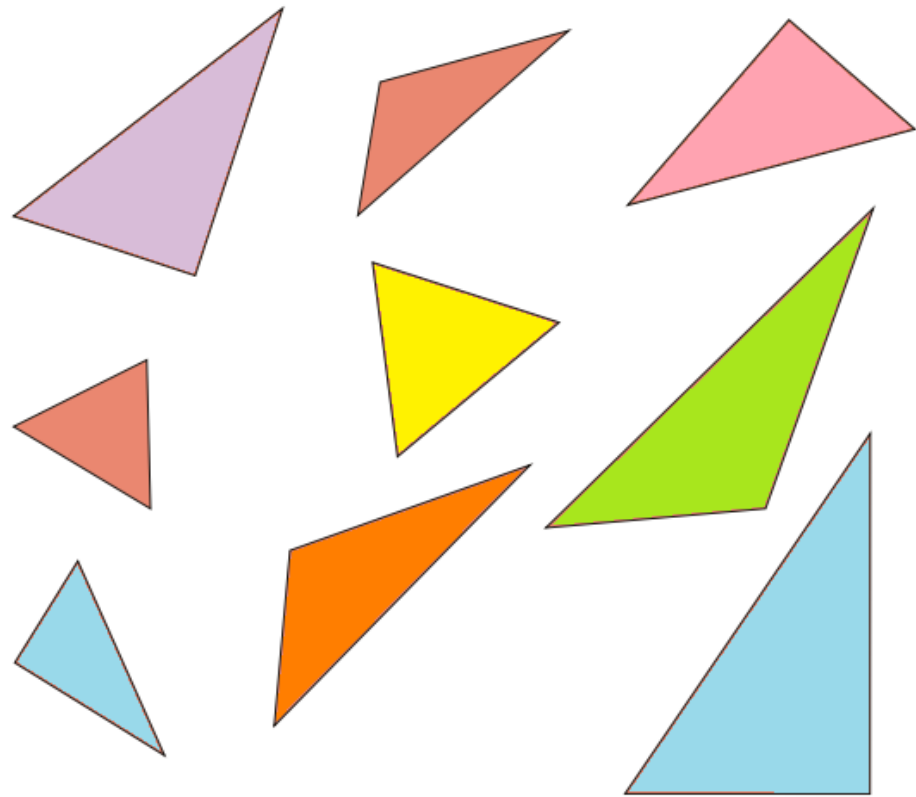
Representation of mathematical concept

Mathematical concept consists of three components: *examples*, *mental image*, *name* and *symbol*



All properties irrelevant to a concept are collectively called ***noise***.

- size
- color
- position in the space
- measure of angles



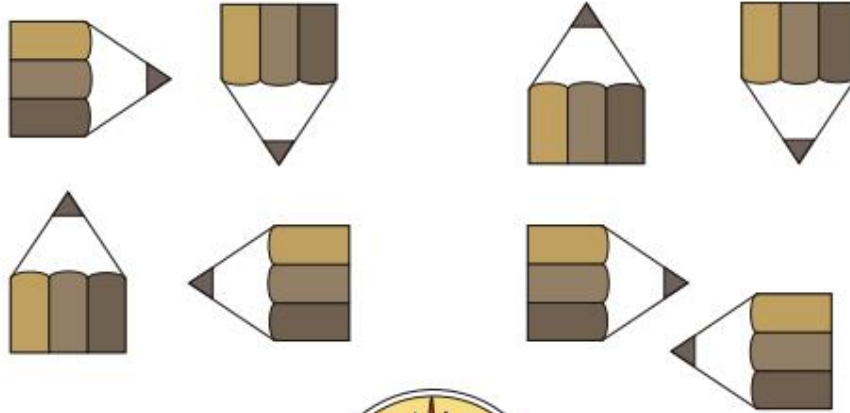
triangular shapes



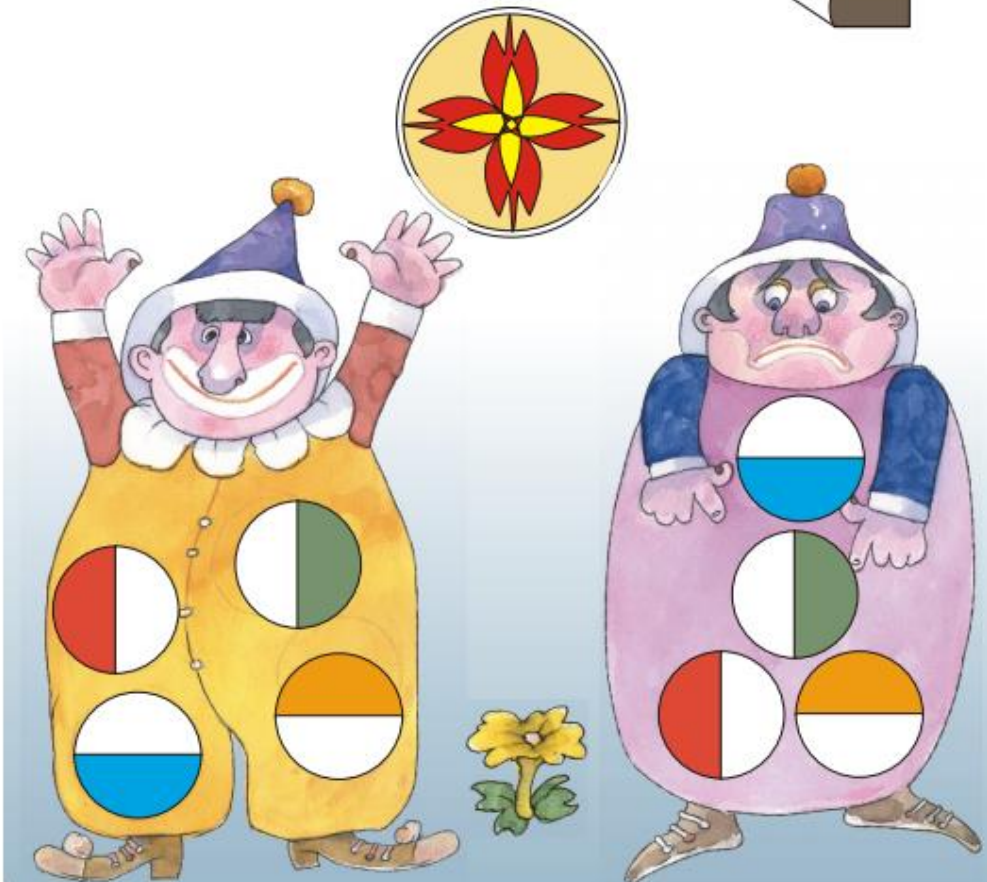
Mathematical activities - *Games of Equating*

- Preschool age is the period reserved for playing and spontaneous development of children.
- The main goal of preschool mathematical activities is primarily focused on the formation of internal representations of mathematical concept.
- As an instructive example of mathematical activities in the preschool period, we take *Games of Equating* by Professor Marjanovic.
- In *Games of Equating* each game has a clear learning objective.
- The goal in each case is to create an idea in the child's mind, which is the root of a real mathematical concept.





This game develops a sense of direction: up, down, left, and right.



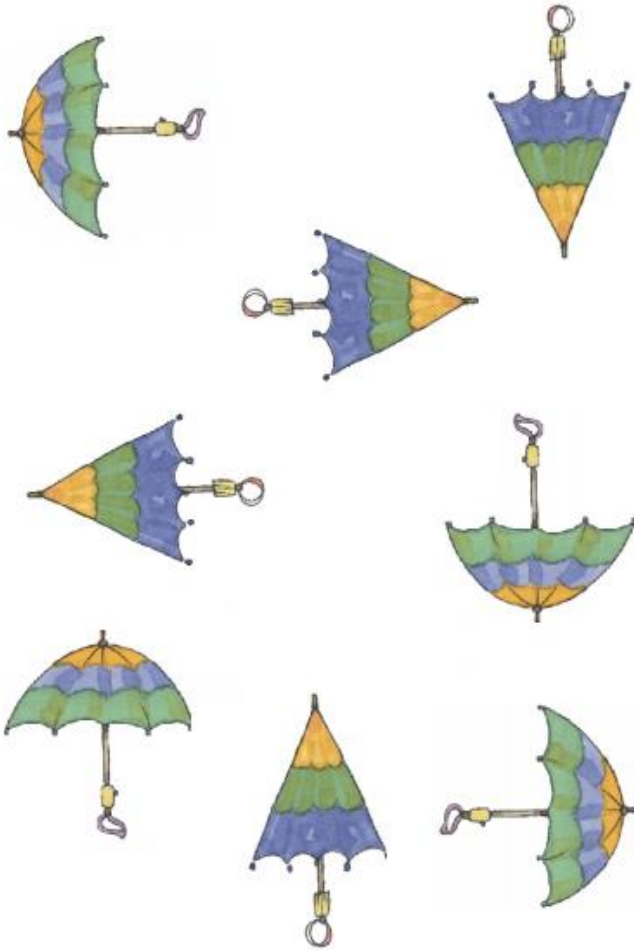
In this picture, directions are represented as colored halves.



MY SIGN

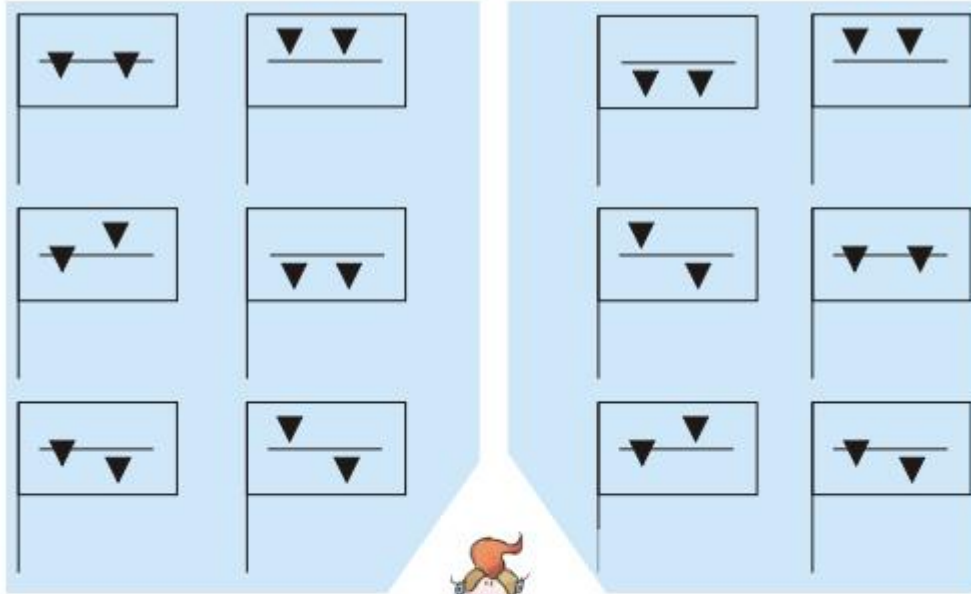
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YOUR SIGN



In this game the arrow
(a modification of the umbrella)
gradually becomes the symbol
for labeling directions.





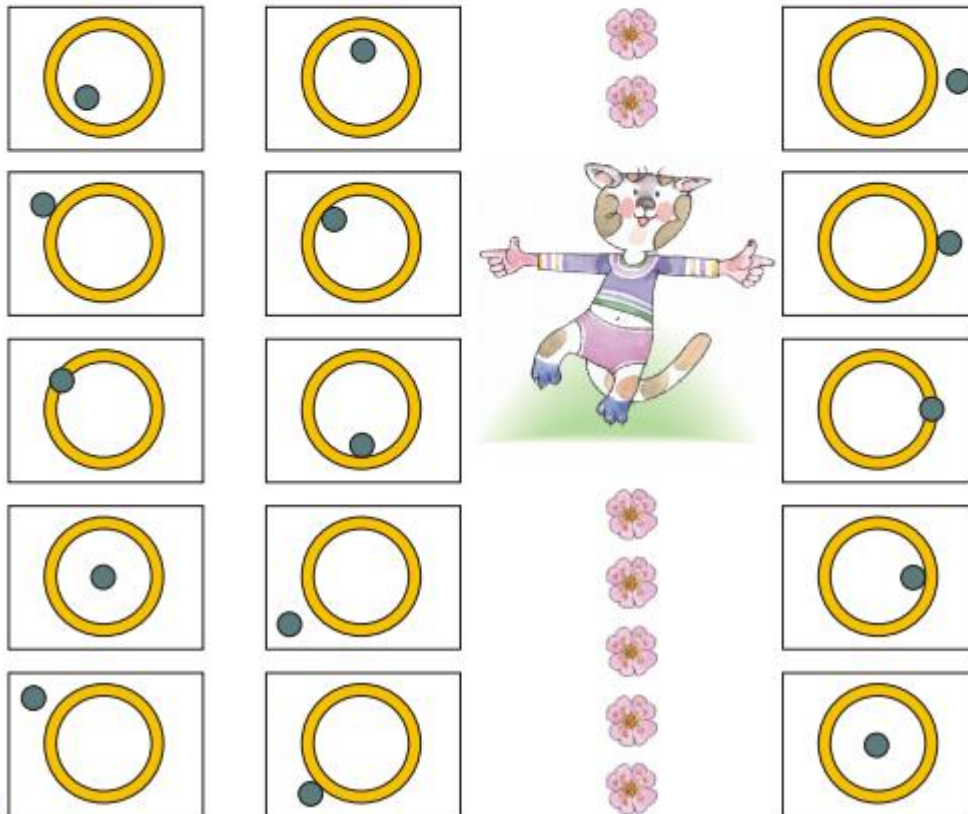
This game illustrates the relationships of two points and a line. The points are drawn as small triangles, so that the images are a little closer to real life.

We can start the game with a story of two boys and a river, using phrases such as "on two sides of the river", "one child is in the river", "now both are on the same side of the river", and so on.



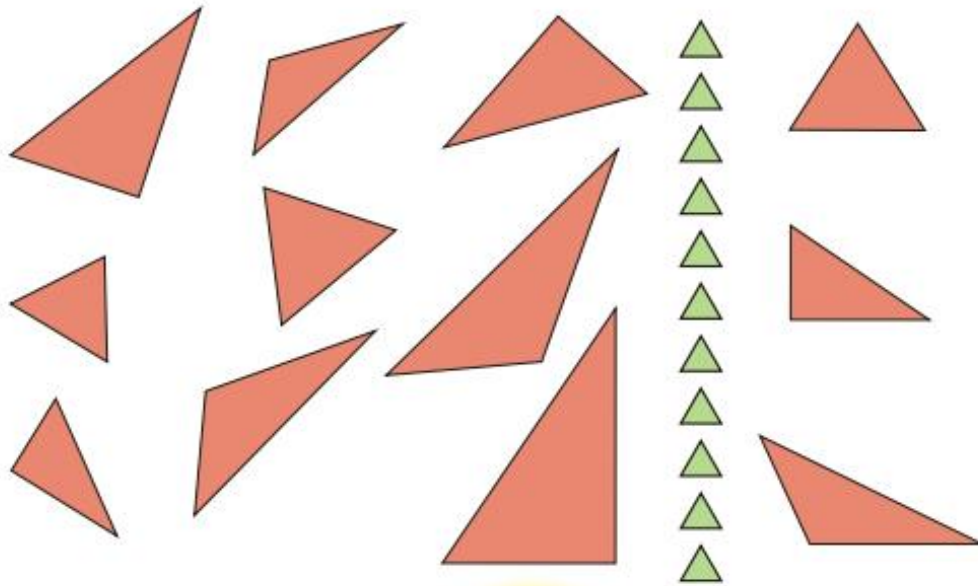
MY SIGN

YOUR SIGN



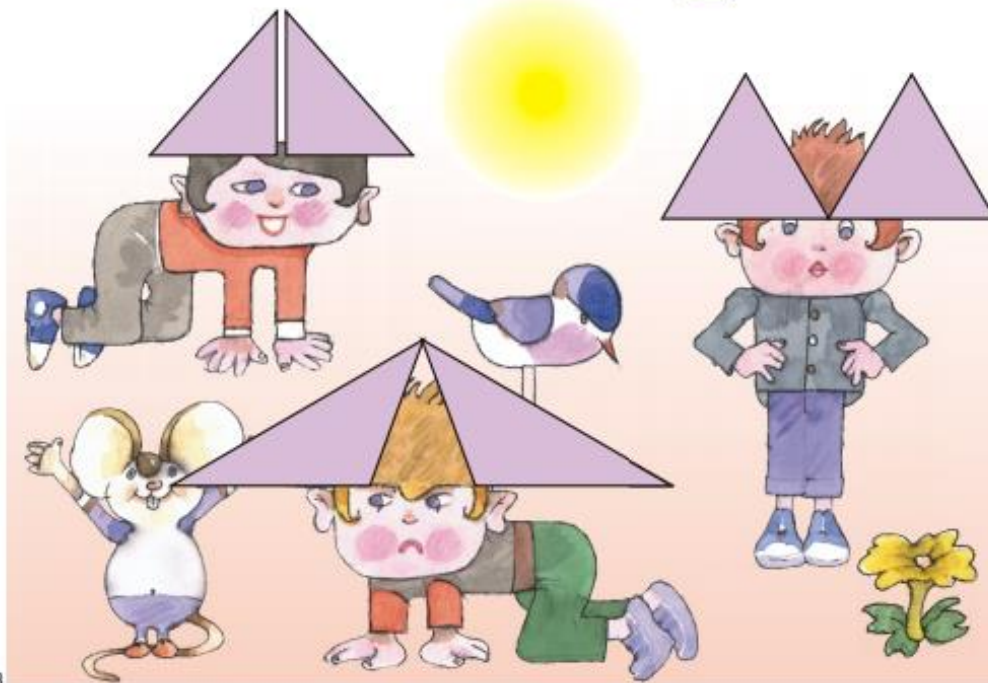
This game illustrates the relationship between a point (here, a small dark disc) and a circle.





In this game, acute, right, and obtuse triangles are differentiated.

The illustrations show that only in one case the carbon triangles can be used to make a good hat!

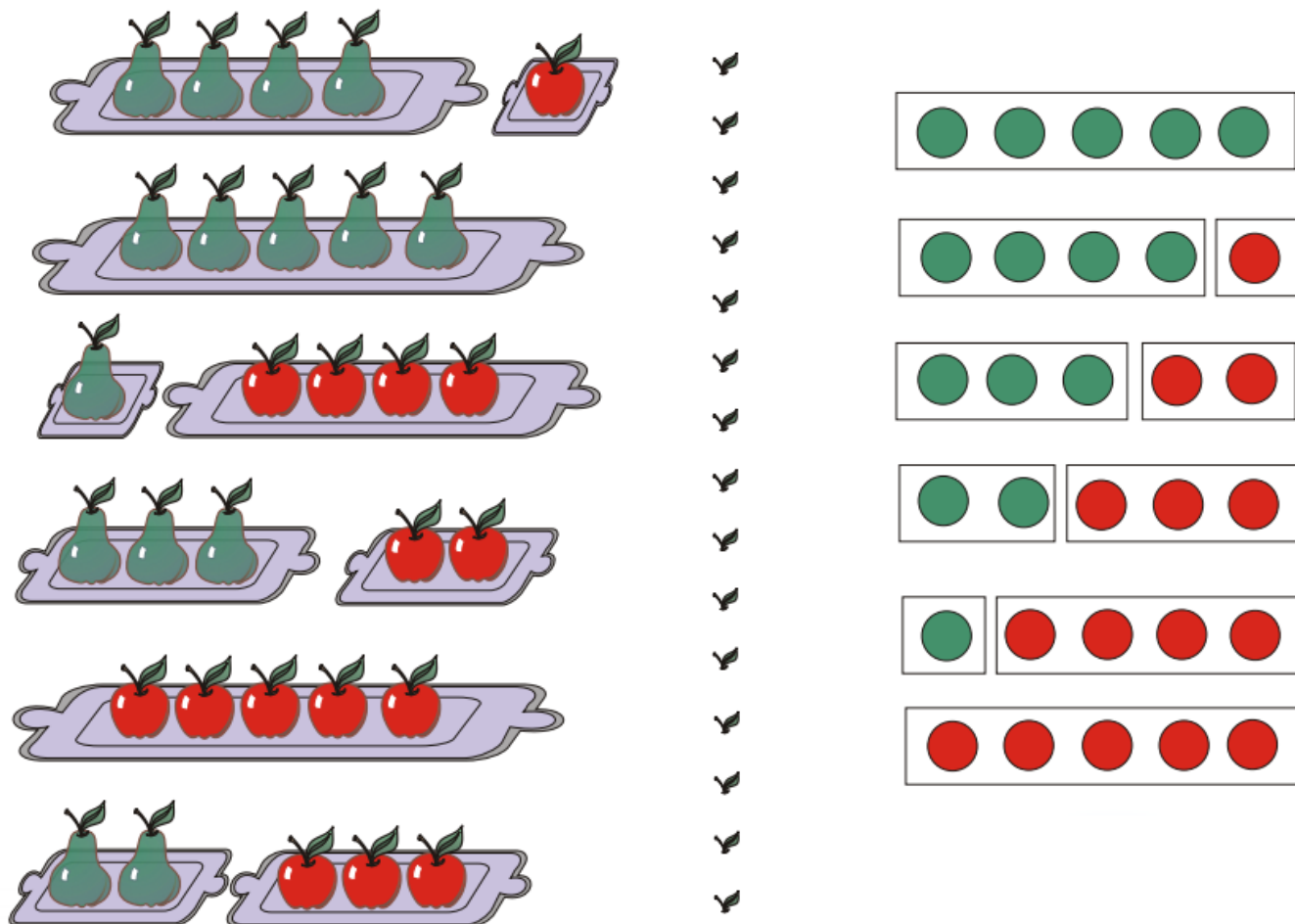




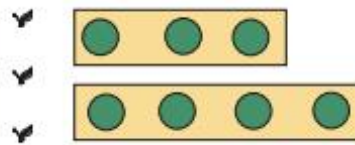
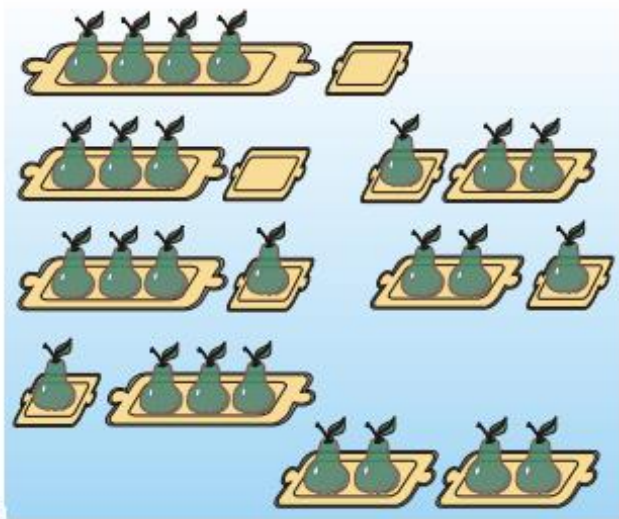
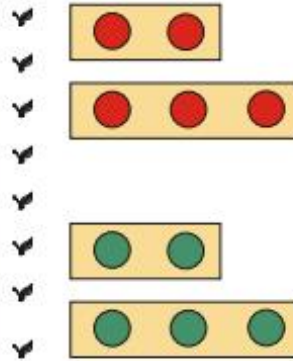
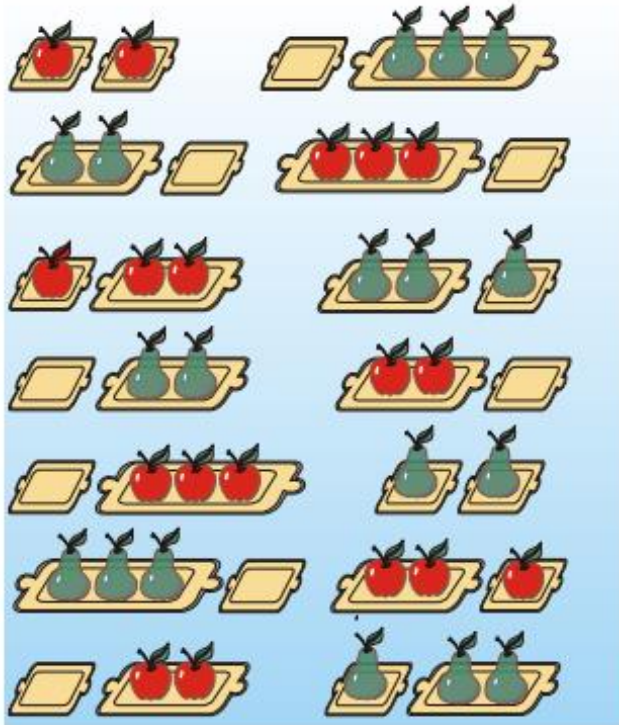
Developing the idea of number

- Most children in preschool age spontaneously learn to count.
- Forming the idea of number begins with the perception of a collection of objects followed by an abstraction of their essential properties.
- When we perceive different collections of objects, to form the idea of number we ignore:
 - a) **the nature of the objects**, and
 - b) **the arrangement and grouping of the objects.**
- Thus, the pure idea of number remains in the mind.

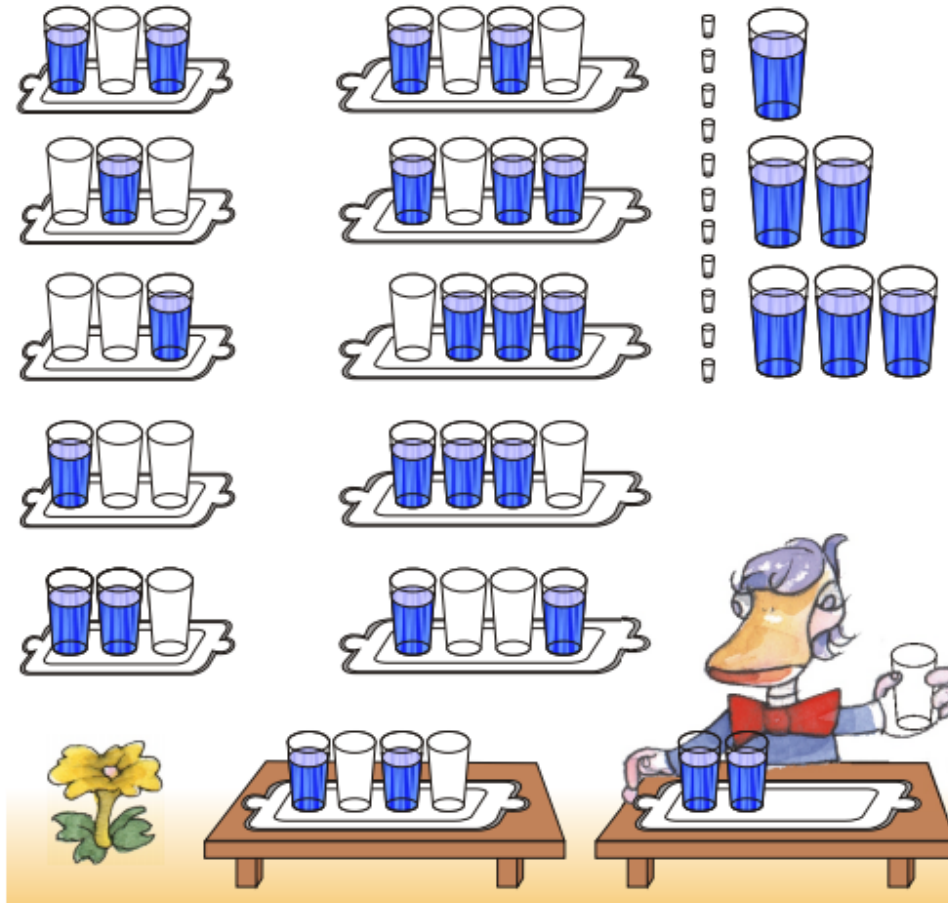




In this game the nature of the objects (which kind of fruit they are) is ignored
by matching them with small circles.

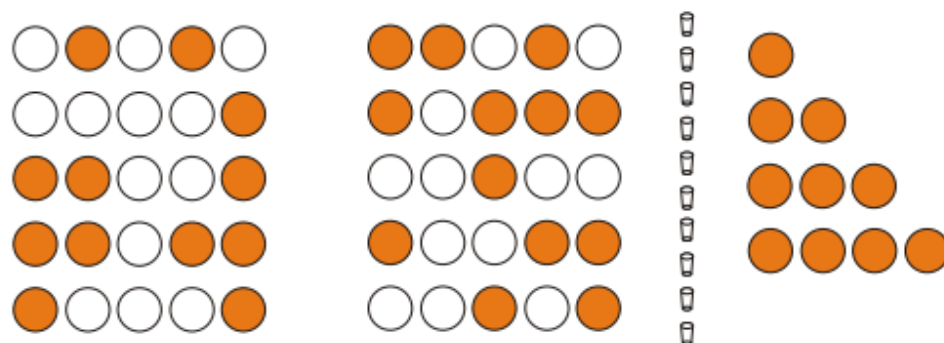


Apples and pears on two trays are gathered together in the "your sign" representation: matching corresponds to addition, taken as a visual operation.



This is an example of subtraction in pictures.

The duck demonstrates that the empty glasses are taken away.



Games of Equating



- Through these games of matching, a preschool child forms mental images of a series of important mathematical concepts.
- These mental images are formed upon the perception of the real-world objects from the child's familiar surroundings.
- Later, in school, a more formal approach (using symbols and names) will then have more complete meaning for children.





Thank you!

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