

The Science of Math

Strengthening Early Math and Science Skills
Through Spatial Learning

Peggy Zee

Spatial Concepts

inside outside around under over
near far together apart
above up down big
below between small



Definition!

Visual-Spatial Reasoning Skills

- your child's ability to solve problems using pictures, shapes, maps, and diagrams.



Circles and Squares and Triangles
are the basis for all letters and Numbers



Build Visual Spatial Reasoning Skills by:

- * drawing shapes
- * playing with blocks & puzzles



Spatial Literacy

- ⌘ Spatial reasoning
- ⌘ Spatial cognition
- ⌘ Spatial intelligence
- ⌘ Cognitive mapping
- ⌘ Mental mapping

Teaching spatial thinking to young children lays the foundation for learning science and mathematics



Spatial Vocabulary

Location/Position Words: on, off, on top of, over, under, in, out, into, out of, top, bottom, above, below, in front of, in back of, behind, beside, by, next to, between, same/different side, upside down

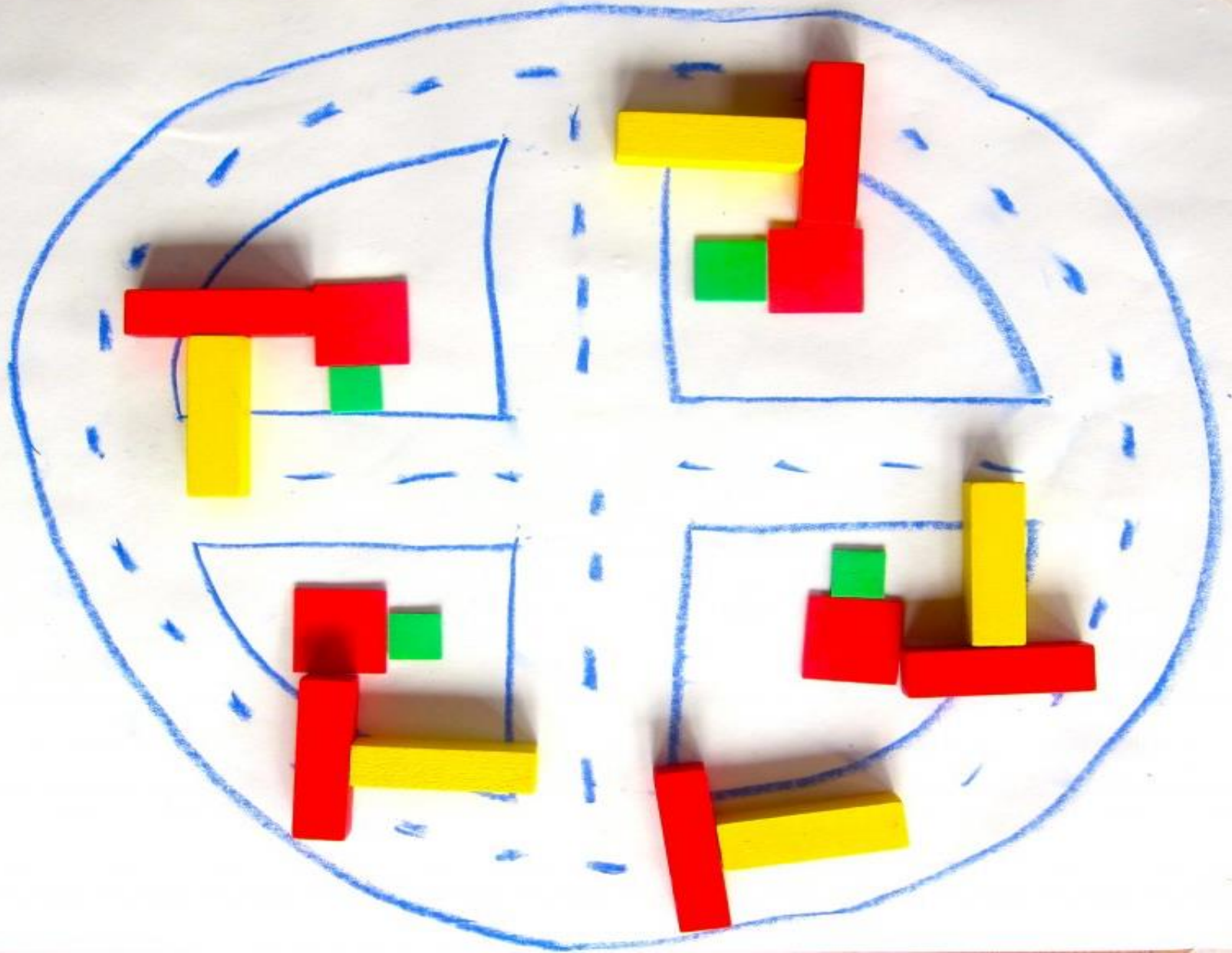
Movement Words: up, down, forward, backward, around, through, to, from, toward, away from, sideways, across, back and forth, straight/ curved path

Distance Words: near, far, close to, far from, shortest/longest path

Transformation Words: turn, flip, slide

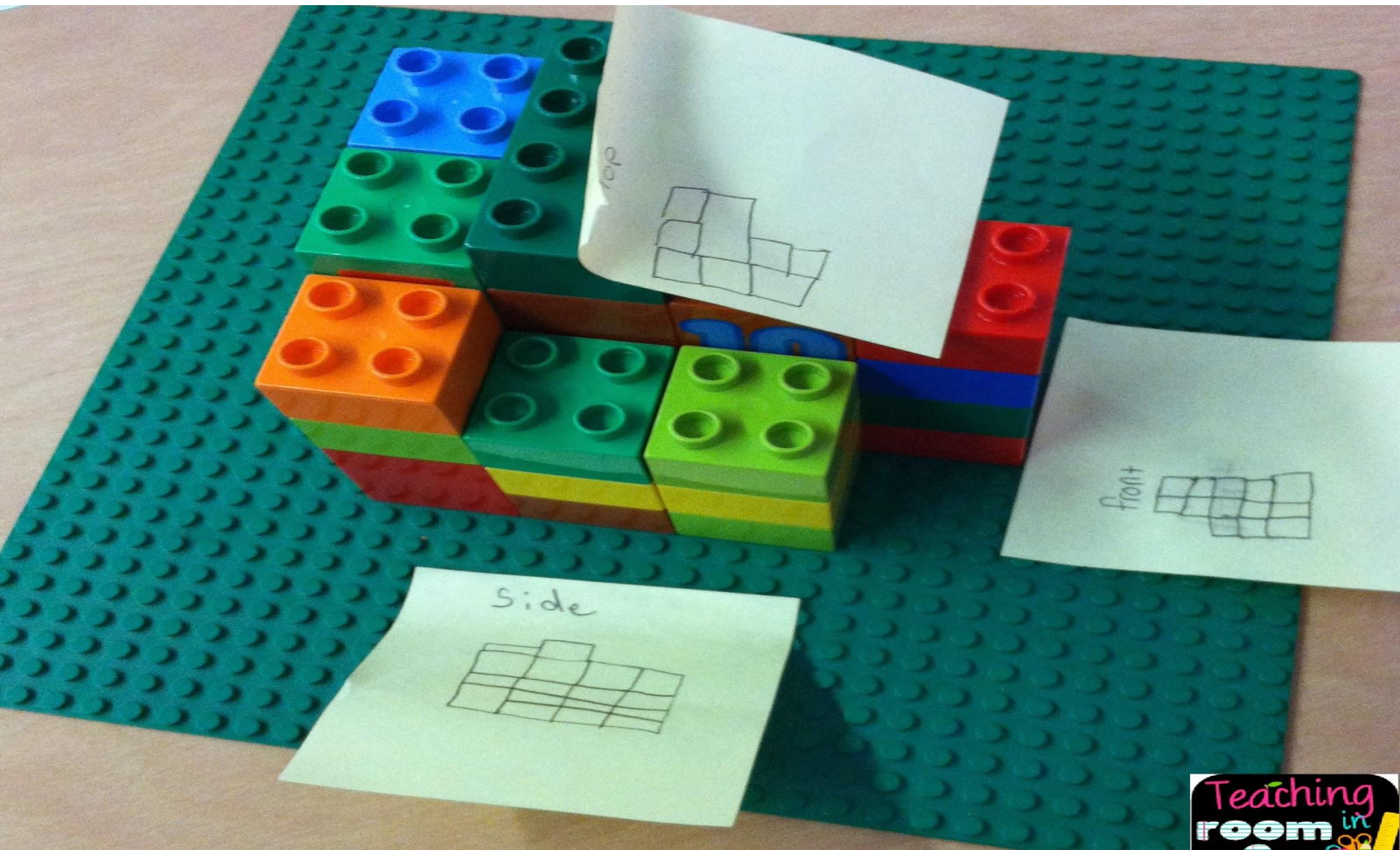


Mental Rotation



Perspective Change

Visualising things from different perspectives



Coordinated Use of Space (Tessellation)

Coordinating how different space is used in relation to other space

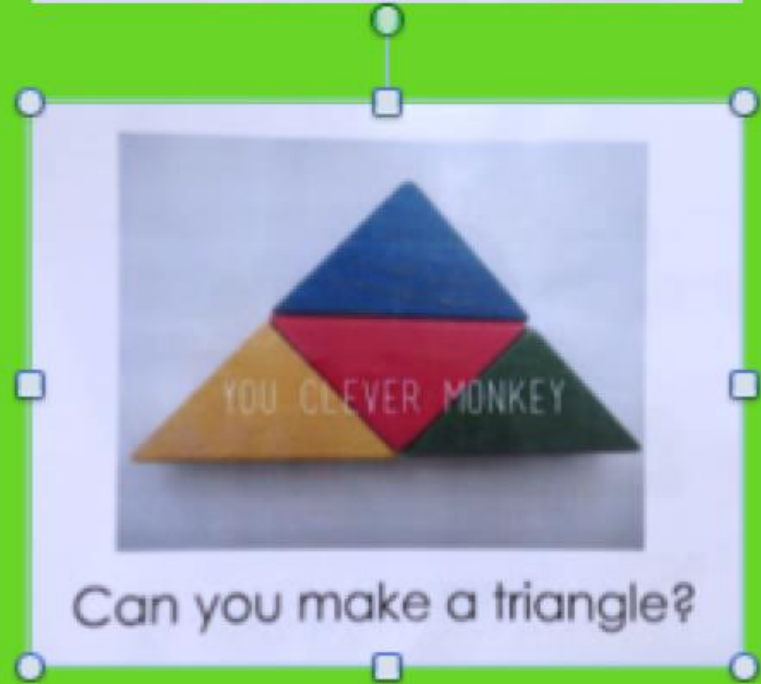
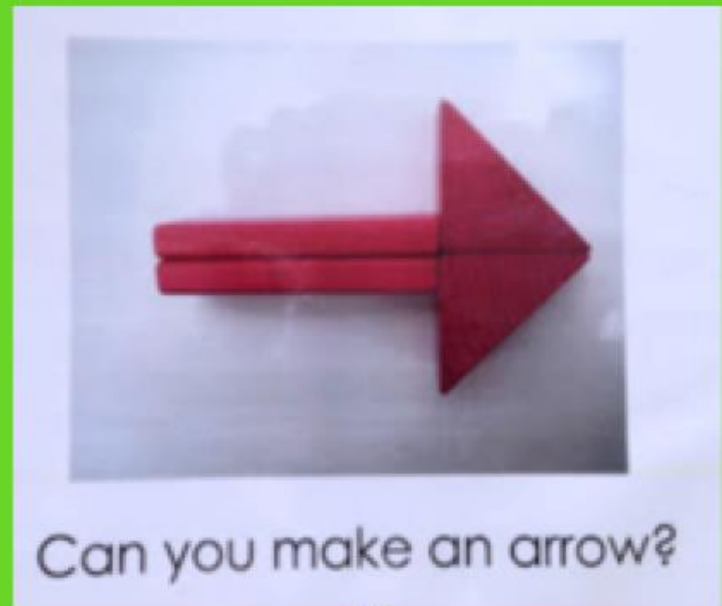
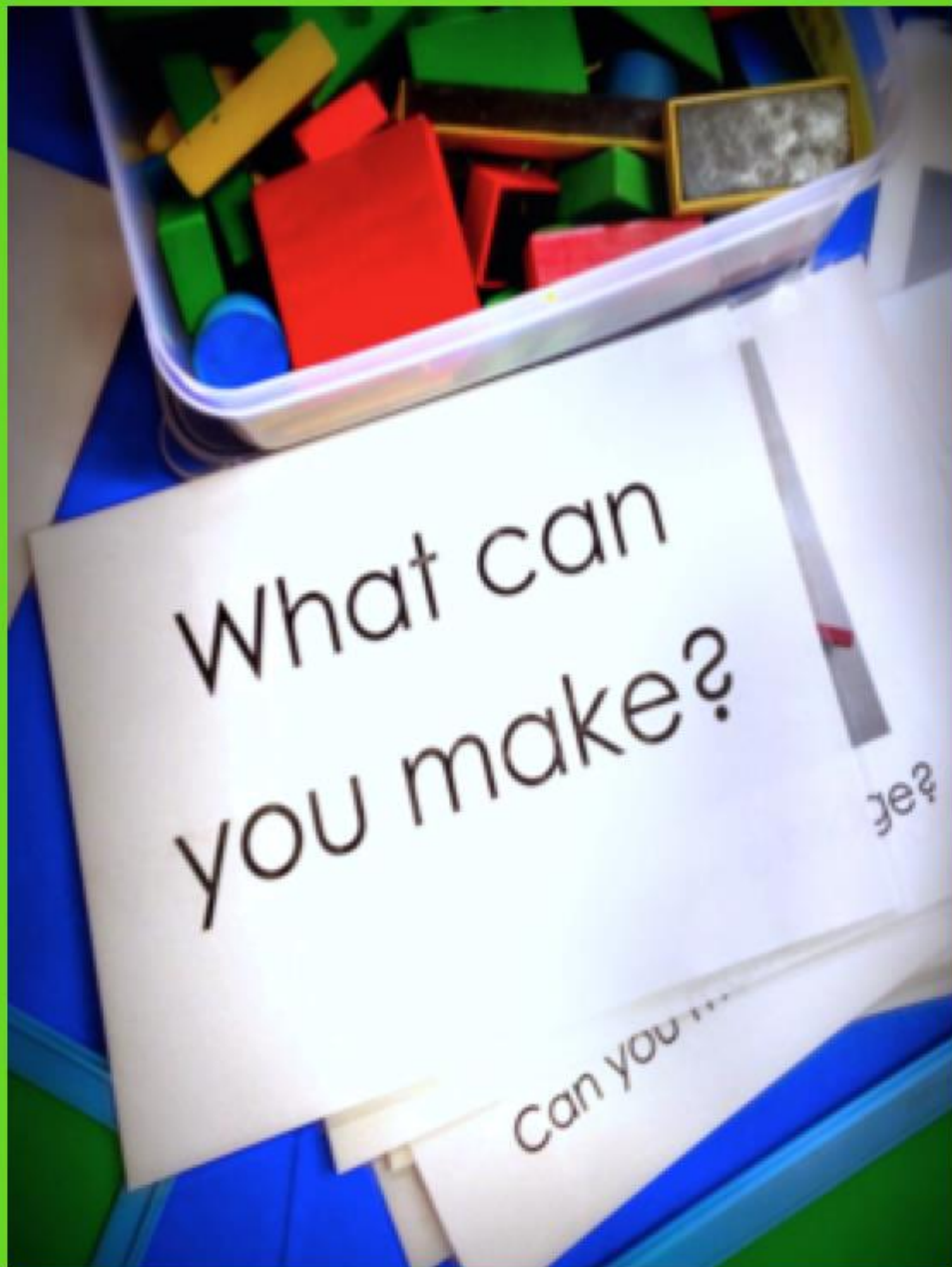


Representation

Representing one object to mean another object or place
as in a map









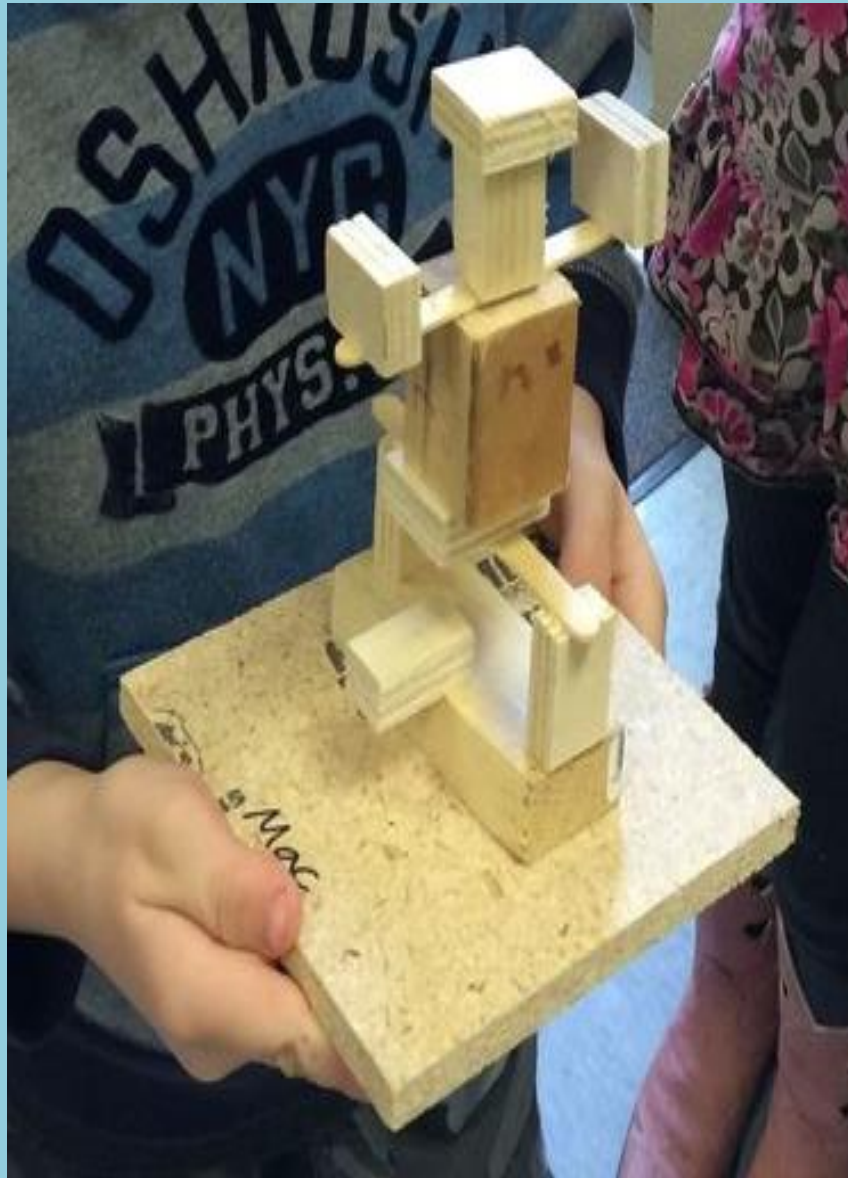




...under the
beehives,

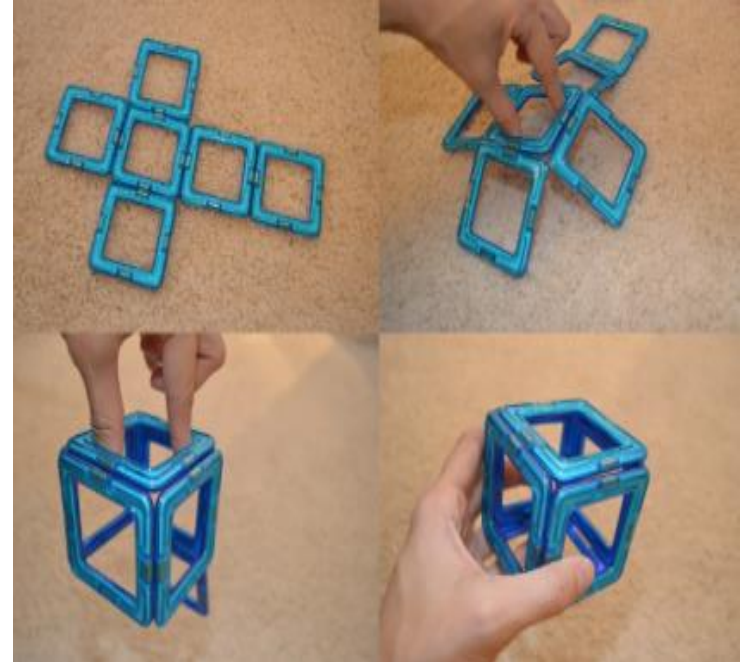
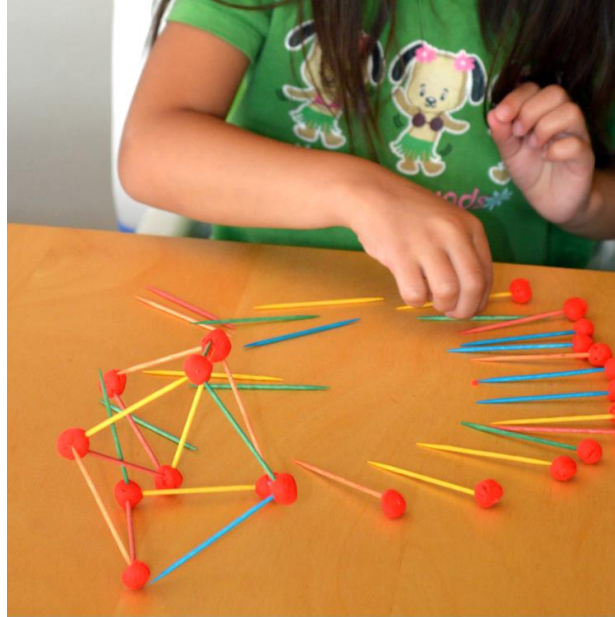
...and got back
in time for dinner!





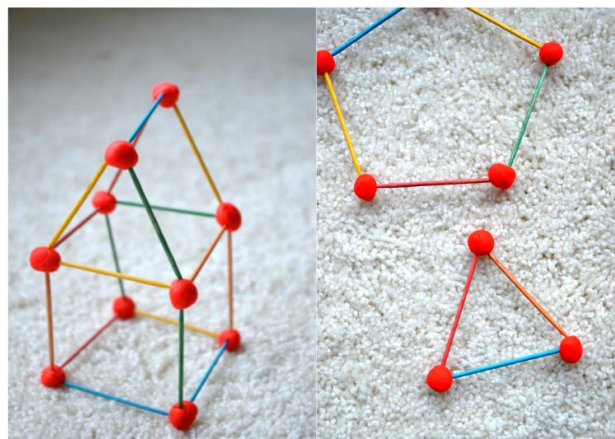
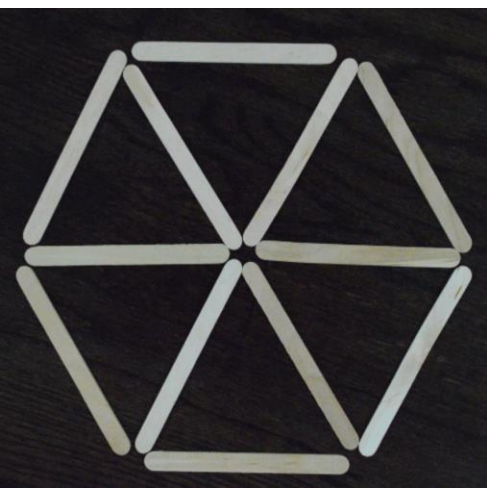


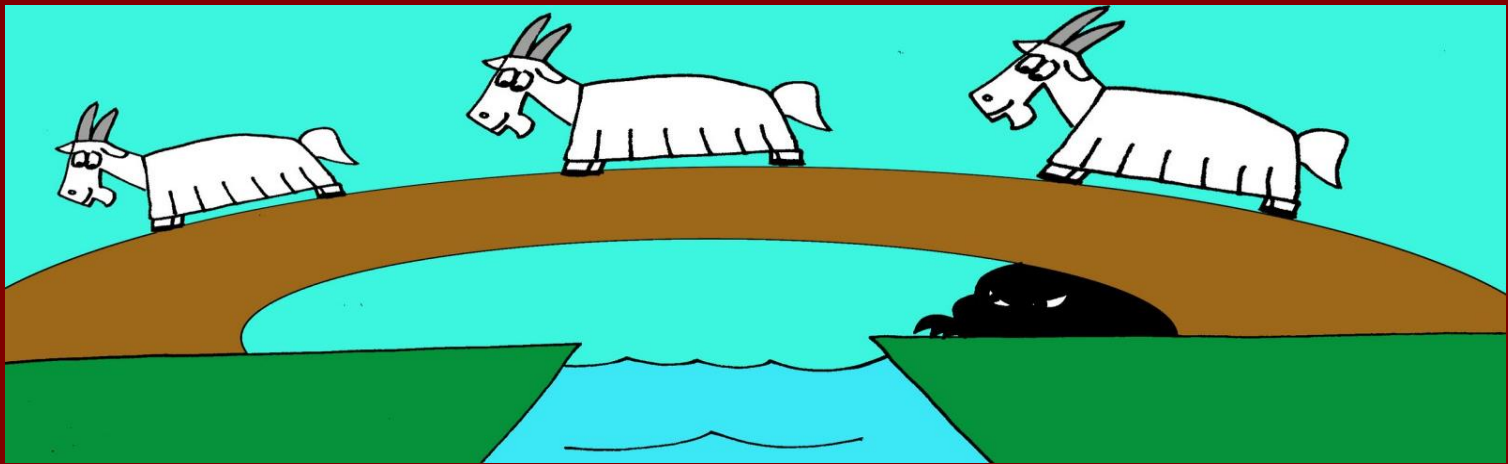
Paper House
Geometry



Contact Paper Q-Tip Art

Spatial Reasoning Activities For Preschoolers





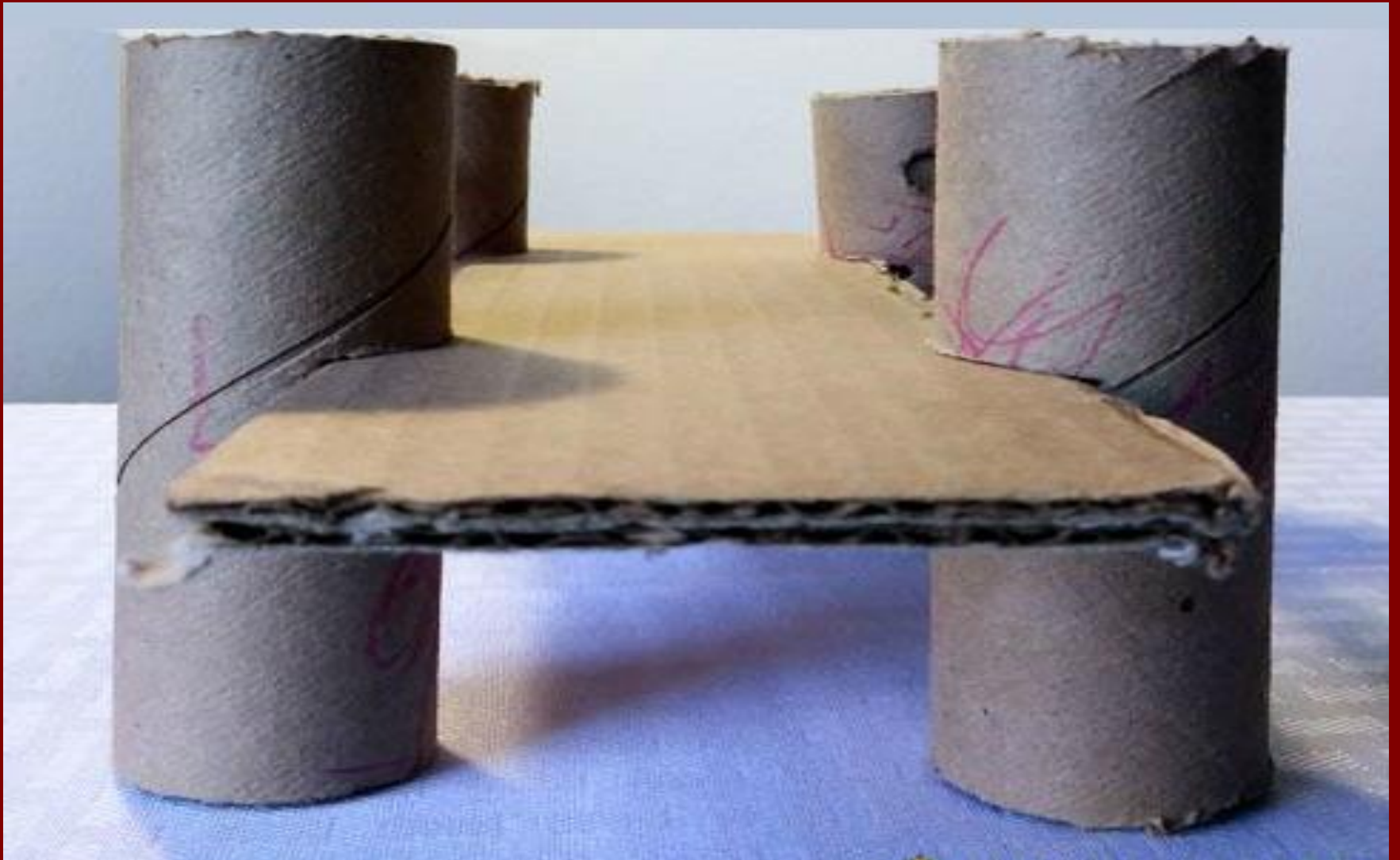
The Three Billy Goats Gruff

Discuss the bridge and the parts of the bridge. Children are shown pictures of beam bridges, log bridges, trestle bridges, covered bridges, and other types of bridges.

Teacher gives each child eight of one of the following: rectangular prisms, cubes, triangular prisms, arches, or popsicle sticks.

Children then construct a bridge using any other materials they find. They will continue on to discuss the type of bridge they created, how secure it is, the lines, points, and flat surfaces of the bridges.

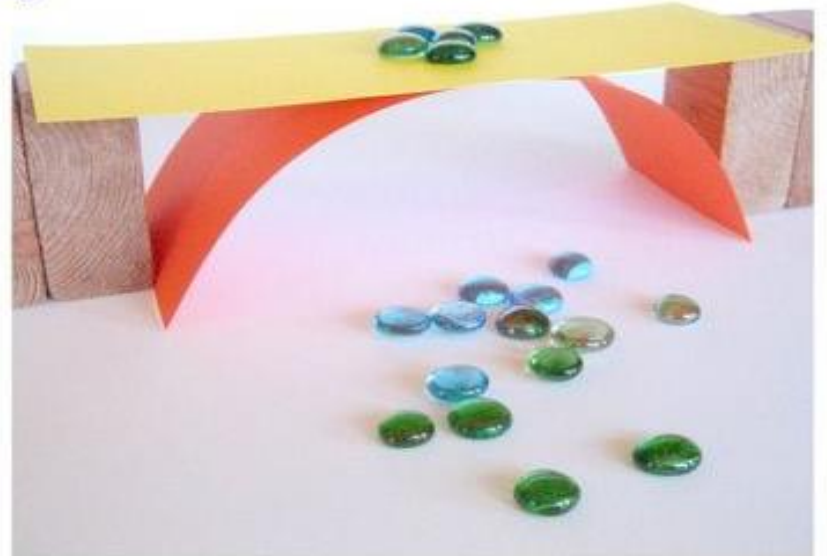
How to Build a Bridge

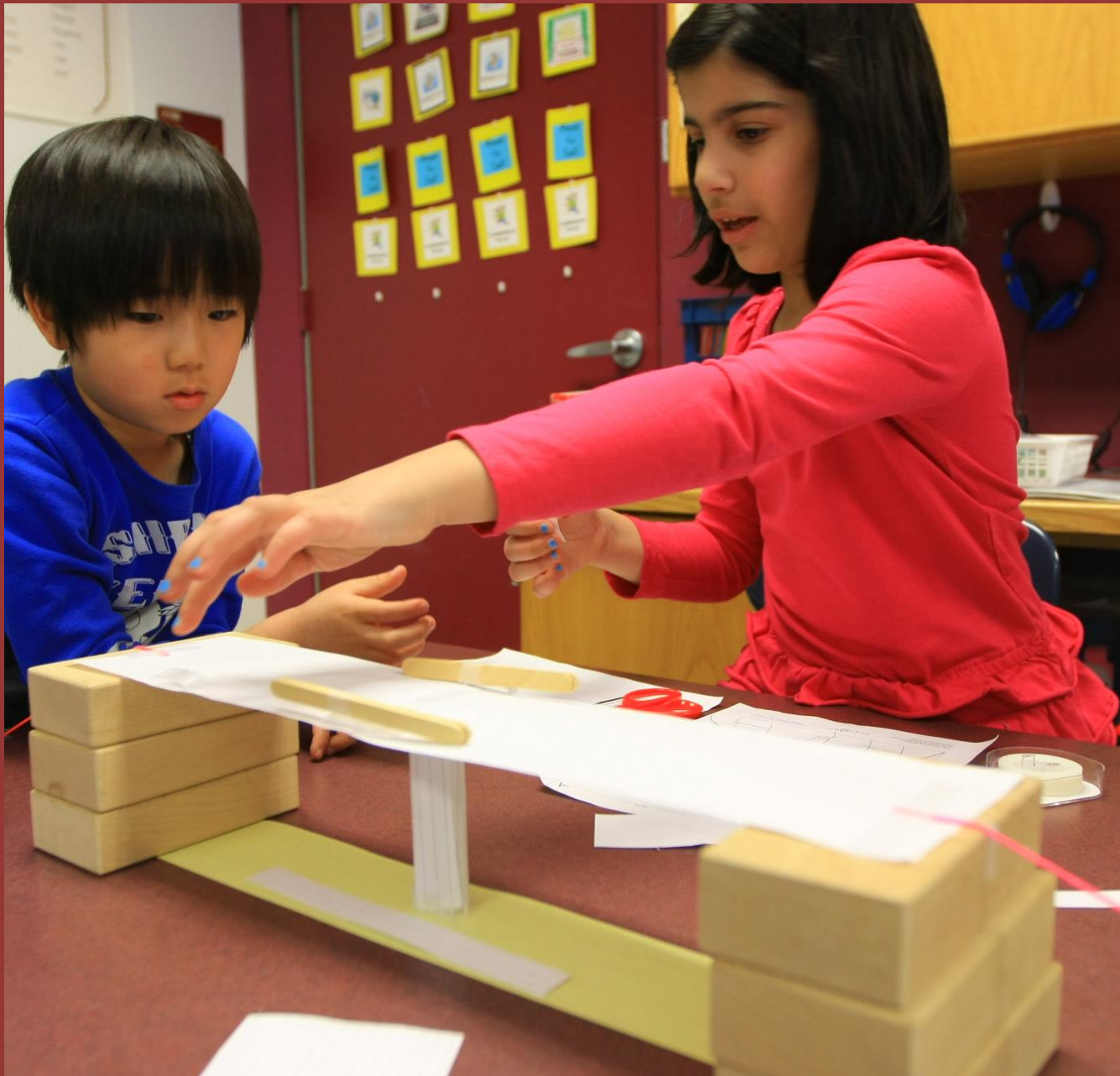




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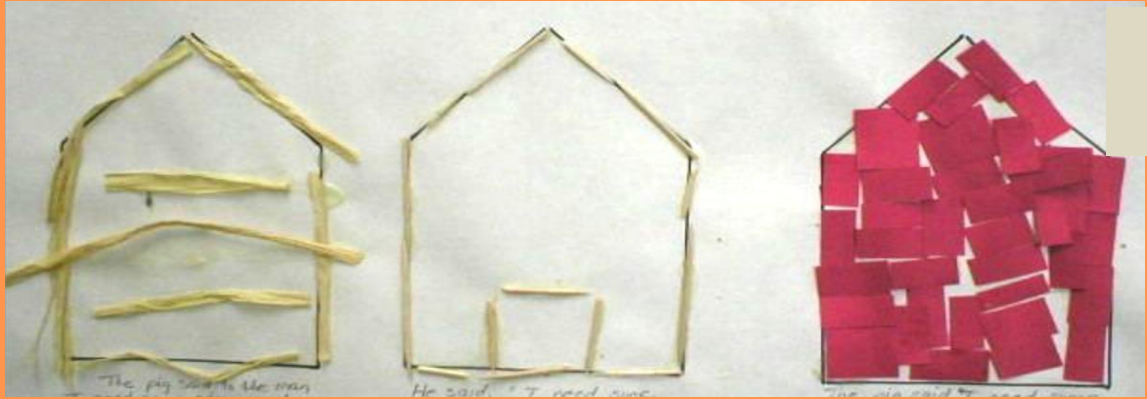
Bridges to Build and Test with Preschoolers



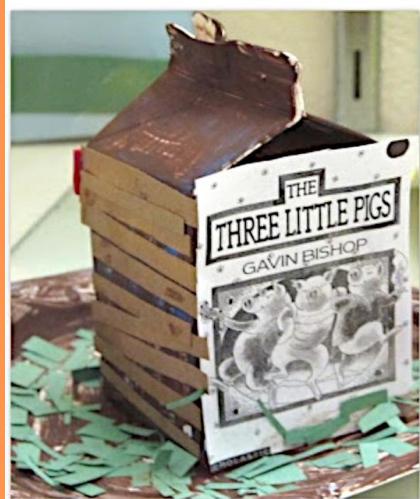




Help the Three Little Pigs build a house that can stand up to the Big Bad Wolf's huffs and puffs



plan



Milk Carton Projects



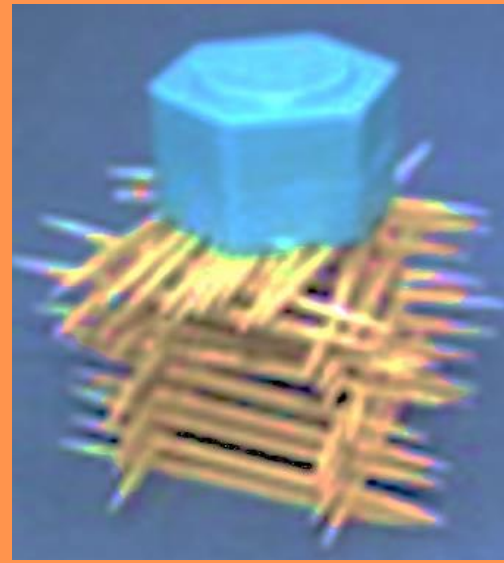
Three Little Pigs



design



experiment



test





House of Bricks



House of Sticks



House of Straws

Other Ideas





Holes and Shapes

Interesting ideas that can be introduced to children of any age group





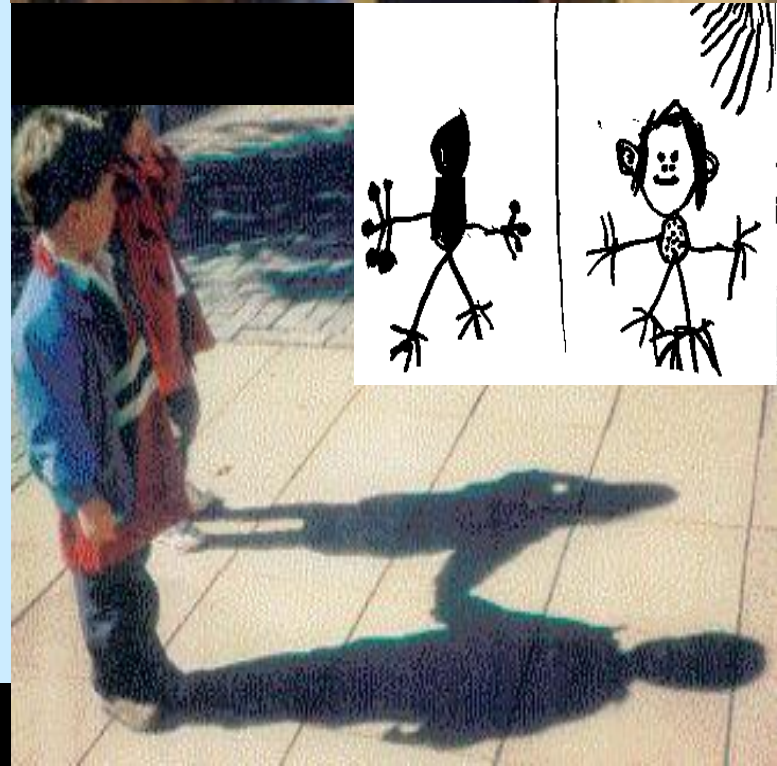
Light is an important source for creating different forms of art.

Profiles can be created either using the light and drawing out a profile on black paper or taking a photograph of the child.

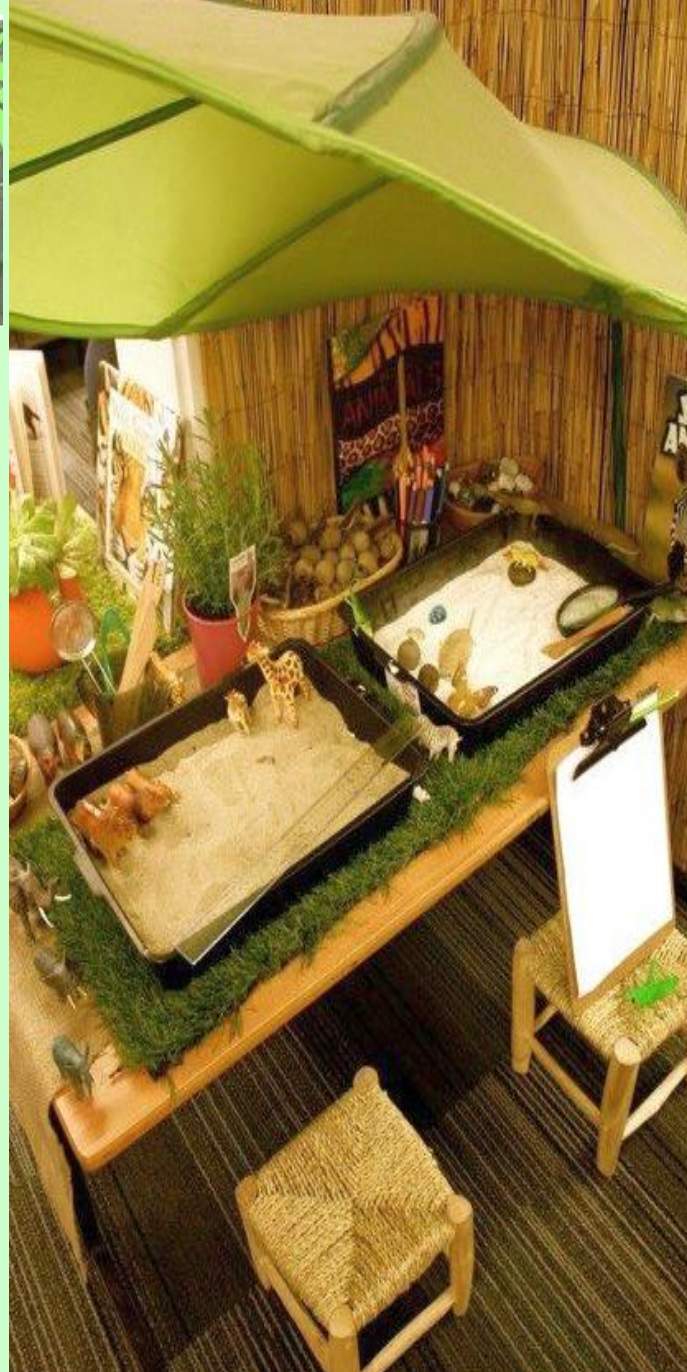
When the child's profile is printed or drawn, children can either draw or write up what they are thinking about.



Teacher takes a photo or traces profile outline of child



Plants and Trees



A science area where children are invited to make their own observations and record their findings informs visitors that you treasure children's thinking. It also says that you support children's exploratory needs.





Facebook Page:

Interested in Children Development



Peggy Zee

peggy.zee88@gmail.com