

Early Geometry Concepts: Making Connections to the Real World

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Learning Goals

Participants will **understand** that...

- helping students achieve success with the correct developmental approach will allow for better mathematical understanding later on in life

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EARLY GEOMETRY CONCEPTS

Geometry

- What is geometry to young learners?
- Spatial Language
- 3D Concepts
- 2D Concepts

Geometry is...

- the **exploration** of space, size, and position.

Geometry is...

- the **exploration** of space, size, and position.
- the manipulation of mental pictures, often called **visual thinking**.

For young learners, geometry is

eye-motor coordination – the ability to coordinate vision and body movement.



For young learners, geometry is

figure-ground perception – the ability to distinguish foreground from background.



For young learners, geometry is

position-in-space perception – the ability to recognize how an object in space is related to themselves and how an object has changed positions.



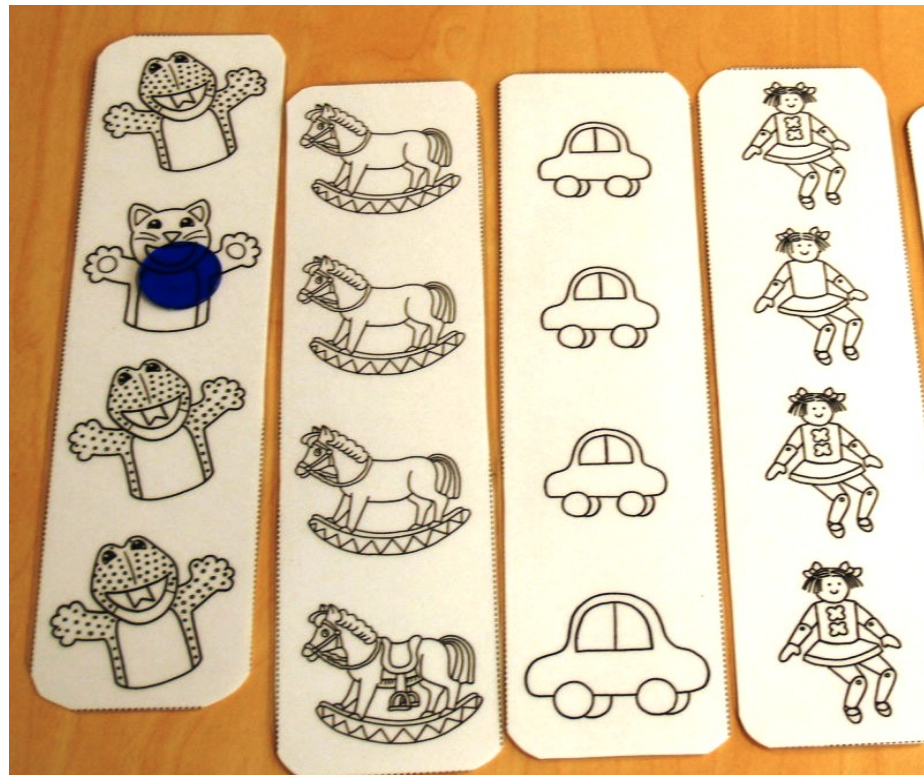
For young learners, geometry is

perception of spatial relationships – the ability to recognize the relationships between two or more objects in relation to themselves.



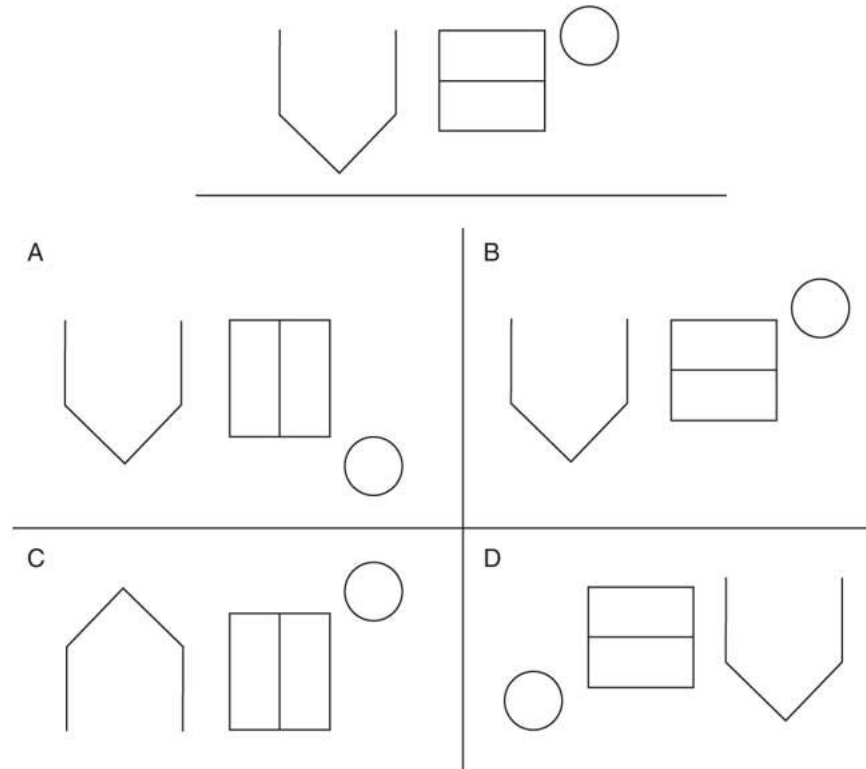
For young learners, geometry is

visual discrimination – the ability to identify similarities and differences in an objects characteristics.



For young learners, geometry is

visual memory – the ability to recall objects and the characteristics of objects that are no longer visible.



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Spatial Understanding

Refers to an individual's spatial sense and their **awareness of their surroundings** in relation to people and objects.

Positional Language



Directional Language



I think
I'll go flying



A book about Positional Language

The Berenstain Bears

BRIGHT-EARLY BOOKS
A Learning Library

BEARS
IN THE
NIGHT

Stan & Jan Berenstain

little blue and little yellow

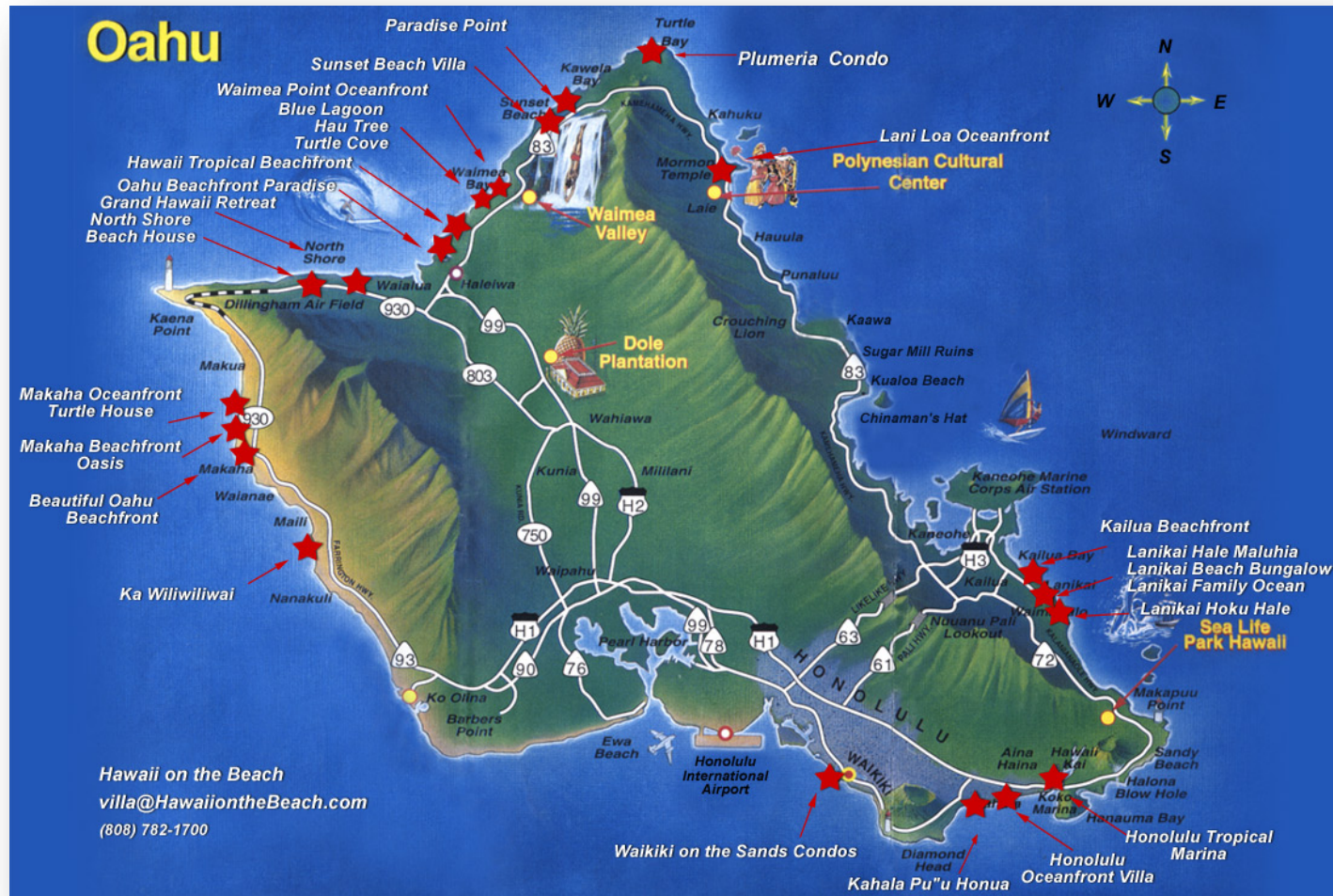


by Leo Lionni

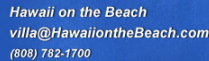


Table Obstacle Course

This understanding leads to...



Hawaii on the Beach
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Three-Dimensional Objects

Their everyday world!



Three-Dimensional Objects

Their everyday world!



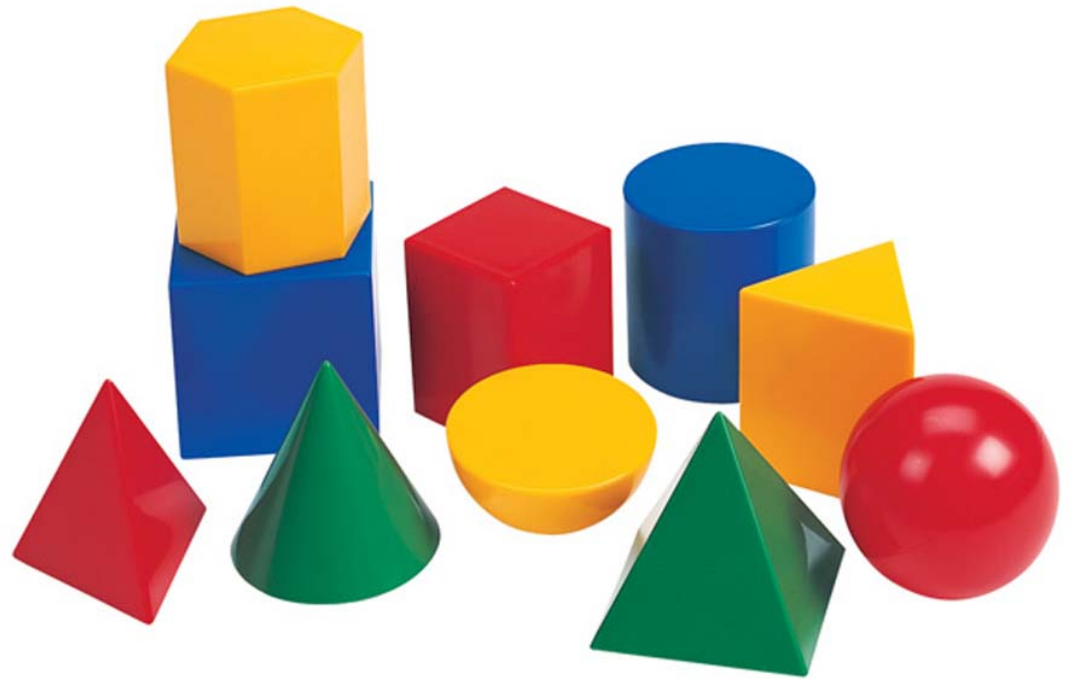
Three-Dimensional Objects



Their everyday world!

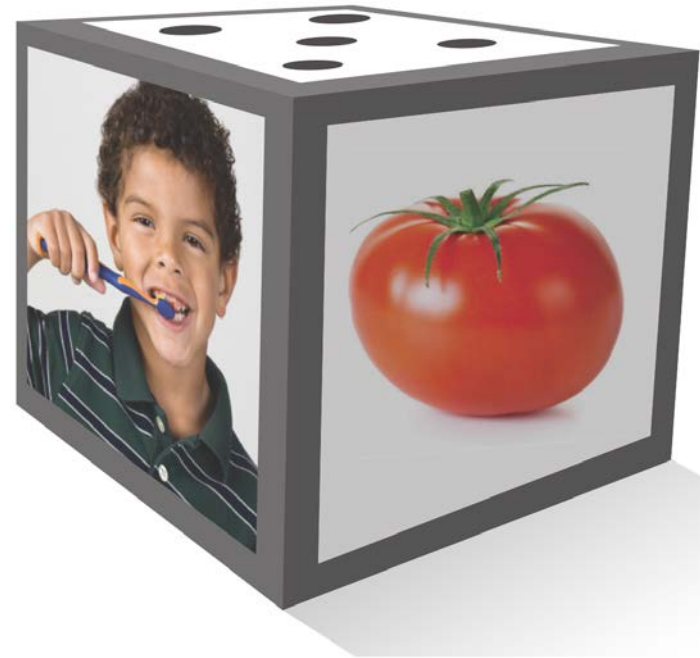
3D Objects for Young Learners

- Cube
- Cylinder
- Cone
- Pyramid
- Prism
- Sphere



Attributes of 3D Objects

- Flat Surface or Face
- Edge
- Corner or Vertex
- Apex
- Curved or Rounded Surface



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Holistic Approach to 3D



Involves
building
families of
objects with
geometric
similarity

Analytical Approach to 3D

Emphasizes the **attributes** of the object.

- Does it roll, stack, or both?
- Same number of faces, edges, corners?



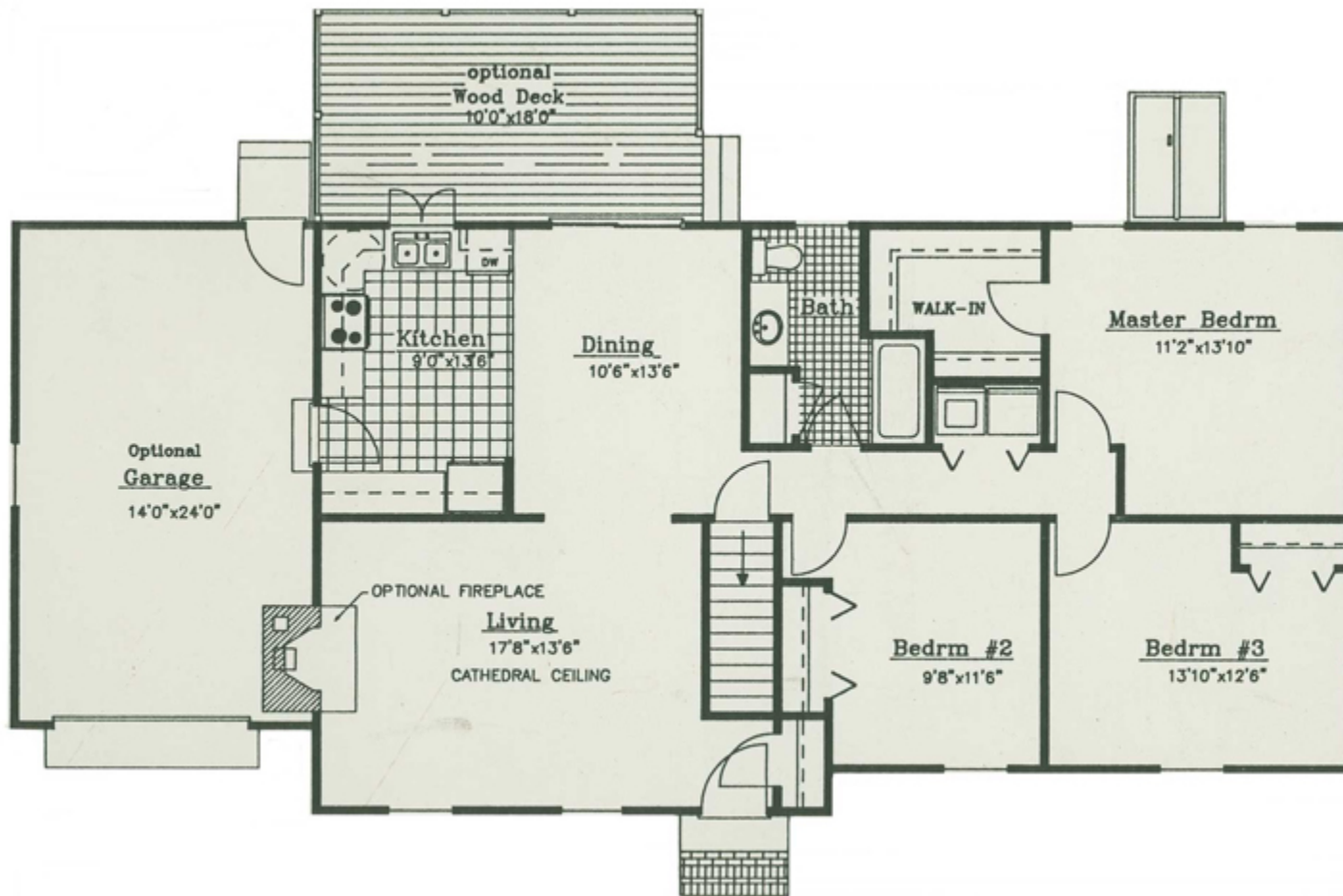
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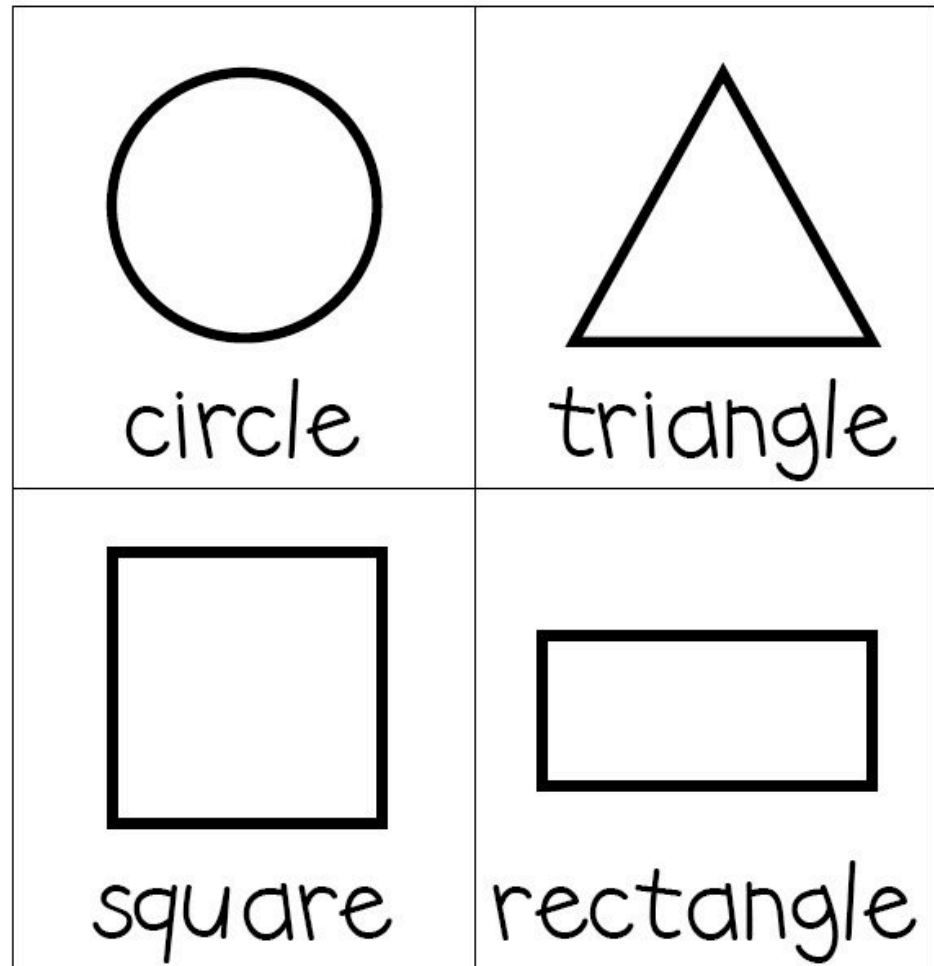
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2D Shapes for Young Learners

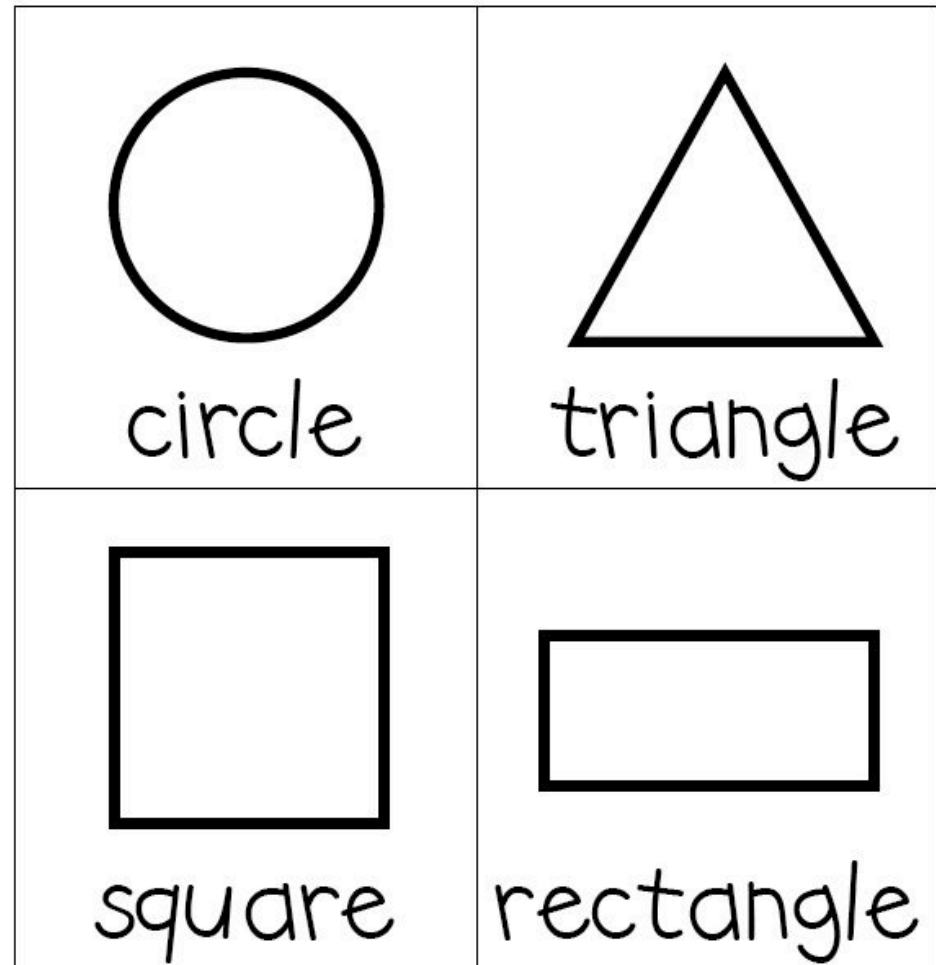
**2D shapes
come from 3D
objects!**



2D Shapes for Young Learners

Attributes:

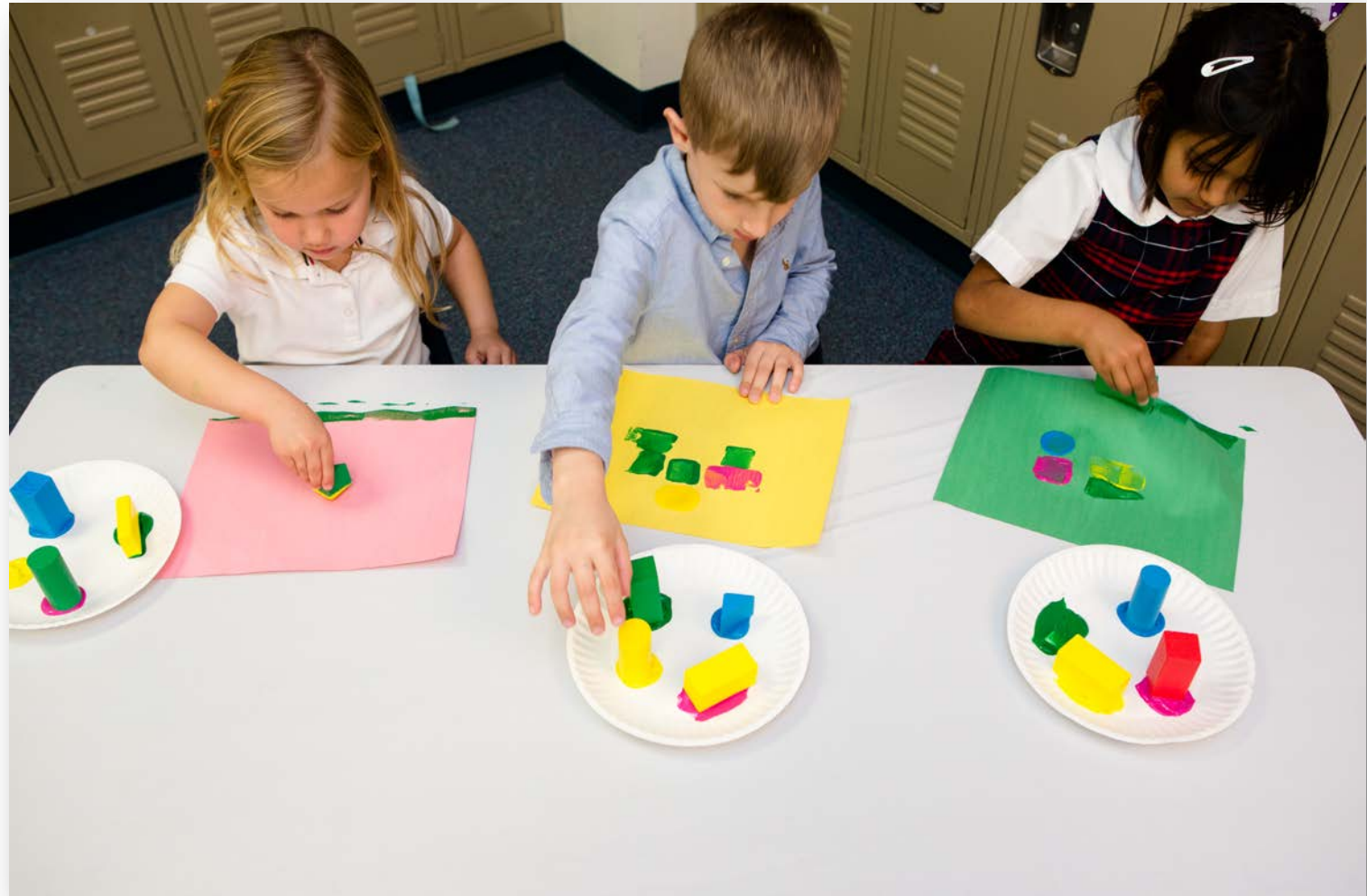
- *No thickness*
- *Are flat*
- *Corners*
- *Sides*



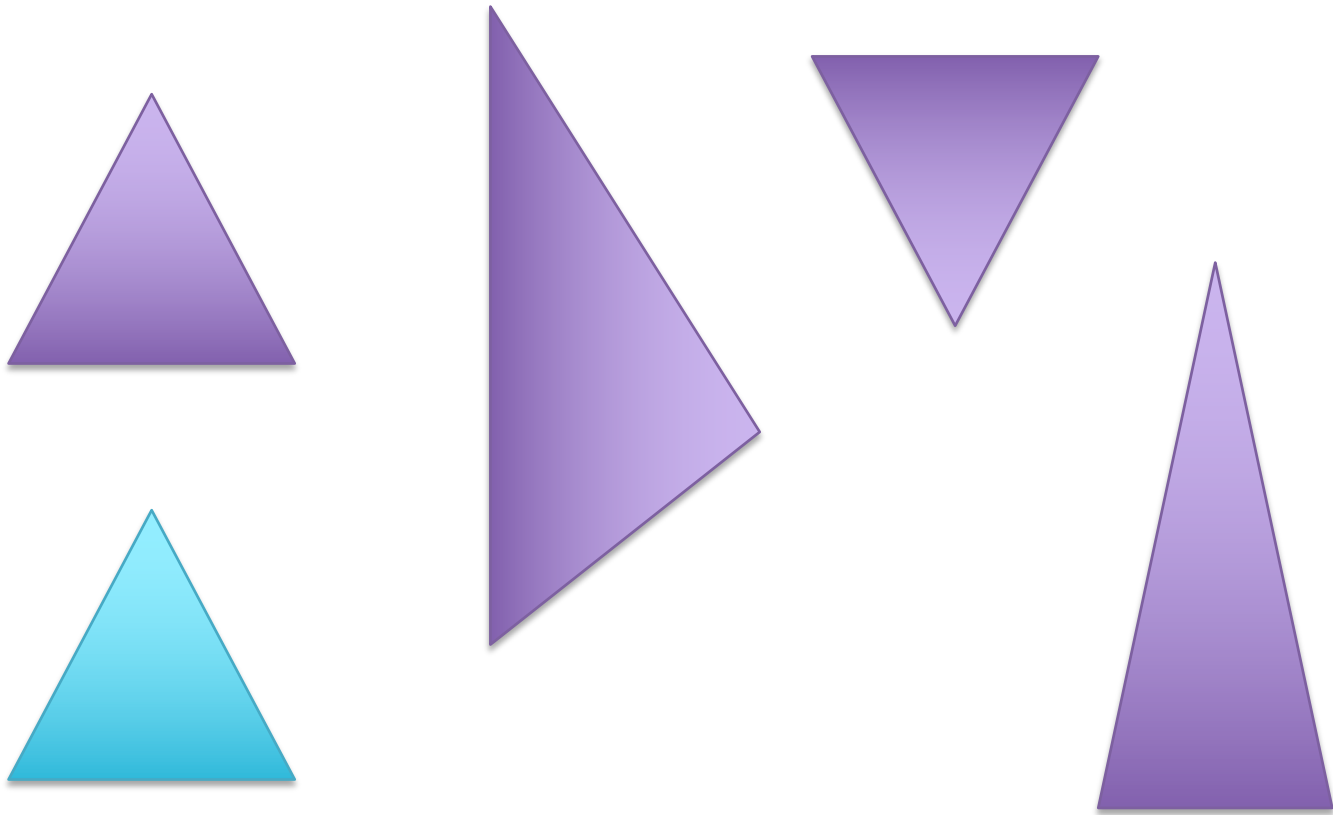
3D to 2D Understanding



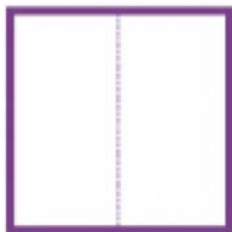
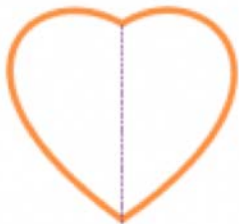
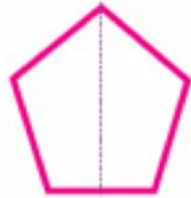
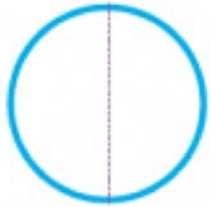
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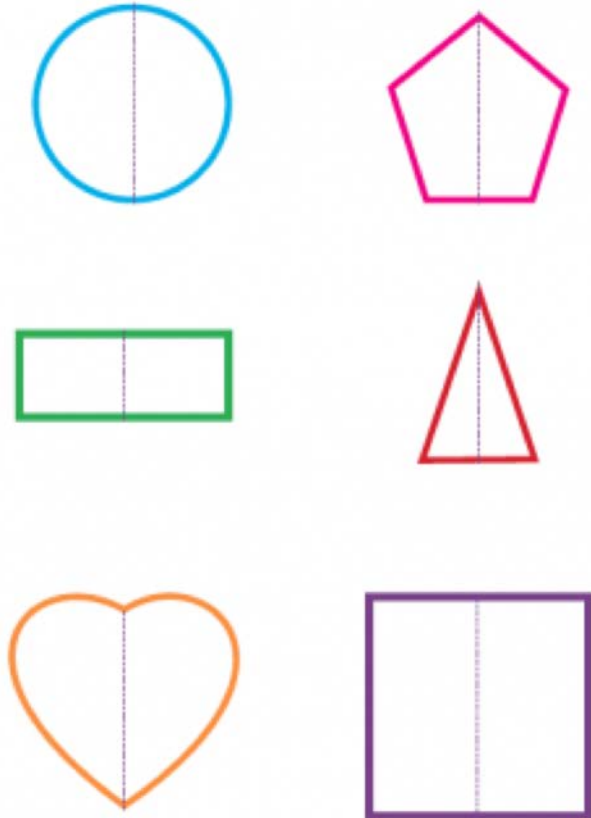
Attribute Recognition



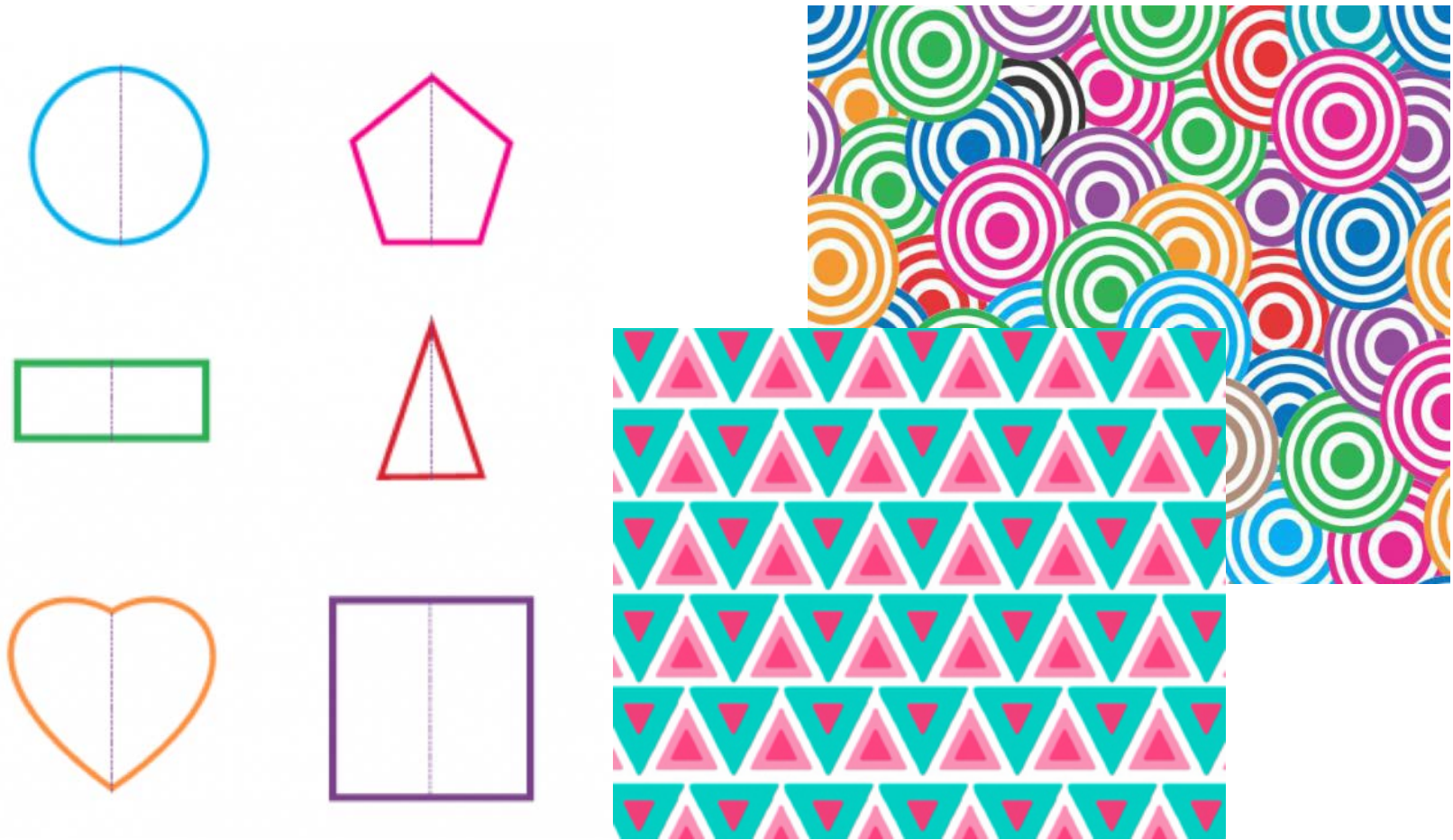
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Thank You



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