

NVACS: Geometry

In Kindergarten, students must:

Identify shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

K.G.1 - Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

K.G.2 - Correctly name shapes regardless of their orientations or overall size.

K.G.3 - Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

Analyze, compare, create, and compose shapes.

K.G.4 - Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/”corners”) and other attributes (e.g. having sides of equal length).

K.G.5 - Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

K.G.6 - Compose simple shapes to for larger shapes. *“Can you join these two triangles with full sides touching to make a rectangle?”*

Kindergarten students begin by using informal language to describe what shapes look like such as, “That is a ball,” and shift to formal mathematical language, “That is a sphere.”

Students in kindergarten need to understand that some attributes define what a shape is called: number of sides, number of angles, etc. and that other attributes do not: color, size, etc.

Using geometric attributes, the student identifies and describes squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres.

Kindergarten students need a variety of experiences exploring different forms of the shapes: different sizes, different orientations (upside down, sideways), different types (right, obtuse, equilateral triangles), etc. and using geometric vocabulary to describe them.

Using geometric vocabulary to describe shapes that look, “wrong,” kindergartners develop an understanding of the attributes that define a shape.

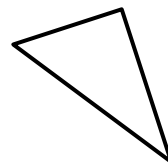
For example:



This shape has 3 sides.

This shape has three corners.

It’s a triangle.



This shape has 3 sides.

This shape has three corners.

It’s a triangle.

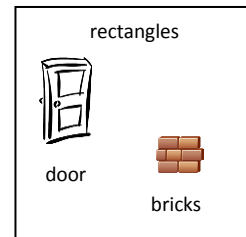
Shapes in the environment:

Students should spend time locating and identifying shapes in their environment.

For example: Students can go on a shape walk around the school or at home. They take note of any shapes they see.

The students will start out using informal language such as, boxes, cans, doors, etc., The teacher should use the formal language during discussions about what shapes they saw.

During discussions, the teacher might make charts of the shapes the students saw. So if a student says, "I saw a door. It has 4 sides." The teacher asks, "Which chart should we put that on?" "How do we know?" "Why doesn't it go here?"



Positional words:

Students should also use positional words to describe shapes in the environment.

For example: When describing the shapes that they see in their classroom, students may say, "The window is above the door." "The book is on the tabletop." "The paper is under the pencil can."

Analyze and Compare Shapes:

Students understand the attributes of a given shape better when comparing it to other shapes.

For example: Using attribute blocks, student sort the shapes according to different attributes.



These shapes have 3 sides and 3 corners. They are triangles.



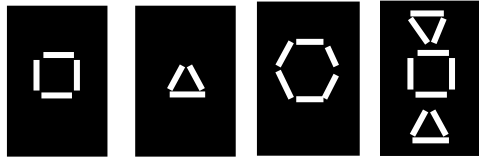
These shapes have 4 sides and 4 corners. They have 2 sides that are the same and 2 others sides that are the same. They are rectangles.

They both are closed and have straight

Create shapes:

Students use their understandings of the attributes of shapes by modeling them with materials.

For example: Students can use toothpicks to create 2D shapes or a combination of 2D shapes.



Students can model clay or play dough into 3D shapes.

They can also use the toothpicks and clay to model 3D shapes by making small spheres from the clay and connecting toothpicks or coffee straws into 3D shapes.

Compose and decompose shapes:

Students manipulate multiple shapes to make a new shape. They can replace a shape with a combination of others.

For example: Students use pattern blocks and find all the ways they can make a hexagon.



For example: Students use pattern blocks and fill in a given shape puzzle. They find out how many blocks they used. Then they are asked to see if they can use more blocks or fewer blocks.

