California Preschool Learning Foundations (at around 60 months of age) *Geometry*	CA CCSSM – Kindergarten *Geometry (G)*
Children identify and use a variety of shapes in their everyday environment. **PLF.G–1.1** Identify, describe, and construct a variety of different shapes, including variations of a circle, triangle, rectangle, square, and other shapes. **PLF.G–1.2** Combine different shapes to create a picture or design. **PLF.G–2.1** Identify positions of objects and people in space, including in/on/under, up/down, inside/outside, beside/between, and in front/behind.	**Identify and describe 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 form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*
Vocabulary: *In, on, under, up, down, inside, outside, beside, between, in front, behind, below, next to, flat, solid, square, circle, triangle, rectangle, hexagon, cube, cone, cylinder, sphere, side, corner, vertex, vertices*	
What it looks like: • Xavier says, "Look, the window is a rectangle, and it has rectangles in it!" (**MP.7**) • In a class discussion about shapes, Veronica says, "A sphere is just like a ball— round all around!" (**MP.2**) • In a discussion about the prepositions *above* and *below,* Cho says, "That's funny, things can be both! Everything is above the floor and below the ceiling!" (**MP.2, MP.3**)	
Big ideas: Shapes have fixed attributes, such as the number of sides and corners. Knowledge of three-dimensional shapes is important; do not limit exposure to two-dimensional shapes. Two or more shapes can be put together to make new shapes.	

Instructional issues: Shapes should be provided in all orientations and all permutations (long rectangles, triangles with a vertex pointing down, isosceles triangles, scalene triangles), and these should be discussed to help students focus on the central attributes. Help students to understand the difference between actual representations of shapes and common objects with similar characteristics (e.g., an apple has round characteristics, but it is not a sphere). Help students begin to understand that some shapes are special cases of a larger shape category (e.g., a square is a special rectangle that has all sides of equal lengths). Students should compose and decompose shapes with right angles and not just pattern blocks made from equilateral triangles.

Activities: In a whole group or small group, talk about words that describe where something is. Examples are *in, on, under, up, down, inside, outside, beside, between, in front, behind, below,* and *next to.* Ask each student to find an example of these positions/prepositions in the classroom. One example is *over:* Ask students to find things that are over something else. Give students about five minutes to find examples. Go around the room and ask each student what the object is and what it is over (e.g., *"The exit sign is over the door"*). (**MP.1, MP.4**)

Provide opportunities for sorting by shapes. For students who are just learning about shapes, a shape sorter —a container with different-shaped openings through which corresponding three-dimensional pieces (typically made of plastic or wood) can be pushed—may be useful. Pattern blocks and attribute blocks are also useful for sorting. (**MP.4**)

Provide an activity center where students create and work with shapes. This center might include shape magnets, clay balls and toothpicks, chopsticks, paper, pencils, and scissors. Encourage students to talk about what they are creating. Provide tangram sets with pictures to compose and parquet blocks for creating designs. (**MP.4, MP.5, MP.7**)

Gather a collection of two- and three-dimensional shapes. In a whole or small group, ask students to describe the shapes one by one. For instance, hold up a triangle and ask the students to describe it. At first, students might need help learning the vocabulary words listed above. To prompt students' descriptions, ask them how many sides, corners, vertices, or faces they see when looking at a particular shape. After students are comfortable providing these sorts of descriptions, change the activity by describing a hidden shape and asking the students to guess which shape it is. (**MP.3, MP.4, MP.6, MP.7, MP.8**)