

Kindergarten Clarifying Lessons: Learning Centers List for Geometry in Our World

Math Learning Centers

Sort and Resort Geoblocks (K. 8A, B, C; K.9A, B)

Students work in pairs. One partner decides on a rule that will sort the blocks into two sets, e.g. "blocks that can roll and blocks that cannot roll" or "blocks that are pointed and blocks that are not pointed," and partners work together to sort the blocks. The teacher listens for discussion of their reasoning for putting a particular block in a particular set. They then repeat the activity having the other partner determine a sorting rule.

Materials

- geoblocks

Extension

- Partners make a sorting rule that will separate the blocks into more than two sets (such as "blocks that are the same height" and work together to sort the blocks.
- One partner sorts the blocks into two or more sets and challenges the other partner to determine the sorting rule.

How Many Flat Faces on a Geoblock (K.9A, B, C)

Students work in pairs and predict which geoblock has the most flat faces and which one has the least flat faces and explain the reasoning behind their predictions. Partners work together to place a sticky dot on each flat face of a geoblock, then transfers the dots from the geoblock to a piece of paper to be kept with that geoblock. (For example, set the geoblock on the paper or tape the paper to the geoblock). Students discuss the information they have gathered (e.g. What do the dots on each paper represent?) and compare the results to their predictions.

Materials

- a set of 5 different geoblocks
- colored sticky dots
- paper

Extension

Challenge students to organize the data by ordering the geoblocks according to the number of flat faces each one has.

Science Learning Centers

Estimate Number of Cups to Fill a Jar (K.10A; K.13A, D)

Students work in pairs to estimate how many cups of water it would take to fill the large jar and explain their estimate. Partners test their estimate by pouring a cup of water into the jar and marking the resulting level of water on the jar. (Encourage students to change their estimates if they wish after seeing the relationship of one cup to the jar. They must justify their change).

Partners continue to pour water into the jar and mark each new water level, changing their estimates as desires.

Materials

- a small tub of water
- paper towels
- a large jar
- medium or large paper or styrofoam cups
- markers

Extension

Students compare capacities of other containers.

Build a Stronger Building (K.9A, B; K.13A, B, D; K.15)

Students work in pairs to construct the frame of a building out of play dough and straws on the cardboard or styrofoam sheet. The building should be constructed to withstand a "storm" made by waving the cardboard. Partners test the "strength" of their building. Partners discuss the outcome of their test and make conjectures about what they could do to improve the strength of their building. If time allows, partners test their new conjectures.

Materials

- play dough or clay (about 1/4 cup)
- straws (about 12)
- tape (about 12 inches)
- cardboard or styrofoam sheet to build building on
- piece of cardboard to fan with

Extension

Students display their strongest buildings and look for patterns among the geometric attributes of the different structures (e.g. Do shorter buildings seem stronger?).

Language Arts Learning Centers**Describe an Item for Partner to Choose (K.8A, B; K.9A, B)**

Students work in pairs (or the teacher could lead for the whole class). Partner will secretly identify a block from the set and name one of its attributes, e.g. "It is pointed." The other partner will select all the geoblocks from the set that fit that attribute. (The first partner will make sure that the one he or she has selected is chosen.) The first partner names another attribute of the geoblock so that second partner can identify which of the smaller set of blocks chosen in the first round also fit the new clue. This continues until only one block is left, the secret block. Partners trade places and repeat the activity.

Materials

- a set of several different geoblocks

Extension

Students play the game like "20 Questions" where one partner asks questions and the other partner replies "yes" or "no" to determine the chosen block.

Give Directions for Partner to Walk a Shape (K.9C)

Students work in pairs. One partner gives directions while the other partner follows the directions to walk the outline of a path, e.g. "face the windows, take three steps forward, turn to face the teacher's desk, etc." Partners work together to draw the path that was walked. Students discuss the characteristics of the path.

Materials

- large paper
- markers
- ruler (or some kind of straight-edge)

Extension

Students develop directions for particular shapes, such as squares, triangles, hexagons. Challenge students to develop directions for a circle.

Art/Fine Motor Learning Centers

Make Junk Sculpture (K.9A; K.14A, B)

Students work in groups of 2–8 to make a junk sculpture using a variety of "junk" from the pile in the center of the table. The teacher listens for appropriate geometric vocabulary as students discuss their design and the placement of different objects. Students present their sculpture to the class, using geometric vocabulary to describe it.

Materials

- newspaper to protect the work surface
- glue
- construction paper
- "junk" (toilet paper rolls, paper cones, old pencils, straws, old gum balls, twisties, nuts, bolts, boxes, etc.)

Extension

Students examine complicated objects and identify geometric aspects of them, e.g. the shapes of the different parts of a telephone or calculator.

Make and Copy Secret Shape with Linking Cubes (K.9A, B; K.14A, B)

Students work in pairs. One partner secretly makes a solid from a given number of cubes, e.g. 8 cubes, and then wraps the figure tightly in aluminum foil. The other partner examines the foil-wrapped figure, looking and feeling, and tries to duplicate the figure using the given number of cubes. Partners discuss why they think the figures do or do not match before the first one is unwrapped. Partners trade places and repeat the activity.

Materials

- linking cubes
- aluminum foil

Extension

Students put the first figure in a paper bag and try to reproduce it only by feeling it. Challenge students further by not revealing how many cubes were used to make the first figure.

Music/Movement Learning Centers

Act Out What It Is Like Inside an Object (K.9A, B; K.14A, B)

One student chooses a model of a solid and that they have had experience examining, e.g. a cone, a cylinder, a sphere. (See the Math Centers.) The students at the center pretend that they are inside the chosen solid. "How would you be able to move? Show with your hands what it

would feel like on the inside. Where would you be able to stand?" Students repeat the activity with other three-dimensional solids. Students discuss the differences, for example, between the inside of a cone and a box, or a sphere and a cylinder.

Materials

- models of solids such as a cone, a cylinder, etc.

Extension

Students dictate a story about being inside their favorite three-dimensional figure.

Investigate Shapes of Numerals (K.8A, B; K.13D)

Students try to form a numeral with their bodies. (All students can be doing the same numeral, or they could each choose their favorite one.) Discuss the geometric characteristics they discover about the numeral: Is it connected at the beginning and end? Does it cross over itself? Does it have other shapes as part of it? Students form the same numeral with yarn and identify the characteristics discussed. Students repeat the activity with other numerals and compare their characteristics.

Materials

- yarn (12" to 18" lengths)

Extension

Students work in groups of two or three to sort numerals according to the characteristics they have identified (e.g. numerals that are connected at the beginning and end like 8 and 0 and numerals that are not like 1 and 2).