



December Curriculum Planning Kindergarten



"The best and most valued assessments happen when teaching and learning are going on." Catherine Twomey Fosnot

Spatial Sense

Spatial Sense involves visualization, mental imagery and spatial reasoning. It is developed through a variety of experiences and interactions within the environment. This enables students to solve problems involving 3-D objects. To build their understanding of the attributes or characteristics of objects, students need many opportunities to manipulate 3-dimensional objects. They should be encouraged to identify how these objects are alike and how they differ.

Mathematical Language

Sorting: Colour words, informal vocabulary for shapes (round, flat, pointy, like a box, like a can, etc.), vocabulary for size (big, small, heavy, light, long, short, etc.), sort, classify, group, the same as, different.

Curriculum Outcomes for December

N1 (cont'd): Say the number sequence by 1s starting anywhere from 1 to 10 and from 10 to 1. [C, CN, V]

N2 (cont'd): Recognize, at a glance, and name familiar arrangements of 1 to 5 objects or dots. [C, CN, ME, V]

N3 (cont'd): Relate a number, 1 to 10, to its respective quantity. (Extend to counting properties to ten and numeral writing in context). [CN, R, V]

SS2* (optional): Sort 3-D objects using a single attribute. [C, CN, PS, R, V]

SS3* (optional): Build and describe 3-D objects. [CN, PS, V]

* Note: SS2 and SS3 are outcomes that can be easily integrated with holiday art activities.

Mathematical Processes

Communication (C): As students use mathematical language such as cube, sphere, cone and faces to describe various shapes, they will move from using informal language such as "box" to more formal language, "cube". The focus is not on identifying 3-D objects but on using the attributes such as the number or shape of the faces, whether it rolls and/or stacks, etc. to compare the various objects.

Connections (CN): Creating activities using student names within questions, interesting facts about their families, pets, etc. will make classroom work more meaningful.

Reasoning (R): As students develop mathematically, they are increasingly able to describe an object by using reasoning. Use questioning to focus student thinking, for example: "Name some things that this object looks like?", "How are they alike?", "What does this object look like?"

Mental Mathematics and Estimation (ME): Mental math strategies are highly linked to visualizing a number broken into parts as well as comparing the number to 5 and 10. (For example, 6 is 5 and 1 more; 8 is 2 away from 10). Students need to be given many opportunities to explore these number relationships using concrete and visual materials, such as counters, five and ten frames and rekenreks.

Problem Solving (PS): It is important to build on students' natural problem solving inclinations and encourage learning that values problem solving. As a teacher, you can capitalize on opportunities that come from rich problem solving experiences by talking with the student and observing, listening to and questioning the student. Be sure to allow students plenty of time to work out the problems and share alternative ways of solving them.

Technology (T): Although it is best to have young students working with physical models when engaged in geometry, computer models that are used to build geometric thinking are very engaging for students. Electronic attribute blocks are available at http://nlvm.usu.edu/en/nav/category_g_1_t_3.html

Visualization (V): Sorting and building activities help to develop visual discrimination. Students should be given many opportunities to sort and build 3-D objects using a variety of materials as it increases their visualization skills.

Roll a Snowman (see Portal)

Students can draw or paint a snowman but can only use the parts of a snowman that correspond with the number they roll. (N1)



Hat	1
Head	2
Top Body	3
Bottom Body	4
Eyes & mouth	5
Carrot Nose	6

Math Activities/Projects**One of these Things**

Place four 3-D shapes on the table and ask students which shape does not belong; e.g. you might have 3 rectangular prisms and a cylinder. Have students justify why one does not belong. (SS2)

Gift Wrap

Have students bring in a box or can for the food bank. Students can sort objects and then wrap each one. When finished, students can describe which shapes were easier to wrap and why. (SS2&3)

Create an ornament

Have students build 3-D objects using pipe cleaners, craft paper, and marshmallows. Students may need a visual model. (SS3)

**Last Days of the Year**

Students can create a book to count down the last 10 days of school in the calendar year. Students may show numbers concretely, pictorially and symbolically. (N1,N3)

Investigation Ideas

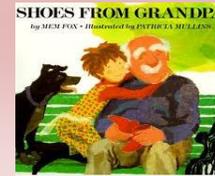
Kindergarten Town: *Materials: classroom objects, food stuff containers, paper rolls, scissors, glue, paper, tape, etc.* Tell students that they are going to design/make a model of a Kindergarten Town. Brainstorm buildings and structures that they would like to have in their town. Have students work in small groups. Designate a specific area in the classroom for each group. As students are working, talk to them about their constructions and particular 3-D objects. Have each group present their town. Ask them to take turns describing the 3-D objects used. Encourage the use of vocabulary specifically related to attributes. (SS3)

Eating Stories: The Very Hungry Caterpillar by Eric Carle. This is a predictable-progression counting book about a caterpillar that eats first one thing, then two, and so on. Children can create their own eating stories and illustrate them. What if more than one type of thing were eaten at each stop? What combinations for each number are there? Which thing did they eat more of or less of? How many items did they eat altogether? What did the student become at the end of their book? Create a classroom library to share stories. (N1)

**Literature Links**

Shoes From Grandpa by Mem Fox. After reading the book, ask students to remove their shoes or bring in their outdoor shoes to sort. Do they sort by:

- colour?
- with or without laces?
- Velcro?
- light up shoes?
- theme pictures or words? (SS2)

**Numeral Writing**

Roll and Write: Students roll a numeral cube and then write the number they rolled on a graph. Each time they roll that number they write it again in the appropriate column on the graph. See **Portal**. (N3)

Numeral Writing Poems: Students practice connecting their understanding of a set of objects with the corresponding numerals. See **Portal**. (N3)

Interesting Websites

<http://www.youtube.com/watch?v=dk9Yt1PqQiw>

<http://www.youtube.com/watch?v=jxzMw89qY>

<http://www.edu.gov.mb.ca/k12/cur/math/games/>

(Scroll down for activities for home)

Game Ideas

Guess My Rule: Provide pairs of students with a barrier, such as a book or box. Give students a set of familiar 3-D objects to sort behind their barrier. Once sorted, the barrier is removed and the other student guesses the sorting rule used. The game continues with players taking turns re-sorting the objects and repeating the activity. (SS2)

Model My Object: Gather a collection of small 3-D objects from the classroom. Have students select one of the objects and make a model of it using play dough. Have them compare their model with the actual object. Ask, "Is your model the same as the object? How do you know?" Mix up the original objects and the student models. Have students see if they can match the models to the original objects. (SS3)

I Spy: Give students a clue to a particular 3-D object in the classroom and have them guess which object you have selected. Example: "I spy with my little eye something that is like this" and hold up the object. (SS2)

Dot Bingo: Children have a bingo card with a selection of numerals, dots and pictures. The leader rolls a number cube and asks students to cover the square that matches. Only one square can be covered each turn. See **Portal**. (N2, N3)