



More About Math

Peg + Cat – Big Problems

Background for Leaders

In this unit, children will join Peg and Cat as they solve some **REALLY BIG PROBLEMS** and practice math skills appropriate for ages 4-5 years old: using a pan balance, estimating capacity, identifying shapes, spatial reasoning, ordinal numbers and adding one or two more.



Using a Pan Balance

Children should be able to tell if something is heavier or lighter than another object. One way to weigh an object is to use a pan balance. When the pan balance is empty, it is parallel to the ground. If a heavy object is placed on one side of the balance, that side will move down towards the ground, showing that it is heavier, while the other side will move up into the air, showing that it is lighter. Objects must be added to or removed from each side to make the weight equal. As a result, the pan balance will be parallel to the ground. Encourage children to use vocabulary words **heavier, lighter, and balanced** to describe the objects that they are weighing.

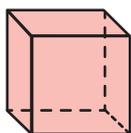


Estimating Capacity

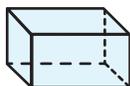
When estimating capacity children are making observations to determine how much liquid can fill a 3-dimensional object. In this unit, children will need to consider which containers hold more water and which hold less water. Children will also determine how many containers of liquid will be needed to fill a larger tub. Use vocabulary such as **too much, too few, more water, and less water** to encourage children to **estimate** accurately and reflect on the estimates that they have made. Remind children that estimating is not guessing. Instead they can make estimate based on the size of the containers and knowing that a larger container has more capacity than a smaller container.

Identifying and Combining Shapes

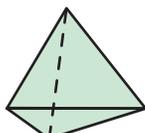
Children at this age should be familiar with both 2-dimensional and 3-dimensional shapes. Vocabulary terms children should know or be learning are: **circles, squares, triangles, rectangles, pentagons, hexagons, cubes, rectangular prisms, cylinders, and spheres**. Children should recognize shapes based on their attributes, such as numbers of sides and corners and whether the shape is two-dimensional (flat) or three-dimensional (solid).



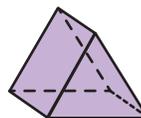
Cube



Rectangular Prism



Triangular Prism



Pyramid



Summer Adventure!

Powered by a Ready To Learn Grant

Professional Development Extension

More About Math (continued)

Spatial Reasoning

Developing spatial sense in children is an essential skill that enables children to read maps or graphs and complete mazes or puzzles. These activities lay the foundations for more advanced geometry and spatial reasoning skills. It is essential that children use and develop spatial sense in conjunction with the proper vocabulary. Children should be able to determine the relative position of an object in a picture when given 1-2 directional clues. Position and direction vocabulary includes words and phrases such as: **above, under, on, next to, on top of, near, and between.** For example the square is **next to** the bed and **on top of** the table.

Children will use spatial sense when choosing the right sized object and orientation to solve a puzzle. In **Baby Fox's Big Machine**, children will choose rectangles that are the right length and orientation (horizontal – left to right or vertical – up and down).



Adding One or Two More

Children at this age are learning to count by ones up to 30 and by twos up to 20. Adding one more to an existing number is similar to counting “one more”. In the same way adding two more to an existing number is like counting by twos. This skill can be a challenge for some children so they can use objects or a number line and skip every other number to show counting by two (or adding two repeatedly).

Ordinal Numbers

Children at this age are familiar with number and numeral correspondence. Throughout the **Race Car Problem** children are asked to put people, objects, and cars in order: 1st, 2nd, 3rd, 4th, and so on. This may be an introduction to ordinal numbers. Show children how to match the person holding the number four with the 4th place. Continue this with third, second, and first, and then play again! Children can practice this concept by discussing placement in line (who is first in line? Who is last in line? Who is third in line?).



This out-of-school resource was developed by Maryland Public Television.

The contents of this activity were developed under a grant from the Department of Education. However, those contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government. [PR/Award No. U295A100025, CFDA No. 84.295A]. © 2015 Public Broadcasting Service. • PEG • CAT © 2015 Felina Features LLC.