



## More About Math

### Measuring How Much

#### Background for Leaders

This unit focuses on pattern skills for 4-5-year-olds. Children will learn that patterns consist of a “core” or “unit” that repeats as they identify, complete and create patterns.

#### Volume and Capacity

**Volume is the amount of space that a 3-dimensional object takes up.** In these activities, two methods are used to measure volume; using connecting cubes and water displacement. When volume is measured using connecting cubes children put cubes inside the shape to see how many will fit in it. To measure volume using water displacement, the amount of water that an object displaces is directly proportional to its size. A small dinosaur will raise the water level in a swimming hole by just a little bit, while a large dinosaur will raise the water level in the swimming hole by much more.

**Capacity is the amount a 3-dimensional object can hold.** At this age children need to know that a small container holds a small amount of water and a large container holds a large amount of water. Children should be able to match up containers that hold similar amounts, based on relative size, such as the small egg and the small hole, the medium egg and the medium hole, and the large egg and the large hole. Important vocabulary to use when dealing with capacity is **more, less, most, and least**. Which container will hold the most water? Which container will hold the least? Does this container have more or less capacity than that other one? Comparisons between containers should be limited to two to three containers at this age.

#### Weight and Pan Balances

Children at this age 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 nothing is on the pan balance it is parallel to the ground, when a heavy object is placed on it that side of the balance will move down towards the ground, while the other side will move up into the air. To balance the pan balance objects must be added to or removed from each side until the balance is parallel to the ground once more; this makes the weight on each side equal.



As the children play **Dinosaur Train: Leaf Leader**, they are comparing the weight or force of the dinosaurs on a rope; which unlike the other activities requires the leaf to center over the dinosaur rather than balance the scale. In this activity the dinosaurs are added to or removed from only one side of the rope to “balance” the force of the other side of the rope. In each of these activities there is a combination of small, medium, or large objects that have a supposed weight or force relative to their size. Essential vocabulary to use with children in these activities is: **heavy, light, heavier, and lighter**. Which object weighs more? Which object weighs less? Do you need to add more weight or take weight away from the pan balance?

