

Math Background

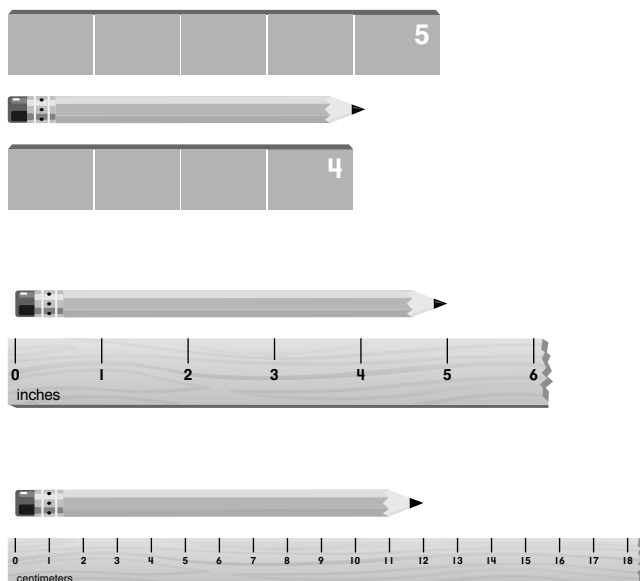
Nonstandard Units of Length

Children begin Unit 10 by taking measurements with multiple strips of paper and with toothpicks. Lining up these physical units helps children understand the concept of measurement and the arbitrary nature of measurement units. This approach also allows children to see that measurements are inclusive—that a quantity of 5 toothpicks includes 4, 3, 2, and 1. When young children are given rulers before they are prepared, they are sometimes misled into thinking that “5” is simply a line on the rule rather than an accumulation of 5 units.



Standard Units of Length

Children quickly move from toothpicks to inches, and later to centimeters. They take measurements, and they begin to develop a mental image of these standard units. One way to reach this goal is to have children practice estimating length in inches or centimeters.



Teaching Unit 10 (Continued)

Rounding to the Nearest Unit

Children usually comprehend rounding more easily when it is associated with the visual reinforcement of a ruler. They can see that a partial unit is either closer to the next whole number or to the previous number. For this reason, rounding is introduced with measuring in Unit 10.

This pencil is 2 toothpicks long and more than half another toothpick. The pencil is about 3 toothpicks long.



This pencil is closer to 5 inches than to 4 inches. This pencil is about 5 inches long.



Special Days

Measurement Day Children use what they have learned as they discuss, analyze, estimate, and measure objects. They choose appropriate measuring tools for various situations. Then they compare objects in terms of length, weight, and capacity for both customary and metric measures. Children also order measures.

Estimation Day Children use estimation in a variety of ways. They estimate sums and differences and determine if an estimate is sufficient or if an exact answer is needed. They estimate length and other measures as well as the amount of money needed for a purchase.

Daily Routines Continue the *Money Routine* and *Date and Time* throughout Unit 10. Begin the new routine for Unit 10, *Counting with Quarters*. The description of all of the Daily Routines begins on page xxiii of the Introduction.