

Number Sense to 100. In this unit, students explore and extend their knowledge of number relations in a variety of contexts, focusing on the number 100. They develop strategies for solving addition and subtraction problems involving multiples of 5 and 10, including reasoning from known facts and using tools such as links, ten frames, number lines, and the 100 Chart.

The ability to partition numbers is important in developing number sense. It will help students understand part-whole relationships that will be useful when they solve problems and encounter more formal mathematics. Several activities in this unit develop this ability by partitioning 10 and 100. Students begin by using 100-link chains to partition 100 into two parts. In another activity, they decompose 10 cents using pennies and 100 cents using dimes. They represent both addition and subtraction situations by writing number sentences.

Exploring number relationships in more than one context helps students recognize relationships and generalize patterns. For example, a number sentence such as $10 + 90 = 100$ can be explored using links (10 links + 90 links is 100 links) and using coins (10 cents + 90 cents is 100 cents). Students measure using a special 10-inch ruler and make estimates using 10-link and 100-link chains as referents.

In this unit, students explore the relationship between pennies and dimes. They learn that addition and subtraction facts for 10 can be generalized to multiples of 10, as with the two related number sentences $3 + 7 = 10$ and $30 + 70 = 100$. Research suggests that though children may be able to count by ten, they need additional experiences to make this generalization. They also explore the value of quarters, learning that there are fewer quarters in a dollar than nickels or dimes. In addition, students practice skip counting to find the value of a collection of pennies, nickels, dimes, and quarters.

Students use money (nickels and dimes) to partition 100. They add and subtract multiples of 5 and 10 as they partition \$1.00. This activity helps students develop computing methods that will facilitate later number work.

Familiar tools, the 100 Chart and the number line, are used to expand students' number sense. In the Moving On the 100 Chart Game, they apply their knowledge of number relationships to write number sentences that describe 10 more, 10 less, one more, and one less.

Estimation, Measurement, and Number Sense.

Students learn that measurement is dependent on the size of the unit of measure. In Lesson 6 *Could Be or Crazy*, students practice estimation to further develop their number sense of the numbers up to 100. Using 10-inch rulers and 10-link and 100-link chains as referents, they assess the reasonableness of estimates and measurements. Objects are measured using both tools, and estimates are compared and analyzed. It is important that students develop ease with estimation and that they understand that it is not just sloppy computation—a substitute for finding the “real” answer. As estimation eventually becomes a habit of mind, students become more critical and flexible mathematical thinkers. They become able to recognize an error in computation quickly by noticing when their answer just doesn't make sense. For further discussion, see the TIMS Tutor: *Estimation, Accuracy, and Error* in the *Professional Development Resource Guide*.

Time. In this unit, students review telling time to the nearest hour using a one-handed clock. They are introduced to a regular analog clock and practice reading and writing time to the nearest hour and half-hour.

Math Facts and Mental Math

Addition Facts with Sums to Ten. In this unit, students continue to systematically review the addition facts. Daily Practice and Problem items in this unit can be used to assess students' fluency with the addition facts in Group D with sums to ten: $3 + 3$, $3 + 4$, $4 + 4$, $4 + 5$.

Students should be using doubling strategies, reasoning from known facts (e.g., if $3 + 3 = 6$ then $3 + 4 = 7$), and applying properties of addition (e.g., using turn-around facts) to solve these facts.

Fact Families for Addition Facts with Sums to Ten. Students have been connecting addition to subtraction and using the addition facts to solve subtraction problems since Unit 6. A student proficient with their addition facts can also find the related subtraction facts (e.g., $4 + 5 = 9$ so $9 - 5 = 4$ and $9 + 4 = 5$). Daily Practice and Problems items in this unit can be used to assess students' abilities to name the fact families related to facts in Group D with sums to ten.

Resources

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