Chapter 1: Addition Concepts

Content Area: **Mathematics**
Course(s): **Math 1**
Time Period: **September**
Length: **11 days**
Status: **Published**

Unit Summary

In this unit, children work with addition by "adding to" and "putting together" (1.OA.A.1). Children represent these situations by using concrete objects and pictorial models. The action of modeling and then showing the addition with a number sentence reinforces the conceptual knowledge of addition. Children can then begin to see and to understand how to show an unknown number in an addition sentence or situation. Further in the unit, children explore and then apply the Additive Identity Property and the Commutative Property of Addition (1.OA.B.3). Each of these properties reduces the number of addition facts they have to memorize. At the end of the chapter, they are working towards fluently adding sums to 10. Academic vocabulary within this unit includes the following terms: add, addends, addition sentence, is equal to, order, plus, sum, zero, Additive Identity Property for Addition, Commutative Property for Addition.

Standards

CCSS.Math.Content.1.OA.A.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
	Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize-to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents-and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.
CCSS.Math.Content.1.OA.B.3	Apply properties of operations as strategies to add and subtract.
	Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.
CCSS.Math.Content.1.OA.C.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 − 4 = 13 − 3 − 1 = 10 − 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 − 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by

creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

CCSS.Math.Content.1.OA.D.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
TECH.8.1.2.A.CS1	Understand and use technology systems.
TECH.8.1.2.A.CS2	Select and use applications effectively and productively.

Student Learning Objectives

Students will learn to...

- Use pictures and concrete objects and the strategy make a model to solve "adding to" and "putting together" addition problems
- Understand, apply, and explore the Additive Identify Property for Addition and the Commutative Property of Addition
- Model and record all the ways to put together numbers within 10
- Build fluency for addition within 10

Essential Questions

- How can you model adding within 10?

Enduring Understandings

Students will understand that...

- in addition we combine quantities to find the sum.

Application

Students will be able to independently use their learning to...

- solve "adding to" and "putting together" addition problems within 10 and develop fluency for solving addition facts within 10.

Skills

Students will be skilled at...

- Use pictures to "add to" and find sums
- Use concrete objects to solve "adding to" addition problems
- Use concrete objects to solve "putting together" addition problems
- Solve adding to and putting together situations using the strategy "make a model"
- Understand and apply the Additive Identity Property for Addition
- Explore the Commutative Property of Addition
- Model and Record all the ways to put together numbers within 10
- Build fluency for addition within 10