

Chapter 8: Two-Digit Addition and Subtraction

Content Area: **Mathematics**
Course(s): **Math 1**
Time Period: **March**
Length: **13 Days**
Status: **Published**

Unit Summary

In unit 8, children expand upon their basic knowledge of addition and subtraction. Children learn to add and to subtract multiples of ten using models and place value strategies. This work leads into adding a two-digit number with a one digit-number using a hundred chart, base-ten blocks, and quick pictures. Children can see with quick pictures and a place-value chart how to regroup ones to compose a ten. Then they use these skills to solve addition word problems. Children explain the method and the reasoning they used to solve the problems (1.NBT.C.4). This progresses to children understanding that the relationship between addition and subtraction with larger numbers is the same strategy as with numbers within 20. Throughout this unit, students will become familiar with and master the following academic terms: addition, subtraction, hundred chart, tens, sum, difference, place value.

Standards

MA.K-12.1

Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

MA.K-12.3

Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

MA.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 $6 + 6 + 1 = 12 + 1 = 13$).

MA.1.NBT.C.4

Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

MA.1.NBT.C.6

Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

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...

- Add and subtract within 20
- Use and draw models and manipulatives to add two digit numbers
- Solve and explain two digit addition word problems using the strategy draw a picture

Essential Questions

- How do we represent a two-digit number?
- How are two numbers related to one another and how can we represent this relationship?
- How can we organize a group of objects so they are easy to add or subtract?
- What strategies can we use to solve addition and subtraction equations involving two-digit numbers?
- How do we show our work when solving a problem?

Enduring Understandings

Students will understand that...

- The place value of two-digit numbers is made up of some group of tens and some number of ones (including zero).
- It is more efficient to group tens and ones to add two two-digit numbers and sometimes it is necessary to compose tens.

- The use of pictures, numbers, words, and symbols helps to model and communicate our thinking.

Application

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

- use knowledge of place value to add two two digit numbers.

Skills

Students will be skilled at...

- Adding and subtracting within 20
- Drawing a model to add tens
- Drawing a model to subtract tens
- Using a hundred chart to find sums
- Using concrete models to add ones or tens to a two-digit number
- Making a ten to add a two-digit number and a one-digit number
- Using tens and ones to add two-digit numbers
- Solving and explaining two-digit addition word problems using the strategy "draw a picture"
- Adding and subtracting within 100, including continued practice with facts within 20