

Chapter 4: Subtraction Strategies

Content Area: **Mathematics**
Course(s): **Math 1**
Time Period: **December**
Length: **9 Days**
Status: **Published**

Unit Summary

In unit 4, children extend their understanding of subtraction concepts to include subtraction strategies. Children first learn to count back from the number they are subtracting from to find the difference. They then learn how addition and subtraction are related and how to use known addition facts to solve subtraction problems. These lessons help children understand subtraction as an unknown-addend problem (1.OA.B.4). Understanding how numbers can be composed and decomposed is the foundation for using 10 to subtract. Children use make a 10 to subtract as a strategy for subtraction facts in which the subtracted number is 8 or 9. Then, they break apart a number to make a ten. Learning these subtraction strategies helps children become more fluent with subtraction facts (1.OA.C.6). Finally, children apply these strategies to word problems. Throughout this unit, students will master the following academic terms: subtract, addition facts, act it out, difference, subtraction sentence, and take away.

Standards

MA.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.
MA.1.OA.B.4	Understand subtraction as an unknown-addend problem.
MA.1.OA.C.5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
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.OA.D.8	Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers.
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. 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.

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.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Student Learning Objectives

Students will learn to...

- Use the following strategies to find differences within 20; count back 1,2 or 3, use addition to subtract, or make a ten
- Recall addition facts to subtract numbers within 20
- Subtract by breaking apart to make a ten
- Solve subtraction problem situations using the strategy to act it out

Essential Questions

- How can we use addition to solve subtraction problems?
- How are addition and subtraction related?

Enduring Understandings

Students will understand that...

- the relationships between addition and subtraction facts can help us solve problems.

Application

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

- solve subtraction problems using the subtraction strategies counting back, think addition to subtract, use 10 to subtract, and break apart to subtract.

Skills

Students will be skilled at...

- Using count back 1, 2, or 3 as a strategy to subtract
- Recalling addition facts to subtract numbers within 20
- Using addition as a strategy to subtract numbers within 20
- Using make 10 as a strategy to subtract
- Subtracting by breaking apart to make a ten
- Solving subtraction problem situations using the strategy "act it out"