

05 Addition and Subtraction Fact Strategies

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **6 weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

In this unit, students will focus on the following skills and concepts:

- Hour Hand Only Clocks
- 2 Digit Number Stories
- Near Doubles
- Making 10
- Understanding Equivalence
- Place Value
- Place Value Application --> Pennies, Dimes, and Dollars
- Fact Families
- Relating Addition and Subtraction
- Subtraction Fact Strategies
- Shape Attributes
- Defining and Nondefining Attributes
- Finding Unknowns
- Digital Clocks

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Essential Questions:

- How can Doubles facts help you to solve other facts?
- How does the Making 10 strategy help you to solve other facts?
- What does equal mean?
- What are some equivalent names to represent a number?
- How does Fact Families deepen the relationship between addition and subtraction?
- What are examples of shape attributes?
- How can function machines help to solve unknown numbers?

Enduring Understandings:

- Doubles can be used to solve other addition facts.
- There are equivalent names to represent a given number.
- Addition and subtraction are related as inverse operations.
- Two-dimensional shapes have defining and non-defining attributes.

CONTENT AREA STANDARDS

1.OA

A. Represent and solve problems involving addition and subtraction

B. Understand and apply properties of operations and the relationship between addition and subtraction

C. Add and subtract within 20

D. Work with addition and subtraction equations

1.NBT

A. Extend the counting sequence

B. Understand place value

C. Use place value understanding and properties of operations to add and subtract

MA.K-12.1	Make sense of problems and persevere in solving them.
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.A.2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.1.OA.B.3	Apply properties of operations as strategies to add and subtract.
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.K-12.7	Look for and make use of structure.
MA.1.OA.D.7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.1.OA.D.8	Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers.
MA.1.NBT.B.2	Understand that the two digits of a two-digit number represent amounts of tens and ones.

	Understand the following as special cases:
MA.1.NBT.B.2a	10 can be thought of as a bundle of ten ones — called a “ten.”
MA.1.NBT.B.2b	The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
MA.1.NBT.B.2c	The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
MA.1.NBT.B.3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
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.5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
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.
MA.1.MD.B.3	Tell and write time in hours and half-hours using analog and digital clocks.
MA.1.G.A.1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.SL.1.1	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
LA.SL.1.1.A	Follow agreed-upon norms for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
LA.SL.1.1.B	Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
LA.SL.1.5	Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.
TECH.9.4.2.IML.1	Identify a simple search term to find information in a search engine or digital resource.

STUDENT LEARNING TARGETS

- I can compare two two-digit numbers based on meanings of the tens and ones digits.
- I can distinguish between defining attributes and non-defining attributes of shapes.
- I can relate the strategy used to add within 100 to a written method and explain the reasoning used.
- I can relate the strategy used to subtract multiples of 10 from multiples of 10 to a written method and

explain the reasoning used.

- I can add within 20 using strategies.
- I can subtract within 20 using strategies.
- I can add within 100 using concrete models or drawings and strategies.
- I can apply properties of operations as strategies to add and subtract.
- I can build and draw shapes to possess defining attributes.
- I can identify if equations involving addition and subtraction are true or false.
- I can solve for the unknown whole number in an addition or subtraction equation relating three whole numbers.
- I can mentally find 10 more or 10 less than a given two-digit number without counting and explain the reasoning used.
- I can write the results of comparisons with the symbols $>$, $<$, and $=$.
- I can relate counting to addition.
- I can relate counting to subtraction.
- I can solve word problems that call for the addition of three whole numbers whose sum is less than or equal to 20.
- I can subtract multiples of 10 (in the range of 10-90) from multiples of 10 using concrete models or drawing and strategies.
- I can understand subtraction as an unknown-addend problem.
- I can apply 10 as a bundle of ten ones.
- I can understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and sometimes it is necessary to compose a ten.
- I can understand that the two digits of a two-digit number represent amounts of tens and ones.
- I can explain the meaning of the equal sign.
- I can explain that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two three, four, five, six, seven, eight, or nine tens (and 0 ones).
- I can explain that the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight or nine ones.
- I can apply addition within 20 to solve word problems involving various situations with unknowns in all positions.
- I can use objects, drawings and equations with a symbol for the unknown number to represent addition and subtraction problems within 20.
- I can use subtraction within 20 to solve word problems involving various situations with unknowns in all positions.
- I can demonstrate fluency for addition within 10.
- I can demonstrate fluency for subtraction within 10.
- I can tell and write time in hours using digital and analog clocks.

Declarative Knowledge

Students will understand that:

- An analog clock is a tool used to measure or indicate time and has an hour and a minute hand.
- Using helper facts is a strategy in which known facts are used to find unknown facts.
- Quantities are often represented with numerals; there are equivalent ways to represent quantities.
- Using base-10 blocks, a flat (100) is a group of 10 longs.
- Fact families are groups of facts using the same two or three numbers; use of fact families improves

fluency with addition and subtraction.

- Fact triangles emphasize fact families and the relationship between addition and subtraction.
- Counting up to subtract is a strategy that reinforces the inverse relationship between addition and subtraction.
- Attributes of shapes are characteristics such as size, color, shape, and thickness.
- Attributes can be defining or non-defining.
- The function machine is a structure that demonstrates how the input and output numbers are produced and/or related.
- The minute hand of a clock moves in relation to the hour hand.

Procedural Knowledge

Students will be able to:

- Distinguish between defining attributes and non-defining attributes of shapes.
- Relate the strategy used to add within 100 to a written method and explain the reasoning used.
- Relate the strategy used to subtract multiples of 10 from multiples of 10 to a written method and explain the reasoning used.
- Add within 20 using strategies.
- Subtract within 20 using strategies.
- Add within 100 using concrete models or drawings and strategies.
- Apply properties of operations as strategies to add and subtract.
- Build and draw shapes to possess defining attributes.
- Determine if equations involving addition and subtraction are true or false.
- Solve for the unknown whole number in an addition or subtraction equation relating three whole numbers.
- Relate counting to addition.
- Relate counting to subtraction.
- Solve word problems that call for the addition of three whole numbers whose sum is less than or equal to 20.
- Subtract multiples of 10 (in the range of 10-90) from multiples of 10 using concrete models or drawing and strategies.
- Explain the meaning of the equal sign.
- Apply addition within 20 to solve word problems involving various situations with unknowns in all positions.
- Use objects, drawings and equations with a symbol for the unknown number to represent addition and subtraction problems within 20.
- Use subtraction within 20 to solve word problems involving various situations with unknowns in all positions.
- Demonstrate fluency for addition within 10.
- Demonstrate fluency for subtraction within 10.
- Tell and write time in hours using digital and analog clocks.

EVIDENCE OF LEARNING

Benchmark Assessments

Benchmark Assessments conducted three times per year, using

-Pear Assessment (Standards Based Assessments)

-iXL

Alternate Assessments

- Portfolios
- Verbal Assessment (instead of written)
- Multiple choice
- Modified Rubrics
- Performance Based Assessments

Formative Assessments

- Journal Pages
- Home Links/Worksheets
- Self-Assessments/Student Friendly Scales
- White board responses
- Entrance/Exit Tickets
- Participation
- Teacher Observation
- IXL

Summative Assessments

- Weekly Quizzes

- End of Unit Assessments
- End of Unit Self Assessments
- End of Unit Challenges (optional - if time allows)
- End of Unit 6 Cumulative Assessment
- End of Unit 7 Open Response (optional - if time allows)

RESOURCES (Instructional, Supplemental, Intervention Materials)

Calendar Math

EDM Lessons:

- Lesson 6-1
- Lesson 6-2
- Lesson 6-3
- Lesson 6-4
- Lesson 6-5
- Lesson 6-6 (2 days)
- Lesson 6-8
- Lesson 6-9 (2 days)
- Lesson 6-10
- Lesson 6-11
- Lesson 6-12
- Lesson 7-1
- Lesson 7-2
- Lesson 7-3
- Lesson 7-4
- Lesson 7-5
- Lesson 7-6 (if time permits)
- Lesson 7-7
- Lesson 7-8
- Lesson 7-9 (2 days)
- Lesson 7-10 (2 days)
- Lesson 7-11
- Lesson 7-12

Games:

- Stop and Go (Lesson 6-2): Adding and subtracting 2-digit numbers
- Roll and Record Doubles (Lessons 6-3, 6-4): Finding addition doubles
- Addition Top-It (Lesson 6-3): Solving addition facts and using relation symbols
- Domino Top-It (Lesson 6-5): Finding and comparing sums
- Fishing for 10 (Lessons 6-6, 6-10): Making combinations of 10
- Ten-Frame Top-It (Lesson 6-6): Comparing numbers represented on ten frames
- The Difference Game (Lesson 6-7): Reinforcing subtraction facts

- The Digit Game with 3-Digit Numbers (Lesson 6-10): Comparing numbers based on place value
- Penny-Dime-Dollar Exchange (Lesson 6-11): Exchanging ones for tens
- Base-10 Exchange (Lesson 6-11): Exchanging ones for tens
- Beat the Clock (Lesson 7-2): Using mental addition
- Subtraction Bingo (Lessons 7-2, 7-4): Subtraction facts
- Salute! (Lessons 7-3, 7-6): Adding and subtracting facts
- Top-It with Subtraction (Lesson 7-3): Subtracting facts using relation symbols
- Roll and Record Doubles (Lesson 7-3): Adding doubles facts
- Shaker Addition Top-It (Lessons 7-4, 7-10): Adding facts
- The Difference Game (Lesson 7-4): Subtracting facts
- Stop and Go (Lesson 7-5): Adding and subtracting 2-digit numbers
- Attribute Train (Lessons 7-6, 7-7): Comparing attributes
- Penny-Dime-Dollar Exchange (Lesson 7-7): Making place-value exchanges
- What's Your Way? (Lesson 7-8): Finding 10 more and 10 less than a number
- Tric-Trac (Lesson 7-10): Adding facts
- Time Match (Lesson 7-11): Telling time

Brain Pop, Jr.:

- Addition and Subtraction Fact Families
- Parts of a Clock

IXL

Read Alouds/Literature Links:

- Seaweed Soup (*by Stuart J. Murphy*)
- Windows, Rings, and Grapes (*by Brian P. Cleary*)
- It's a Shape! (*by M.W. Penn*)

Manipulatives Tool Kits (<https://www.hand2mind.com/item/individual-student-manipulative-kits-grades-k-2-set-of-4>)

Materials: See Unit 6 Materials List on page 494 of Teacher's Lesson Guide 2 for needs beyond manipulatives

See Unit 7 Material List on page 584 of Teacher's Lesson Guide 2 for needs beyond manipulatives

Additional Resource charts and tools:

- number line
- number grid
- tally charts
- ten frames
- blank bar graphs
- classroom analog clock

See Shared Drive First Grade/Math for additional resources to support units:

https://drive.google.com/drive/u/1/folders/0B1b4mf8z6FE-UmhUSUxzemRVZ2M?resourcekey=0-DWNrdgPPiT7uDqFqM_7Ogw

INTERDISCIPLINARY CONNECTIONS

- Technology/Multimedia: Educational Tech Applications
- Career Readiness: Utilize critical thinking to make sense of problems and persevere in solving them.

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.

- modify activity
- simplify directions
- check-ins
- visuals
- manipulatives
- graphic organizers
- sentence starters
- wait time
- additional time for tasks
- verbal responses
- illustrations