

Strategy: Add 2 and Subtract 2 – Grade 1

Big Ideas :

- Add 2: When 2 is added to a quantity, the sum is two counting numbers past the quantity
- Subtract 2: When 2 is subtracted from a quantity, the difference is the number that is two before the quantity
- The order of the addends does not change the sum
- Students may be at a counting all phase and the goal is to move to counting on from the larger addend or counting back for subtraction.

Prerequisite skills:

- One-to-one correspondence
- Cardinality
- Understands that addition is putting together and subtraction is taking away
- Kindergarten Curriculum Connections:
 - K.CC.4c: Understand that each successive number name refers to a quantity that is one larger. (0-10)
 - Although this standard does not specifically address one less, this should be a focus of instruction.
 - For fluency purposes, students should be able to name one more and one less up to 20. This can be done orally with phrases like “one more than 14 is 15,” “one less than 20 is 19,” “the next number would be _____,” “The number that comes before is _____.”
- K.OA.1: Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g. claps), acting out situations, verbal explanations, expressions, or equations.
 - In addition to other number combinations, be sure to include many examples of adding and subtracting one more and one less.

Direct Curriculum Connections:

- 1.OA.5: 1.OA.5: Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
- 1.OA.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 $6 + 6 + 1 = 12 + 1 = 13$).

Supporting Curriculum Connections:

- 1.OA.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.
- 1.OA.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.
- 1.OA.3: Apply properties of operations as strategies to add and subtract.
Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known (Commutative property of addition).
To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$ (Associative property of addition).
- 1.OA.4: Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8. Add and subtract within 20.
- 1.OA.7: Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.
- 1.OA.8: Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = _ - 3$, $6 + 6 = _$.

Instructional strategies:

- Literature Connection: Any counting book can be modified to target situations where 2 can be added or subtracted. The following is one example: [Splash!](#), by Ann Jonas
After reading the story with students, provide counters so that students can represent the following problems:
There were 6 creatures in the pond. 2 frogs jumped in. How many creatures are in the pond now?
There were 9 frogs in the pond and 2 frogs hopped out. How many frogs are still in the pond?
- Students should understand the idea of the commutative property, but are not expected to use that vocabulary. See *Mastering the Basic Facts in Addition and Subtraction* (O'Connell and SanGiovanni) pages 31-46 and use ideas that pertain to adding or subtracting two.
- Keep in mind that instruction may be different based on which phase the student exhibits
 1. If a student is at the modeling phase and begins counting with the smaller number your next instructional step would be to have them start at the larger number.
 2. If a student is relying on a number path to add or subtract two, the next instructional step would be to wean them from the number path and recognize it is the previous or next number in the counting sequence.

- Expose students to equations during instruction. Students should be able to write an equation to show their thinking to match models or pictures. However, students should not be spending time memorizing or solving equations through drill activities (i.e. flashcards and worksheets).
- Students should work with word problem structures that give students a context for adding or subtracting two (add to, take from, put together, take apart). The following are examples of word problems for this context:
7 kids were standing in a line. 2 more kids lined up with them. How many kids are in line now? (add to)
9 kids are in line. 2 kids went back to their seats. How many kids are in line now? (take from)
7 boys and 2 girls were playing a game together. How many children were playing the game? (put together)
9 children were playing a game. 7 of the children were boys. How many were girls? (take apart)
- Students should be able to show their thinking with an equation, but should also show their thinking using number bonds, part part whole mats, ten frames, math racks, etc. Using a combination of these tools will build an understanding of the strategy.
- Use Ten Frames and two sided counters. Present +2 number sentences for students to represent on a ten frame. To work with addends over 10, use a double tens frame.
- Flash a card that represents a number and students add on 2 more or subtract 2. What number is 2 more? What number is 2 fewer?

Dot Card Flash*[Print resource available](#)*

Digit Card Flash*[Print resource available](#)*

Ten Frame Flash*[Print resource available](#)*

Double Ten Frame Flash*[Print resource available](#)*

From Teaching Student-Centered Mathematics K-3 (Van de Walle), see pages 99-100.

Activity 4.1 (One-More/Two-More-Than Dice)

Activity 4.2 (One-More/Two-More-Than Match)

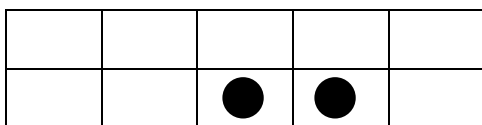
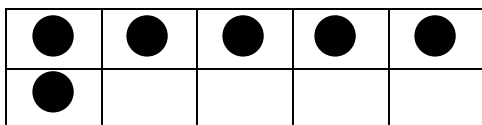
Activity 4.3 (Lotto for +1/+2)

- Number Talks (See *Number Talks* by Sherry Parrish)
 - Begin with the number talks on page 98-99 to build the idea of two more and counting on as opposed to counting all.
 - See examples on pages 99 that show a cluster of dots and two more dots.
 - See examples on page 101-102 that use rekenreks/math racks to show a set on top and two on the bottom or two on the top and a set on the bottom.
 - See examples on page 103-104 that use double ten frames to show a set on top and two on the bottom or two on the top and a set on the bottom.

- See examples on page 106 that use number sentences to show a string of problems that would be used to allow students to apply strategies they know to solve new problems. An example of a problem string would be $5+0$, $5+1$, $5+2$. Another example of a problem string would be $5+2$, $7+2$, $13+2$.

Resources to Support Instruction:

- Number bonds
 - Number Bond Cards (Addend of 2 missing) [*Print resource available*](#)
 - Number Bond Cards (Addend other than 2 missing) [*Print resource available*](#)
 - Number Bond Cards (Sum missing) [*Print resource available*](#)
- Flip cards
 - Begin with all dot cards and move to numeral and single dot to encourage counting on two from the larger number [*Print resource available*](#)
- Double Ten frames
 - Show students ten frames with a cluster of dots and one more dot in another position to find the total.



- Have students draw a number card, build that amount on the ten frame, and add two more to find the total.
- Have students draw a number card, build that amount on the ten frame, and take away two to find the difference.
- Number Paths to 20 (create)

Have students use a number path to solve problems such as $6+2$, $2+7$, $11+2$, $8-2$, $14-2$. Are students counting on from the greater addend?
- Games
 - I Spy 2 More ([Mastering the Basic Math Facts in Addition and Subtraction](#), p. 44)

Students search for dominoes with 2 dots on one side and another number on the other side. Students write the number sentence that is modeled by the domino. Students turn the domino around and write the new number sentence that is made to demonstrate the commutative property.

- Hop the Line (Mastering the Basic Math Facts in Addition and Subtraction, p. 44)
Students hop on a floor number line and use a number card and +2/-2 spinner [*Print resource available*](#) and hop the number sentence created.
- Dot Card Addition (Mastering the Basic Math Facts in Addition and Subtraction, p. 44)
Students take turns picking a dot card 1-10 and then spin a +2/-2 spinner and write/solve the number sentence created.
- Less or More Spin B (Nimble with Numbers, Gr. 1 & 2, pages 21-23)
- Capture Two (Nimble with Numbers, Gr. 1 & 2, p. 26)
- More or Less 1 (Nimble with Numbers, Gr. 1 & 2, p. 27)

Assessment:

- Asking the following questions may help assess a student's understanding of this strategy:
 - What is two more than seven?
 - What is two less than five?
 - What is seven plus two?
 - What is 13 minus two?
 - What is 18 take away two?
- Observation/Interview Recording Tool