AFT Innovation Fund Lesson Plan

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**Unit Title:** Strategies for adding a two-digit number and a one-digit number

**Subject:** Math **Grade Level:** 1

**Lesson #** 1 **Lesson Title:** Adding a two-digit number and a one-digit number using ten frames

**Common Core State Standard: 1.NBT.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 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.

**Standards for Mathematical Practices Identified for this Lesson:**

**Make sense of problems and persevere in solving them.**

**Reason abstractly and quantitatively.**

**Construct viable arguments and critique the reasoning of others.**

**Model with mathematics.**

**Use appropriate tools strategically.**

**Attend to precision.**

**Lesson Objectives: I CAN Statement(s):**

1. I CAN add a two-digit number and a1-digit number using ten

 frames.

1. I CAN use ones to make groups of ten.
2. I CAN write down and explain the steps that I followed as I used the concrete models or drawings to show how I added.
3. I CAN use concrete models or drawings to show a strategy based on place value to add a two-digit number and a 1-digit number.

**Essential Questions:**

1. How can I add a two-digit number and a one-digit number using ten frames?
2. Is there more than one way to make new groups of ten?
3. How does a digit’s position affect its value?

**Time needed:** 50 minutes

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| **Materials Required:*** ten frames
* counters
* laminated tens/ones T-chart (Appendix A)
* assessment (Appendices B & C)
* homework (Appendices D & E)
* vocabulary checklist (Appendix F)
* dry erase markers
* dry eraser
* chalkboard, easel or document camera (Elmo)
 | **Vocabulary:*** tens
* ones
* add
* composing ten
* 2-digit
* 1-digit
* story problem
* multiples of 10
* place value
* group of ten
* equal
* amount
* horizontal
* vertical
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**Bloom’s Taxonomy Levels of Objectives:**

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| Cognitive Domain |
|  | Evaluation | X | Application |
|  | Synthesis | X | Comprehension |
| X | Analysis |  | Knowledge |

**Introduction: “**We have used ten frames many times to add one-digit numbers like 6+3 or 5+2, but today we will use what we know about ten frames and making ten to add a two-digit number and a one-digit number. We will need to use more than one ten frame to do this. Let’s find out how. T. refers to first of two posters labeled “Today I CAN” and has S.s read I CAN statement along with her. T. asks S.s to predict what the concrete models for this lesson will be. Since ten frames were mentioned at the beginning of the introduction, S.s should be able to determine the concrete model with ease. Next, T. directs S.s to the Mathematical Practices chart on which the practices to be of particular importance for this lesson have been identified using highlighter tape. T. and S.s also read these together. (Reading I CAN statements and Mathematical Practices have become routine for the S.s by this time in the year, as it begins every math lesson every day. S.s have come to understand the meaning of the terminology because math vocabulary is used in discussion and writing daily.)

**Lesson Outline:**

1. S.s are directed to place an empty ten frame under both the tens and ones headings on the T-chart. T. projects one on the Elmo.
2. T. displays a written real-life situation story problem and asks the class reads along. “19 ducks were swimming in a pond. Then 6 more ducks flew into the pond. How many ducks are in the pond now?”
3. T. asks S.s to turn to their math partner and decide what the story problem is asking them to do. Possible answers may include, “ Find how many ducks there are all together.” “Add.” “Group the ducks together by making tens and then adding the leftover ones.”
4. T. directs S.s’ attention to the 2-digit number (19) in the problem and asks S.s to talk to each other about how the ten frames and tens/ones T-chart might help them solve the problem.
5. T. elicits strategies from various partners, asking them to demonstrate and explain their reasoning to their classmates. **If inaccurate reasoning or confusion results, T. models the strategy with the S.s following along, using steps 6 through 21.**
6. T. asks, “How can we use our counters and ten frames to show the two-digit number 19, which is the number of ducks that were first in the pond?”
7. S.s work collaboratively with partner to make 19 using 2 ten frames. T. asks successful partners to demonstrate for their classmates.
8. T. asks S.s where on the T-chart the complete ten frame should go and where the incomplete ten frame belongs. T. checks for accuracy.
9. T. reminds the students that 6 additional ducks flew into the pond and asks partners to consider where they would place 6 more counters. Conversation should revolve around the fact that there is not enough room to place them in the ten frame which already has 9 counters in it. If S.s do not suggest it, T. tells them they may use a third ten frame.
10. T. asks S.s to place the newly-created complete ten frame and the ten frame with 5 counters where on the T-chart they belong. T. checks for accuracy. ( See Figure 1)

Figure 1

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| **Tens** | **Ones** |
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 25 ducks |
| 2 tens + 5 ones = 2520 + 5 = 2510 + 10 + 5 = 25When we added 6 more ducks to 19 we put 1 one in the ten frame that had nine and then put the leftover ones in a new ten frame. |

1. T. directs partners to count the tens and ones to arrive at the number of ducks at the pond now. T. allows a group of partners to demonstrate counting to confirm check the answer and reminds S.s that the sum must also be labeled, as seen above.
2. T. asks partners to write an equation(s) to explain how they had added using tens frames.
3. T. asks partners to write a sentence to describe their math reasoning, similar to the one in Figure 1.
4. T. asks S.s to give a thumbs up, sideways or down to indicate if the ten frames helped them to meet today’s objective of adding a 2-digit number with a 1-digit number.

**Guided Practice:** T. asks partners to create their own story problem, reminding them that it must contain a two-digit and a one-digit number. T. circulates to ask and answer questions and to facilitate strategy use and conversation. Partners share their work with another set of partners and explain their reasoning. Repeat until S.s are able to use the ten frames without much T. guidance.

**Independent Practice:**  **Tiered assessment**

T. distributes an exit slip (See Appendices B and C). T. directs all students to complete number 1, and if time allows to complete challenge 2.

**Rubric for assessment:** One point each for correct use and placement of ten frames, correct equation, and sentence reasonably explaining math reasoning. Challenge question is used diagnostically to inform future instruction.

**Answer Key for Tiered Assessment: Side 1: 33 marbles, 3 tens + 3 ones = 33, 30 + 3 = 33, 25 + 8 = 33, Side 2: 7 marbles, 3 tens + 6 ones + 7 ones =43, 30 + 6 + 7 = 43**

**Answer Key for Homework: Side 1 : 36 muffins, 3 tens + 6 ones = 36, 30 + 6 = 36, 28 + 8 = 36. Side 2: 42 children, 4 tens + 2 ones = 42, 40 + 2 = 42, 37 + 5 = 42.**

**Learning Center:**

1. S.s write or dictate their own story problems, alone or with a partner, which involve 2-digit numbers added to 1-digit numbers.
2. S.s can write or dictate word problems involving missing addends involving 1-digit and 2-digit numbers.

**Additional Resources:**

1. The following websites can be accessed for further practice:

<http://www.ixl.com/promo?partner=google&phrase=sitelink_common-core-strand-practice&gclid=COXJupWK9bMCFayPPAodzTAAGA>

<https://www-k6.thinkcentral.com/ePC/start.do>

<http://nrich.maths.org/frontpage>

<http://www.mathlanding.org/>

<http://www.coolmath-games.com/>

1. Math Expressions Differentiated Instruction Cards
2. Intervention Level – Number Flash, Activity Card 4-13

On Level – Make a New Ten, Activity Card 4-13

Challenge – Faster than a Calculater, Activity Card 4-13

Intervention Level – Tens and Ones, Activity Card 4-15

On Level – Add to Totals, Activity Card 4-15

Challenge – Nines Pattern, Activity Card 4-15

**Technology Integration:** Document Camera, websites listed above as learning center activities

**Assessments:**

1. **Products:** Exit slip Rubric: One point each for correct use and placement of ten frames, correct equation, and sentence reasonably explaining math reasoning. Challenge question is used diagnostically to inform future instruction.
2. **Observations:** T. will observe student work during modeling, guided and independent practice. T. will observe the ease or difficulty of the S.s’ problem solving in order to make mid-lesson clarifications to insure understanding.
3. **Conversations:** Conversations will include teacher/student during modeling, partner conversations, teacher/partners, partner share out, and explanations of agreement or disagreement and reasoning. T. will be attuned to S.s’ use of key vocabulary, on-topic engagement, partner explanations, and peer/self evaluations of work products.

**Suggestions of modifying up or down for other grade levels within grade band:**

**Adaptation for Kindergarten:**

Teachers can adapt this lesson for kindergarteners by using ten frames to add two 1- digit numbers, some that would necessitate making ten. The use of the tens/ones T-chart would be eliminated.

**Adaptations for Second Grade:**

Teaches can adapt this lesson for second grade by using ten frames to add 3-digit numbers to 1-digit or 2-digit numbers, with or without regrouping. The chart should be adapted by adding a column for hundreds.

**If applicable – Accommodations for ELL or Exceptional Needs Students:** Partner groupings should be planned by the teacher to include heterogeneous abilities so peer collaboration is maximized.

**Homework:** See Appendices C and D.

**Research to support instructional strategies:**

Houghton Mifflin Math Expressions, Houghton-Mifflin Harcourt Publishing Co., 2009

Teaching Student-Centered Mathematics, Grades K-3, Vol. 1, by John A. Van de Walle and LouAnn H. Lovin, Pearson, New York, 2006

The Young Child and Mathematics by Juanita V. Copley, National Association for the Education of Young Children, Washington D.C., 2000

Do the Math by Marilyn Burns, Scholastic, New York, 2008

It Makes Sense: Using Ten Frames to Build Number Sense K-2 by Melissa Conklin, Math Solutions, Sausilito, 2010

**Related websites:**

<http://commoncoretools.files.wordpress.com/2011/04/ccss_progression_nbt_2011_04_073.pdf>

<http://www.hmheducation.com/on-core-mathematics/pdf/MATH_OC_TE_G1.pdf>

<http://www.readtennessee.org/math/teachers/k-3_common_core_math_standards/first_grade/number_operations_in_base_ten/1nbt4.aspx>

<http://ccss1.watchknowlearn.org/Category.aspx?CategoryID=8857>

<http://www.youtube.com/watch?v=Jq1C_sIm8Q4>

<https://ccgps.org/1.NBT_RKQ1.html>

<http://wiki.warren.kyschools.us/groups/wcpscommoncorestandards/wiki/fa0f5/1NBT4.html>

<http://www.myboe.org/cognoti/content/file/resources/documents/ca/ca84285e/ca84285ee449bdeffe2d16973bfd38683dba696d/downloadedfile_4767250468492220493_NYCDOEG1MathNinasNumbers_Final.pdf>

<https://grade1commoncoremath.wikispaces.hcpss.org/1.NBT.4>

<http://www.parcconline.org/>

<http://www.achievethecore.org/>

<http://www.coedu.usf.edu/main/departments/sped/mathvids/understanding/understanding.html>

<http://www.nctm.org/profile/changes_confirm.aspx>

<http://mathsolutions.com/>

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| **Tens** | **Ones** |
|  |  **\_\_\_\_\_\_\_ \_\_\_\_\_\_** **label** |
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**Appendix A: Tens/Ones Chart for Laminating**

**Appendix B: Tiered assessment side 1**

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| **Name** |
| **Solve the problem. Write an equation to match your work. Write a sentence to explain your work.** |
| **Tom had 25 marbles. His mom gave him 8 more. How many marbles did Tom have now?** |
| **Tens** | **Ones** |
|  |  **\_\_\_\_\_\_\_ \_\_\_\_\_\_** **label** |
|  |  |

**Appendix C: Tiered Assessment side 2**

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| **Name** |
| **Solve the problem. Write an equation to match your work. Write a sentence to explain your work.** |
| **Latisha has 43 marbles. She put 36 of the marbles in a box. She put the rest in her pocket. How many are in Latisha’s pocket?** |
| **Tens** | **Ones** |
|  |  \_\_\_\_\_\_ \_\_\_\_\_\_ **label** |

**Appendix D: Homework side 1**

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| **Name** |
| **Solve the problem. Write an equation to match your work. Write a sentence to explain your work.** |
| **The man at the bakery baked 28 muffins. Then he baked 8 more. How many muffins does he have to sell altogether?** |
| **Tens** | **Ones** |
|  |  **\_\_\_\_\_ muffins** |
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**Appendix E: Homework side 2**

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| **Name** |
| **Solve the problem. Write an equation to match your work. Write a sentence to explain your work.** |
| **37 children were jumping rope in the playground. 5 more children came to jump too. How many children were jumping rope in all?** |
| **Tens** | **Ones** |
|  |  **\_\_\_\_\_ children** |
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**Appendix F: Math Vocabulary Checklist**

**Anecdotal Record of Math Vocabulary used by Students With Lesson #1 (Can be used for individual, group or class record)**

**Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lesson\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class \_\_\_\_\_ Group\_\_\_\_\_\_ Student\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Key Vocabulary Word** | **Tally** |
| **tens** |  |
| **ones** |  |
| **add** |  |
| **composing ten** |  |
| **2-digit** |  |
| **1-digit** |  |
| **story problem** |  |
| **multiples of 10** |  |
| **place value** |  |
| **group of ten** |  |
| **equal** |  |
| **amount** |  |
| **horizontal** |  |
| **vertical** |  |