

Grade 1 Lesson Plan: 1.OA.A.1, Operations & Algebraic Thinking - Use Addition and Subtraction Within 20 to Solve Word Problems.

(This lesson should be adapted, including instructional time, to meet the needs of your students.)

Background Information	
Content/Grade Level	Mathematics/Grade 1 Domain: 1.OA-Operations and Algebraic Thinking Cluster: Represent and Solve Problems involving Addition and Subtraction
Unit/Cluster:	Understand and apply addition & subtraction to solve word problems within 20.
Essential Questions/Enduring Understandings Addressed in the Lesson	<p>Essential Questions</p> <ul style="list-style-type: none"> • Why do I need mathematical operations? • How do mathematical operations relate to each other? • How do I know which mathematical operation (+, -) to use? • How do I decide which representation to use when solving problems (concrete manipulatives, pictures, words, or equations)? • How do I know which computational method (mental math, estimation, paper and pencil, and calculator) to use? • What is meant by equality in mathematics? • How do I know where to begin when solving a problem? • How does explaining my process help me to understand a problem's solution better? • How do I decide which strategy will work best in a given problem situation? • What do I do when I get stuck? • How do I know when a result is reasonable? • What is the relationship between solving problems and computation? • Why is the ability to solve problems the heart of mathematics? • What are efficient methods for finding sums and differences? • What questions can be answered using addition and/or subtraction? <p>Enduring Understandings</p> <ul style="list-style-type: none"> • Operations create relationships between numbers. • The relationships among the operations and their properties promote computational fluency. • Real world situations can be represented symbolically and graphically. • There can be different strategies to solve a problem, but some are more effective and efficient than others. • The context of a problem determines the reasonableness of a solution. • The ability to solve problems is the heart of mathematics. • The problem in front of you is a member of a larger class of problems. • Computation involves taking apart and combining numbers using a variety of approaches.

	<ul style="list-style-type: none"> • Flexible methods of computation involve grouping numbers in strategic ways. • Proficiency with basic facts aids estimation and computation of larger and smaller numbers.
<p>Standards Addressed in This Lesson</p>	<p>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, drawing, and equations with a symbol for the unknown number to represent the problem.</p> <p>Teacher Notes: The information in this component provides additional insights which will help the educator in the planning process for the unit.</p> <ul style="list-style-type: none"> • Review the Progressions for Grades K-5 Counting and Cardinality; K-5 Operations and Algebraic Thinking at http://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf to see the development of the understanding of addition and subtraction as stated by the Common Core Standards Writing Team, which is also the guiding information for the PARCC Assessment development. • When implementing this unit, be sure to incorporate the Enduring Understandings and Essential Questions as a foundation for your instruction. • See Table 1 on page 88 of the Common Core State Standards to see explanations and examples of the various addition and subtraction situations that students should experience during this unit at http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf, and page 7 of the Progressions for Grades K-5 Counting and Cardinality; K-5 Operations and Algebraic Thinking (see link above). • It is vital that students have many varied experiences building number sentences (equations) through the use of concrete manipulatives. This incorporates the tactile, visual, and abstract experiences and assists in developing conceptual understanding. • Continue to develop number sense by reinforcing early number relationships. These early number relationships include but are not limited to anchors to 5 and 10, part-part-total, one more/two more/one less/two less, and spatial relationships. Students should be able to decompose numbers and see 12 as $6 + 6$, $5 + 7$, $4 + 8$, etc. • It is important for students to view number sentences (equations) in two ways throughout all instruction: $7 + 8 = 15$ and $15 = 7 + 8$. This helps to eliminate the misunderstanding that the answer <u>always</u> follows the equal sign.

	<ul style="list-style-type: none"> • As students work with concrete materials to solve problems, they should begin to record their problem and then the solution in an equation. For example, if Ted caught 6 fish and Sally caught 5 fish, how many fish did they catch all together? A student might write one of these equations to represent the problem: <ul style="list-style-type: none"> ○ $5 + 6 = ?$ ○ $6 + 5 = ?$ ○ $? = 6 + 5$ ○ $? = 5 + 6$ • When working with three addends, encourage the students to decide which two of the three are best to add together first, adding the remaining one last. For example, when adding $6 + 7 + 4$, it is much easier to add the 6 and 4 first to get the benchmark number of 10 and then add the 7 to 10 to get 17. Choose problems carefully for students. For example, determine if you wish to focus on using doubling and halving, or on using landmark numbers. Specific types of problems typically elicit certain strategies. • Focusing on ‘Key Words’ limits a child’s ability to successfully solve problems since it locks them into one and only one approach, which is not necessarily the best for that problem, and possibly not even correct. • Classroom discussions, “think-alouds”, and recording students’ ideas as they share them during group discussions are integral in developing algebraic thinking as well as building on students’ computational skills. It is important to record a student’s method for solving a problem both horizontally and vertically.
Lesson Topic	Solve story problems using the processes of addition and subtraction within 20.
Relevance/Connections	<p>It is critical that the Standards for Mathematical Practice are incorporated in ALL lesson activities throughout the unit as appropriate. It is not the expectation that all eight Mathematical Practices will be evident in every lesson. The Standards for Mathematical Practice make an excellent framework on which to plan your instruction. Look for the infusion of the Mathematical Practices throughout this unit.</p> <p>Connections outside the cluster:</p> <ul style="list-style-type: none"> • 1.OA.B.3: Apply properties of operations as strategies to add and subtract. <i>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 $2 + 6 + 4 = 2 + 10$ which equals 12</i>

	<p><i>(Associative property of addition).</i></p> <ul style="list-style-type: none"> • 1.OA.B.4: Understand subtraction as an unknown-addend problem. <i>For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.</i> • 1.OA.C.5: Relate counting to addition and subtraction (e.g. by counting on 2 to add 2). • 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 know equivalent $6 + 6 + 1 = 12 + 1 = 13$). • 1.OA.D.7: Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. <i>For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.</i> • 1.OA.D.8: Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = ? - 3$, $6 + 6 = ?$</i>
Student Outcomes	<p><u>Students will:</u></p> <ul style="list-style-type: none"> • Understand that $b + a = c$, if they know $a + b = c$. • Combine pairs of numbers that make 20 or less or easy combinations within a larger problem to arrive at the solution efficiently. • Quickly solve $c - a = ?$ by making it a missing addend problem of $a + ? = c$. • Explain how they solved the problem or identify the strategy used to solve the problem. • Use manipulatives to model the strategies used to solve the problem. • Justify their solution by using concrete materials to model the problem and solution. • Identify different ways to solve the same problem. • Identify the most efficient strategy to use when solving a problem and explain why it was chosen. • Solve Result Unknown, Change Unknown, and Start Unknown problems using addition, subtraction, and comparison situations.
Prior Knowledge Needed to Support This Learning	<p>Students in Kindergarten:</p> <ul style="list-style-type: none"> • Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

	<ul style="list-style-type: none"> • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects, drawings, and mental math to represent the problem. • Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects, drawings, and mental math and then record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$). • When given any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects, drawings, and mental math and then record the answer with a drawing or equation. • Fluently add and subtract within 5. (Students in Kindergarten work with addition and subtraction to 10 but must be fluent up to 5.)
Method for determining student readiness for the lesson	Distribute two-color counters to each student. Ask the students to make as many different combinations for 8 using the counters as they can and record them on paper. Those who struggle with this activity may need additional experience and support prior to the lesson.

Learning Experience		
<i>Component</i>	<i>Details</i>	<i>Which Standards for Mathematical Practice(s) does this address? How is the Practice used to help students develop proficiency?</i>
Warm Up	<p>TEACHER NOTES:</p> <ul style="list-style-type: none"> • This is a multi-day lesson. The timing will be determined by the students' demonstration of understanding during the activities. • The Open-ended questions in each section will have multiple answers, not just a single answer. Encourage students to find as many of them as they can. <p>Pass out picture cards of two different animals (see Resource Sheets 1A&B). Students will role-play through the story problem pretending to be the animals. Teacher should lead a discussion of what is taking place and highlight math vocabulary such as join together, add to. Prompt students to generate a numeric equation to answer the question "How many animals are there?"</p>	<p>SMP 4 Model with Mathematics Students represent the equation through role-play of animals and equation.</p> <p>SMP 5 Use appropriate tools strategically Students use picture cards or stuff animals to represent the problem and display a solution.</p>

Learning Experience		
	<p>Read the following story problems: <i>There were four tigers in the grass and three elephants in the river. How many animals are there in all?</i></p> <p>Have four students who are holding the tiger pictures come to the front of the room along with three students who are holding the elephant pictures. Ask them to act out the problem as you reread it. Ask the class to discuss the solution. Ask how they would write an equation to represent this story. Be sure to share both possibilities:</p> <ul style="list-style-type: none"> • $4 + 3 = ?$ • $? = 4 + 3$ 	
Motivation	<p>Read story: <u>Animals on Board</u> by Stuart J. Murphy or any book that relates to animals and addition and subtraction methods.</p> <p>Highlight pages 9 and 13 and discuss the pictures and equations to incorporate math vocabulary such as 'sum' and 'joining together'.</p>	
<p>Activity 1</p> <p>UDL Components</p> <ul style="list-style-type: none"> • Multiple Means of Representation • Multiple Means for Action and Expression • Multiple Means for Engagement <p>Key Questions Formative Assessment Summary</p>	<p style="text-align: center;">Result or Total Unknown</p> <p>UDL Components</p> <ul style="list-style-type: none"> • Representation is present through the use of role-playing and through visual models. • Expression is present in the activity through the use of manipulatives and work mats. • Engagement is present in the activity through the solving of story problems through the use of various strategies. <p>Differentiation: The expectation is that students are able to solve story problems within 20. After completion of Activity 1 and teacher observation, modify your numbers to meet the needs of your students.</p> <p>Students will work to solve 'Result and Total Unknown' problems.</p> <p>In this activity students will solve word problems using connecting cubes, counters, base ten materials, or other appropriate manipulatives. The use of Resource Sheet 2: Part-Part-Total mat will help reinforce the joining of sets.</p>	<p>SMP 1 Make sense of problems and persevere in solving them. Students will have to determine the start of a problem and find the change unknown.</p> <p>SMP 2 Reason abstractly and quantitatively. Using the manipulatives, they can show the different ways to combine and separate groups.</p> <p>SMP 3 Construct Viable Arguments and critique the reasoning of others. Students will compare models and equations with each other and discuss the reasonableness of their classmates' strategies. They need to understand that there are multiple solutions to a problem.</p>

Learning Experience

Display this word problem for students on chart paper or an interactive whiteboard. It is NOT expected that the students would name the type of problem. Their job is to make sense of each problem and solve it. For a full listing of problem types, see: http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Example 1:

A truck was carrying 7 horses. Another truck passed by carrying 4 horses. How many horses were on both trucks?

Allow time for 'Think-Pair-Share' prior to students working on the problem to help them visualize and comprehend what is essential for them to solve.

Think-Pair-Share Discussion Questions:

While leading this discussion, incorporate the use of visuals or models.

- How many trucks are there?
- What is on each truck?
- What are we solving for? (Be sure you help students identify that the unknown can be represented with a box or a question mark.)
- What is our unknown? (Show students a box or question mark that highlights that this is the unknown.)

Distribute manipulatives and Resource Sheet 2: Part-Part-Total Mat to students. While students are working to solve the problem, the teacher should monitor student progress.

While solving, students should participate in peer discussions based on the following questions:

- What are you solving for?
- How are the numbers represented on your part-part-total mat?
- What is the missing number?

Students will demonstrate the solution for the word problem using manipulatives or some virtual representation.

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The teacher should then prompt students to use Resource Sheet 3: Number Cards or dry erase markers to record numbers in the form of an equation on their part-part-total mats. (It would work best to laminate the part-part-total mats or place them in a sleeve. See Resource Sheet 2: Part-Part-Total Mat.)

The teacher should then initiate a discussion with the whole class, identifying equations created by the students and highlighting the vocabulary terms of 'joining together' and 'sum'.

Example 2:

There were 11 black bears at the zoo. 5 of the bears took a nap. How many bears were awake?

Ask the students how this problem is different from the first one? What operation would you use to find the answer? Could you use either addition or subtraction? (Students should see that you could use either $11 - 5 = ?$ or $5 + ? = 11$. Allow time for students to solve the problem and share their solutions.

Ask them to use the Resource Sheet 3A&B: Number Cards or dry erase markers to record the equation for their solution. Allow time for students to share these equations.

Example 3: (Open-ended problem with more than one solution)
Some bears were sitting under a big tree. 3 bears came over to join them. How many bears are under the big tree now?

Allow time for students to create as many different solutions as they can, recording them in pictures and/or equations. Allow time for students to share their solutions. Record a 'Class Set of Solutions' to display for future reference. Talk to see if all of the possible solutions have been found. Why or why not?

Several more story problems may be used to provide students with more practice, if needed. See Resource Sheet 4 for additional

Learning Experience		
	<p>'Result or Total Unknown' story problems.</p> <p>Formative Assessment: Observe students as they work. Record your findings on Resource Sheet 9: Teacher Checklist. Distribute Resource Sheet 10: Exit Ticket to each student.</p>	
<p>Activity 2</p> <p>UDL Components</p> <ul style="list-style-type: none"> • Multiple Means of Representation • Multiple Means for Action and Expression • Multiple Means for Engagement <p>Key Questions Formative Assessment Summary</p>	<p style="text-align: center;">Change or Addend Unknown</p> <p>UDL Components</p> <ul style="list-style-type: none"> • Representation is present through the use of role-playing and through visual models. • Expression is present in the activity through the use of manipulatives and work mats. • Engagement is present in the activity through the solving of story problems through the use of various strategies. <p>Differentiation: The expectation is that students are able to solve story problems within 20. After completion of Activity 2 and teacher observation, modify you numbers to meet the needs of your students.</p> <p>Note: Please refer back to <u>Animals On Board</u> by Stuart J. Murphy.</p> <p>Students will work to solve 'Change Unknown and Addend' Unknown' problems. Students will solve word problems by finding the missing number. The teacher should display a word problem that requires students to find the missing addend.</p> <p>Begin by showing students only page 8 of <u>Animals on Board</u>. Then display the story problem.</p> <p>Example 1: There are 2 tigers sitting on a truck. Some more tigers jump on the truck. Now there are 5 tigers on the truck. How many tigers jumped on the truck?</p> <p>Ask the students what they know from the problem and what they</p>	<p>SMP 1 Make sense of problems and persevere in solving them. Students will have to determine the start of a problem and find the change unknown.</p> <p>SMP 2 Reason abstractly and quantitatively. Using the manipulatives, they can show the different ways to combine and separate groups.</p> <p>SMP 3 Construct Viable Arguments and critique the reasoning of others. Students will compare models and equations with each other and discuss the reasonableness of their classmates' strategies. They need to understand that there are multiple solutions to a problem.</p>

Learning Experience

are looking for?

Allow time for students to solve this word problem using connecting cubes, counters or other appropriate manipulatives. The use of Resource Sheet 2: Part-Part-Total mat will help students understand and visualize the missing addend.

Next have students share strategies used to solve the problem with others (whole or small groups).

The teacher should be recording appropriate strategies students used to solve their problems on chart paper or an interactive whiteboard. This will help students understand that there are multiple ways to solve problems.

The teacher should then prompt students to use Resource Sheet 3A&B: Number Cards or dry erase markers to record numbers in the form of an equation on their part-part-total mats. (It would work best to laminate the part-part-total mats or place them in a sleeve. See Resource Sheet 2)

Example 2:

There are 13 swans on the lake. Some flew away. Now there are 6 swans left on the lake. How many swans flew away?

Repeat procedures above. Again, allow time for students to discuss what they know from the problem and what they need to find. After they have solved the problem and created an equation, allow time for them to share their thinking and look at the different strategies used by their fellow classmates.

Example 3: (Open-ended problem)

There were 20 swans on the lake. Less than half of the swans flew away. How many swans could still be on the lake?

Allow time for students to work with the part-part-whole map and manipulatives to model possible solutions. Ask them to record their solutions as equations.

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	<p>Allow time for students to share their solutions in pairs, small groups, or with the whole class.</p> <p>For further practice:</p> <ul style="list-style-type: none"> Refer to http://www.k-5mathteachingresources.com/1st-grade-number-activities.html within 1.OA.A.1 see 'Bunk Bed Problem'. Allow students to play 'Ace of Numbers' game either on the web at http://www.fuelthebrain.com/Game/play.php?ID=1 or use Resource Sheet 8: Ace of Number Game for their use at a center. <p>Several more story problems may be used to provide students with more practice, if needed. See Resource Sheet 5 for additional 'Change or Addend Unknown' story problems.</p> <p>Formative Assessment: Observe students as they work Use Resource Sheet 9: Teacher Checklist, to keep track of student understanding and to guide future instruction.</p> <p>Closure: Math Journal Activity: Ask students to write or draw a story problem with an unknown addend.</p> <p>Allow time for students to trade their problems with a partner and solve. Students should be given time to share their strategies and solutions. If needed, students work in pairs to create the problems and then share with other pairs of students.</p>	
<p>Activity 3</p> <p>UDL Components</p> <ul style="list-style-type: none"> Multiple Means of Representation Multiple Means for Action and Expression 	<p style="text-align: center;">Start Unknown</p> <p>UDL Components</p> <ul style="list-style-type: none"> Representation is present through the use of role-playing and through visual models. Expression is present in the activity through the use of manipulatives and work mats. Engagement is present in the activity through the solving of story problems through the use of various strategies. 	<p>SMP 1 Make sense of problems and persevere in solving them. Students will have to determine the start of a problem and find the change unknown.</p> <p>SMP 2 Reason abstractly and quantitatively. Using the manipulatives, they can show the different ways to combine</p>

Learning Experience

- Multiple Means for Engagement
- Key Questions
Formative Assessment
Summary

Students will work to solve 'Start Unknown' problems.

Pose the following problem to the students and allow time for them to share their thinking.

Example 1:

The red truck headed to the circus with some bears on it. The green truck headed to the circus with 3 bears on it. A total of 11 bears are headed to the circus. How many bears are on the red truck?

Ask students to share what they know from hearing the problem. Allow time for them to share their thinking.

Then ask what they need to find. Again, allow time for the students to share their ideas.

Provide time for them to use their manipulatives and part-part-total mats to explore the problem and arrive at a solution.

Again, allow time for students to share their different strategies and solutions with partners and/or the whole group.

Finally, ask the students if their answer could be more than the 11 bears being taken to the circus. Why or why not?

Teachers should record appropriate strategies on a chart for students to refer back to at a later time when solving problems of similar types.

Allow time for students to write an equation to represent the problem.

Example 2:

There was a basket of apples in the bear cage. The bears ate 5 apples. There were 7 apples left in the basket. How many apples were in the basket before they started eating?

Repeat procedure from above, allowing time for students to share their solutions and reasoning.

Example 3: (Open-ended problem)

There were giraffes on the grass. An even number of giraffes ran

and separate groups.

SMP 3 Construct Viable Arguments and critique the reasoning of others. Students will compare models and equations with each other and discuss the reasonableness of their classmates' strategies. They need to understand that there are multiple solutions to a problem.

Learning Experience

	<p>over to join them. Then there were 13 giraffes. How many giraffes could have been on the grass to begin with?</p> <p>Repeat procedure from above, allowing time for students to find as many solutions as possible and share with the class. Compare strategies used by different students during the discussion.</p> <p>Several more story problems may be used to provide students with more practice, if needed. See Resource Sheet 6 for additional 'Start Unknown' story problems.</p> <p>Formative Assessment: Observe students as they work Use Resource Sheet 9: Teacher Checklist, to keep track of student understanding and to guide future instruction.</p> <p>Closure: Ask students to work in pairs to create a story problem with a start unknown. Ask them to be prepared to act it out for their classmates using manipulatives or stuffed animals (if available). Then ask the classmates to write an equation to match their problem.</p>	
<p>Activity 4</p>	<p style="text-align: center;">Compare</p> <p>UDL Components</p> <ul style="list-style-type: none"> • Representation is present through the use of role-playing and through visual models. • Expression is present in the activity through the use of manipulatives and work mats. • Engagement is present in the activity through the solving of story problems through the use of various strategies. <p>Students will work to solve 'Compare' problems.</p> <p>Pose the following problem to the students and allow time for them to share their thinking.</p> <p>Example 1: There were 14 bears on the red truck and 8 bears on the green</p>	<p>SMP 1 Make sense of problems and persevere in solving them. Students will have to determine the start of a problem and find the change unknown.</p> <p>SMP 2 Reason abstractly and quantitatively. Using the manipulatives, they can show the different ways to combine and separate groups.</p> <p>SMP 3 Construct Viable Arguments and critique the reasoning of others. Students will compare models and equations with each other and discuss the reasonableness of their classmates' strategies. They need to understand that there are multiple solutions</p>

Learning Experience

truck. How many more bears were on the red truck?

Allow time for students to solve the problem using manipulatives and the part-part-total mat. Ask them to record their solutions using an equation. Ask if the solution could be a number larger than 14. Have students share the strategies they used to arrive at their solutions. Discuss the fact that they are comparing the number of bears in each truck.

Example 2:

The bears were eating lunch one day at the zoo. The brown bear had 3 apples left and the black bear had 7 apples left to eat. How many fewer apples does the brown bear have left to eat than the black bear?

Again, allow time for students to solve the problem using manipulatives and the part-part-total mat. Ask them to record their solutions using an equation. Ask if the solution could be a number larger than 7. Have students share the strategies they used to arrive at their solutions. Discuss the fact that they are comparing the number of apples each bear has left.

Example 3: (Open-ended problem)

Mary has more apples than Julie. How many more apples does Mary have? Together they have 18 apples.

Again, allow time for students to solve the problem using manipulatives and the part-part-total mat. Ask them to record their solutions using an equation. As students share their solutions, record them on chart paper or an interactive whiteboard. Have students share the strategies they used to arrive at their solutions. Ask the students to determine if the list includes all possible solutions to the problem.

Several more story problems may be used to provide students with more practice, if needed. See Resource Sheet 7 for additional 'Compare' story problems.

Formative Assessment:

to a problem.

Learning Experience		
	<p>Choose a problem from Resource Sheet 4, 5, 6, and/or 7 to use as an Exit Ticket.</p> <p>Closure: Have students share some of the strategies that they used to solve the 'compare' problems. Notice that there are different strategies that can be used to solve the problems and get the same solutions.</p>	
Closure	Included in each activity is a formative assessment activity as well as closure procedures.	

Supporting Information		
<p>Interventions/Enrichments</p> <ul style="list-style-type: none"> • Special Education/Struggling Learners • ELL • Gifted and Talented 	<ul style="list-style-type: none"> • To help students comprehend story problems and to understand what the words actually say, place each sentence on a sentence strip. When displaying the story problem, walk students through each sentence asking what each sentence states, what they know, and what they need to know. Help students to visualize what is being said. Have students act out the problem using props or manipulatives. • For students who are struggling with addition and subtraction to 20, use problems from Resource Sheet 11A&B: How Many More/How Many Fewer which uses sums & differences to 10. • For enrichment, see Lesson Seed 1.OA.A.1-2, Visiting a Restaurant. • For enrichment, focus more on open-ended problems and higher order questions. Additional interventions and enrichments will be added as available. 	
Materials	<ul style="list-style-type: none"> • Resource Sheets 1A&B: Tiger & Elephant Picture Cards • <u>Animals on Board</u> by Stuart J. Murphy • Resource Sheet 2: Part-Part-Total Mat • Resource Sheet 3A&B: Number Cards • Resource Sheet 4: Additional Story Problems – Result or Total Unknown • Resource Sheet 5: Additional Story Problems – Change or Addend Unknown • Resource Sheet 6: Additional Story Problems – Start Unknown • Resource Sheet 7: Additional Story Problems – Compare • Resource Sheet 8: Ace of Number Game • Resource Sheet 9: Teacher Checklist • Resource Sheet 10: Exit Ticket • Resource Sheet 11A&B: How Many More/How Many Fewer 	

	<ul style="list-style-type: none"> • Two-Color Counters, connecting cubes, base ten materials, or virtual manipulatives • Chart paper or interactive whiteboard • Dry erase markers
Technology	Virtual manipulatives should be provided when possible.
Resources (must be available to all stakeholders)	<u>Animals on Board</u> by Stuart J. Murphy http://www.fuelthebrain.com/Game/play.php?ID=1 – Interactive website with ‘Ace of Numbers’ game http://schools.nyc.gov/documents/teachandlearn/ss/census/Grade_1_GT_Curriculum_Edit_09_1_final.pdf Gifted and talented resource from NYC Department of Education. http://www.k-5mathteachingresources.com/1st-grade-number-activities.html The Bunk Bed problem from Illustrative Mathematics. http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf Common Core Standards



Tiger



Elephant

Part-Part-Total Mat

Number Cards

0	1	2	3
4	5	6	7
8	9	10	11

12	13	14	15
16	17	18	19
20	+	-	=

<p>At recess 6 friends were playing catch together and 11 friends were playing baseball. How many friends were playing at recess?</p>	<p>Rosa bought 9 puzzle books at the Book Fair. She bought 7 story books too. How many books did Rosa buy at the Book Fair?</p>
<p>Greg had 20 grapes in his lunchbox. He ate 6 on the way to school. How many grapes did he have for lunch?</p>	<p>Miss Snow had 17 games on the shelf in her classroom. If her students used 8 of them during recess, how many were still on the shelf?</p>
<p>Matthew has 9 toy cars. His brother, Michael, has some toy cars too. How many could they have together if they have less than 20?</p>	<p>Georgia has 8 stickers. Maria has less than half as many. How many stickers could they have?</p>

<p>There were 8 girls playing in the gym. Some boys were playing in the gym too. There are 14 students in the gym. How many boys were in the gym?</p>	<p>Levi read 6 books last week. He read more books this week. He read a total of 11 books. How many books did he read this week?</p>
<p>Sophia baked 5 pies for the Bake Sale on Saturday. She baked some more pies on Sunday. She made a total of 13 pies for the Fair. How many pies did she bake on Sunday?</p>	<p>Eli scored 4 points in the basketball game. Luis scored some more points. If they scored 18 points, how many points did Luis score?</p>
<p>Julie and Lucy made bracelets for their friends. They made less than 20 bracelets. If they each made the same number of bracelets, how many could they make?</p>	<p>Ellie has 7 fish at her house. Max has more fish than Ellie. Together they have less than 20 fish. How many fish could Max have?</p>

The pet store had some dogs and cats. There were 8 cats. There were 15 cats and dogs. How many dogs did the pet store have?

Bella gave her brother 9 nickels from her piggy bank. She has 11 nickels now. How many nickels did she have before she shared with her brother?

Anna had some red bows for her hair. She had 6 green bows too. She had 12 bows. How many red bows did she have?

Logan made cupcakes for the class. The class ate 17 cupcakes. There were 3 left. How many cupcakes did Logan make?

Mr. Roberts took less than 20 pictures of his students. There were 5 more pictures of boys than of girls. How many pictures could there be of girls and how many pictures were there of boys?

Farmer Brown had between 15 and 20 animals on his farm. He had 4 sheep and some pigs. How many pigs could he have?

<p>Sam had 12 baseball cards. Liam had 9 baseball cards. How many more baseball cards did Sam have?</p>	<p>Maya mailed 19 postcards to friends. Katie mailed 6 postcards to friends. How many fewer postcards did Katie mail?</p>
<p>There were 7 lions in the zoo. There were 14 tigers in the zoo. How many more tigers were there than lions?</p>	<p>There were 13 tennis balls in the gym. There were 9 baseballs in the gym. How many fewer baseballs were there than tennis balls?</p>
<p>There are some pears and apples on the table. There are 9 more pears than apples. There are less than 20 pears and apples. How many of each could there be?</p>	<p>There are less than 20 cookies and brownies on the plate. There are twice as many cookies as brownies. How many cookies and how many brownies could there be?</p>

Ace of Number Game Directions, Equation Cards, and Teacher Discussion Questions

Materials:

Deck of playing cards with numbers 1-10 and Aces (aces = 1)

Game Mat

Addition Equation Cards or Subtraction Equation Cards (one set per pair of students, laminated if possible)

Directions:

The object of this game is to be the first to lay down the card that would complete the problem on the Equation Card.

The dealer shuffles the number cards and deals out 7 to each player.

The dealer then shuffles the equation cards. Player one chooses an Equation Card and lays it face up in the middle of the table.

The first player to lay down the correct playing card keeps the Equation Card.

If neither player has a card that completes the equation, both players pass and choose another equation card.

Play continues until one partner has collected 5 Equation Cards.

For example, if the equation is $12 = 10 + \underline{\hspace{2cm}}$, the first play to lay down a 2 would keep the Equation Card.

Variation:

Aces are wild cards.

Mix up the cards so students can play both the addition and subtraction version of the game.

This game has been adapted from <http://www.fuelthebrain.com/Game/play.php?ID=1> – Interactive website with ‘Ace of Numbers’ game.

Resource Sheet 8 (Page 2 of 6) **Ace of Number Addition Equation Cards**

$$11 = 4 + \underline{\quad}$$

$$3 + \underline{\quad} = 6$$

$$9 + \underline{\quad} = 15$$

$$18 = \underline{\quad} + 13$$

$$14 + \underline{\quad} = 18$$

$$13 = 7 + \underline{\quad}$$

$$\underline{\quad} + 9 = 11$$

$$16 + \underline{\quad} = 17$$

$$11 = \underline{\quad} + 9$$

Ace of Number Addition Equation Cards

$19 = 10 + \underline{\quad}$

$5 + \underline{\quad} = 15$

$8 + \underline{\quad} = 16$

$\underline{\quad} = 7 + 8$

$20 = 15 + \underline{\quad}$

$3 + \underline{\quad} = 11$

$6 + \underline{\quad} = 13$

$17 + \underline{\quad} = 18$

$12 = \underline{\quad} + 8$

$20 - \underline{\quad} = 15$	$8 = 9 - \underline{\quad}$	$13 - 10 = \underline{\quad}$
$19 - 12 = \underline{\quad}$	$13 - \underline{\quad} = 9$	$12 - \underline{\quad} = 6$
$\underline{\quad} = 14 - 6$	$\underline{\quad} = 11 - 1$	$11 - \underline{\quad} = 8$

Ace of Number Subtraction Equation Cards

$18 - \underline{\quad} = 9$

$10 - \underline{\quad} = 8$

$16 - 5 = \underline{\quad}$

$14 - \underline{\quad} = 7$

$17 = 20 - \underline{\quad}$

$13 = 17 - \underline{\quad}$

$12 - \underline{\quad} = 10$

$17 - 7 = \underline{\quad}$

$12 = 17 - \underline{\quad}$

Resource Sheet 8 (Page 6 of 6) **Ace of Number Teacher Discussion Questions**

- What strategies did you use to find the unknown? (Note which students use 'think addition' to solve, which 'count on' or 'count back', and which students have memorized their basic facts to guide further instruction).
- Which numbers do you find easier to combine?

After students have played the game several times, the game can be sent home as homework. The game can be left in the math center and students can play the addition or subtraction version throughout the school year.

Name _____

Date _____

Resource Sheet 10

Exit Ticket

Story Problem	Drawing or Model	Equation
<p>There were 7 horses in the barn. There were 6 horses in the field. How many horses were there?</p>		
<p>Dad baked 18 cookies. My brother and I ate 9 of them. How many cookies were left?</p>		

How Many More/How Many Less?

How Many More Tasks:

Jack has 4 cookies and Jill has 7. How many more cookies does Jill have than Jack?

Eduardo cooked 9 pizzas. Sally cooked 4. How many more pizzas did Eduardo cook than Jill?

3 tractors in the field were red. 6 of the tractors were green. How many more tractors were green than red?

John has 6 cars. Sara has 10. How many more does Sara have?

Mei-Ling baked 3 peanut butter cookies yesterday and 6 chocolate cookies today. Aiden baked 10 sugar cookies today. How many more cookies did Aiden bake than Mei-Ling?

How Many More/How Many Less?

How Many Less Tasks:

Lucy has 2 apples. Julie has 5. How many fewer does Lucy have than Julie?

Walmart had 7 bikes left and Target had 9. How many fewer bikes does Walmart have than Target?

Marco built a tower using 9 blocks. Josh built a tower using 5 blocks then added 2 more. How many fewer blocks did Josh use than Marco?

The librarian has 3 books about dogs and 8 books about cats. How many fewer books about dogs does she have?

Anna has 7 bows. Scarlet has 4 bows. How many fewer bows does Scarlet have?