

Parent Packet

HAUPPAUGE MATH

DEPARTMENT

CCLS

Grade 1

MODULE 1

<http://www.hauppauge.k12.ny.us/math>

Grade 1 Module 1

Sums and Differences to 10

In this first module of Grade 1, students make significant progress towards fluency with addition and subtraction of numbers to 10 as they are presented with opportunities intended to advance them from counting all to counting on which leads many students then to decomposing and composing addends and total amounts.

Grade 1 Module 1

Topic A

Embedded Numbers and Decompositions

In this first module of Grade 1, students make significant progress towards fluency with addition and subtraction of numbers to 10 (1.OA.6). They are presented with opportunities intended to advance them from counting all to counting on, which leads to decomposing and composing addends and total amounts. In Kindergarten, students have achieved fluency with addition and subtraction facts to 5. This means they can decompose 5 into 4 and 1, 3 and 2, and 5 and 0. They can do this without counting all. They perceive the 3 and 2 embedded within the 5. In Grade 1's Topic A, we continue the work of developing this ability with all the numbers within 10 in put together situations, with a special focus on the numbers 6, 7, 8, and 9 in 5-group configurations, since recognizing how much a number needs to make 10 is part of the Kindergarten standards (K.OA.4) and easier for most children. Students decompose numbers into 2 visual sets, or conceptually subitize, and record their decompositions as number bonds. In Lesson 1, we use the 5-group configuration, as this organization allows students to quickly “see,” or perceptually subsidize, the subset of 5. Once they have identified that first subset of 5, they can perceptually subitize the other part: T: How many dots do you see? S: 8! T: What two parts do you see? S: I see 5 and 3. T: Did you need to count all the dots?

Topic B

Counting On from Embedded Numbers

As students move into Topic B, they gain momentum with putting together, composing and decomposing, and counting on to determine the total. Students use both concrete and pictorial situations to describe all of the decompositions of 6, 7, 8, 9, and 10 (1.OA.5). Lesson 4 begins with six children posed at the front of the class. They will be put together in different ways to show the various combinations of 6, such as 2 boys–4 girls and 3 wearing long sleeves–3 wearing short sleeves. During this process, the put together situation will be highlighted, engaging students in counting on from one addend, or part, to find the total (1.OA.1, 1.OA.5). As students' progress through the lesson, they come to see that 6 is constructed of several different decompositions, by using 2-color counters and recording the decomposition in number bonds

and as expressions (1.OA.1). They record each decomposition of 6, and reflect upon all of these number partners, “Look at all these ways to make 6! I can see connections between them!” Lessons 5, 6, 7, and 8 continue this same process of putting together, composing and decomposing. In Lesson 5, students

Topic C

Addition Word Problems

In Topic C, students develop a more robust understanding of addition word problems, moving beyond the Kindergarten problem types (K.OA.2) by reviewing put together with result unknown and add to with result unknown problems, and then moving to the more complex change unknown version of the earlier problem types. In Lesson 9, students solve both add to with result unknown and put together with result unknown problems with their classmates. The lesson begins with a cadre of students engaged in a dance party, and then a number of students join them—how fun! Students then record this action-based problem as an equation, and move on to the put together with result unknown problem type where they are faced with a set of students whose characteristics invite decomposition, much like in Topic B. Students end with a debrief where they explore the connections between these two problem types, ultimately understanding that they used the operation of addition to solve both problem types. Lesson 10 has students using 5-group cards to solve put together with result unknown problems that are represented by stories stemming from pictures. The 5-group cards again make the expectation clear that students will be practicing counting on (Level 2 strategy), but may use the strategy of counting all (Level 1 strategy) if necessary. The introduction of the add to with change unknown problem type (1.OA.6) occurs in Lesson 11. This lesson allows students explorations with problems where the action, which represents the change, is unknown. For example, “Ben has 5 pencils. He got some more from his mother. Now he has 9 pencils. How many pencils did Ben get from his mother?” Students physically add more to the starting quantity, counting on until they reach the total; for the first time in Module 1, students simply must use the valuable Level 2 strategy of counting on in order to determine the unknown part. Lesson 12 continues with solving add to with change unknown problems, as students use their 5-group cards to count on to find the unknown change

in quantity. Throughout these two lessons, students explore the symbol for the unknown (1.OA.1) as both a question mark and an open box. The topic ends with students creating their own put together with result unknown, add to with result unknown, and add to with change unknown problems from equations, and having their peers solve them through drawings and discussions. These problems set the foundation early in the module for relating addition to subtraction in Topic G (1.OA.4).

Topic D

Strategies for Counting On

Topic D affords students the opportunity to solve problems within the simplicity of equations, moving on from the context of story problems. Continuing on the momentum gained with counting on as it relates to addition in Topic C, students begin Topic D with tracking the number of counts on from a given number by using their fingers and 5-group cards (1.OA.5). In Lessons 14 and 15, students begin with an embedded quantity represented by both a picture and a numeral, and then tap pictures, tap the dots on their 5-group cards, draw more, and finally, replace these pictorial strategies to extending their fingers as an effective strategy for keeping track of the change. They apply these strategies to track changes of 0, 1, 2, and 3, thus limiting their use of tracking to quantities that will maintain efficiency. Students use these same strategies in Lesson 16, in both result unknown and the more complex change unknown equations, solving problems such as $4 + \underline{\quad} = 7$ as they say, “5, 6, 7” (1.OA.8).

Topic E

The Commutative Property of Addition and the Equal Sign

Topic E leads students to a very intentional understanding and application of the equal sign and the commutative property of addition (1.OA.3 and 1.OA.7). Lessons 17 and 18 ask students to use pictorial representations (pictures and 5-groups) to write expressions, and demonstrate that they are equivalent by using the equal sign. This work with the equal sign precedes the lessons

on commutativity in order to allow students to construct true number sentences such as $4 + 3 = 3 + 4$ without misunderstanding the equal sign to mean that the numbers are the same. Students understand that when added together, two numbers make the same total, regardless of whether one of the numbers appears first or second in equations and expressions. The topic ends with Lesson 20, where students directly apply their understanding of commutativity by starting with the larger quantity and counting on (a Level 2 strategy) as a matter of efficiency, “I can count on 2 from 7 when I solve $2 + 7$!”

Topic F

Development of Addition Fluency Within 10

Topic F continues with the theme of more efficient strategies coupled with deep understanding to solve addition problems within 10. In Lesson 21, students begin to internalize doubles and doubles plus 1 as they work with visual representations of these problems (1.OA.6). As students almost take a mental picture of these doubles and doubles plus 1 dot configurations, they can call on these images to quickly assist them when faced with these problems in the future. Students explore patterns on the addition chart within the context of familiar facts in Lessons 22 and 23 (MP.7, MP.8).

Topic G

Subtraction as an Unknown Addend Problem

Following the mid-module assessment, Topic G focuses on students understanding the meaning of subtraction as it relates to addition. In Lesson 25, students solve add to with change unknown problems as they have in Topic C using addition, but now relate that work directly to the act of taking away (1.OA.4). The work of this lesson starts with students calling upon their knowledge from previous add to with change unknown problems, and then applying it in the context of subtraction, using the addend to subtract from the total, in order to find the missing addend or part (1.OA.1). In this opening lesson, students use objects to represent discreet counts, which serves as a bridge to the number path, used in Lessons 26 and 27. Number bonds will continue to serve as a bridge between prior learning and this new learning. In these concluding lessons,

students use the number path as pictured to the right, in order to find one part, count on to the total, and determine the number of counts it took to get to that total from the part (1.OA.5). The teacher engages students in deep discussion about these strategies as they relate to the contextualized situations of story problems, ensuring that students build a solid conceptual understanding of why and how one utilizes counting on to solve subtraction.

Topic H

Subtraction Word Problems

With a smooth transition from Topic G, Topic H provides students with rich experiences connecting subtraction to their solid foundation of addition (1.OA.4), using various word problem types (1.OA.1). Lesson 28 begins with students solving action-based take from with result unknown problems, as they begin with a set of objects, then take some away, and finally end with a smaller set of objects. Students then work with simple math drawings and equations to represent these take from with result unknown stories, and connect the act of crossing off to the symbol for subtraction. Then lesson 29 allows students to solve the relationship-based take apart with result unknown problems, which are both connected to take from with result unknown problems and are the counterpart to the familiar put together with addend unknown problems from earlier topics. In both Lessons 28 and 29, students make varied statements to explain the remaining amount, e.g., “There were 4 bears left,” “4 bears stayed in the forest,” “Then there were 4 bears altogether.” This permits students to think and speak flexibly about the unknown, rather than associating specific key words with a particular operation. For example, altogether does not always necessitate addition. Lesson 30 furthers the connection between addition and subtraction as teachers have students discuss ways to attack add to with change unknown word problems, as they use simple math drawings and equations to represent the problem and solution. With the introduction of a whole new problem type in Lesson 31, students use drawings to solve take from with change unknown problems such as, “Ben had 7 pencils. He gave away some. Now he has 5. How many pencils did he give away?” Throughout Topic G, students discuss and apply their understanding of addition as it relates to subtraction and vice versa. A Teaching Sequence towards Mastery of Subtraction Word Problems

Topic I

Decomposition Strategies for Subtraction

Similar to Topic E's addition methods, Topic I allows students to learn methods for subtraction which involve subtracting 0 and 1, subtracting the whole number, subtracting one less than the whole number, and using familiar decompositions (5-groups and partners of 10) to conceptualize subtraction as finding a missing part (1.OA.6). In Lesson 33, students use pictures and simple math drawings to show 0 less and 1 less and construct number sentences (1.OA.5). The discussion in Lesson 34 around what happens each time we take away 0 or 1 with numbers within 10 leads students to an understanding that this same reality remains true with all numbers. Similarly, students explore what happens in both $n-n$ and $n-(n-1)$ situations. They notice, "When I take 5 away from 5, I have zero every time!" and " $5 - 4$ is 1, just like $6 - 5$ is 1! It's just a number minus a number that's one less gives me 1!" and again generalize this new understanding. In Lesson 35, students transfer their knowledge of both doubles and fives to the context of subtraction, where they extract those known facts from given expressions. For instance, when faced with $8 - 5$, students access the decomposition of 8 ("I know that 5 and 3 makes 8!"), and apply that understanding to help them solve subtraction problems ("So $8 - 5$ must be 3!"). Lessons 36 and 37 continue on this explicit decomposition and subtraction connection, as students use their knowledge of partners of 10 and partners of 9 to help them solve subtraction stories and equations efficiently. Topic I is full of students using strategies, and discussing those strategies and patterns in order to gain fluency and facility with subtraction within 10, and ultimately beyond!

Topic J

Development of Subtraction Fluency Within 10

Grade 1's Module 1 closes with Topic J, where students spend Lesson 38 exploring the addition chart (similar to Topic F) and looking for patterns within the context of subtraction (MP.7, MP.8, 1.OA.6). When presented with a subtraction equation such as $7 - 3$, students then use their knowledge of the decompositions of 7 to help them solve, and then discuss to find related addition equations on the addition chart such as $3 + 4$ or $4 + 3$. The final lesson, Lesson 39,

allows students to further analyze the addition chart to create their own sets of related addition and subtraction facts for them to practice throughout the year as they work toward mastery of these foundational facts.

Grade 1 • Module 1

Sums and Differences to 10

OVERVIEW

In this first module of Grade 1, students make significant progress towards fluency with addition and subtraction of numbers to 10 as they are presented with opportunities intended to advance them from counting all to counting on which leads many students then to decomposing and composing addends and total amounts. In Kindergarten, students have achieved fluency with addition and subtraction facts to 5. This means they can decompose 5 into 4 and 1, 3 and 2, and 5 and 0. They can do this without counting all. They perceive the 3 and 2 embedded within the 5.

In Topic A, we continue the work of developing this ability with all the numbers within 10 in *put together* situations, with a special focus on the numbers 6, 7, 8 and 9, since recognizing how much a number needs to make 10 is part of the Kindergarten standards and easier for most children. Students decompose numbers into 2 sets, or conceptually subitize, in Lessons 1 and 2 and record their decompositions as number bonds.

T: How many dots do you see?

S: 8!

T: What two parts do you see?

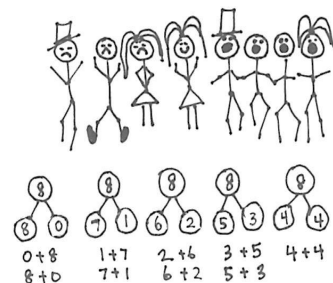
S: I see 5 and 3.

T: Did you need to count all the dots?

S: No! I could see the top row was a full five so I just said 6, 7, 8.



In Lesson 3, students see and describe *1 more* as + 1. They use the structure of the first addend rather than its cardinality just as the student speaking in the above vignette used the five. The number is a unit to which they can add one, or count on by one, without recounting. All three lessons are preparing the students to solve addition problems by counting on rather than counting all.



Topic B continues the process of having the students compose and decompose. They describe *put together* situations (pictured to the right) with number bonds and count on from the first part to totals of 6, 7, 8, 9, and 10. As they represent all the partners of a number, they reflect and see the decompositions, “Look at all these ways to make 8! I can see connections between them.”

Through dialogue, they engage in seeing both the composition invited by the *put together* situation, and the decomposition invited by the number bonds. Expressions are another way to model both the stories and the bonds, the compositions and the decompositions.

In Topic C, students interpret the meaning of addition from *adding to with*



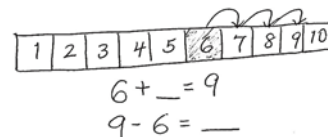
result unknown or putting together with result unknown story problems by drawing their own pictures and generating solution equations. Advancing beyond the kindergarten word problem types, students next solve *add to with change unknown* problems such as, "Ben has 5 pencils. He got some more from his mother. Now he has 9 pencils. How many pencils did Ben get from his mother?" These problems set the foundation early in the module for relating addition to subtraction in Topic G.

In Topic D, students work outside the context of stories for three days, to further their understanding of and skill with counting on using 5-group cards. The first addend is represented with a numeral, symbolizing the structure to count on from. The dot side is shown of the number to be added. Students count on from the first addend. They learn to replace counting the dots by tracking the count on their fingers to find the solution. In Lesson 16, they solve problems such as $4 + \underline{\quad} = 7$ by tracking the number of counts as they say, "5, 6, 7".

In Topic E, in the context of addition to 10, students expand their knowledge of two basic ideas of mathematics: equality and the commutativity of addition. The equal sign lesson precedes the lessons on commutativity in order to allow students to later construct true number sentences such as $4 + 3 = 3 + 4$ without misunderstanding the equal sign to mean that the numbers are the same. The students apply their new generalization about the position of the addends to count on from the larger number. For example, "I can count on 2 from 7 when I solve $2 + 7$!"

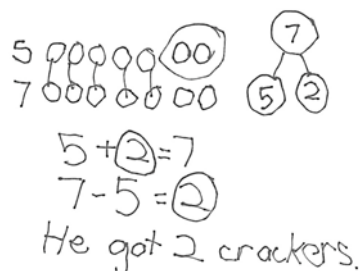
Like Topic E, Topic F leads the students to make more generalizations that support their deepening understanding of addition within 10. They learn to recognize doubles and doubles plus 1. They analyze the addition chart for repeated reasoning and structures (such as 5-groups, plus ones, doubles, sums equal to 10, etc.) that can help them to better understand relationships and connections between different addition facts.

Following the mid-module assessment, Topic G relates addition to subtraction. Since Module 4 in Kindergarten, students are very familiar with subtraction as "take away." During the fluency portion of the lesson in Topics A through F, students have had opportunities to remember their Kindergarten work with subtraction. Therefore, Topic G can start immediately with the concept of subtraction as a missing addend, just as in Grade 3 students learn division as a missing factor in a multiplication problem.



Having already worked with *add to with change unknown* problems earlier in the module, students return to revisit this familiar problem type, reinterpreting it as subtraction. The topic then uses the strategy of counting with both 5-group cards and the number path to solve subtraction problems.

"Ben had 5 crackers. He got some more. Now he has 7. How many crackers did Ben get?"



Topic H is analogous to Topic C. Students interpret the meaning of subtraction as they solve different problem types involving subtraction. Rather than using formal drawings or tape diagrams, throughout Module 1 students are encouraged to make math drawings that flow from their understanding of the stories. They engage in dialogue to relate their drawings to number sentences and explain the meaning of the subtraction symbol.

Topic I follows a week of intensive work with story problems to work on a more abstract level by visiting methods for subtraction involving special cases, subtracting 0 and 1, subtracting the whole number, and subtracting one less than the whole number. These two lessons are followed by three lessons in which students use familiar decompositions (5 -groups and partners of 10) to conceptualize subtraction as finding a missing part.

Finally, in Topic J, students analyze the addition chart for repeated reasoning and structures that support their journey towards fluency with subtraction within 10. The module closes with a lesson wherein students create sets of related addition and subtraction facts and use dialogue to explain their found connections ($7 = 4 + 3$, $7 - 4 = 3$, $4 + 3 = 7$, $4 = 7 - 3$, etc.) They began the module with very basic counting on, and end the module both with the skill to count on and significant movement towards the goal of fluency, achieved as the second addend does not need to be counted or can be counted very quickly.

Please note that the assessments should be read aloud to the Grade 1 students.

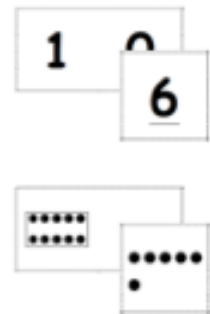
Terminology

New or Recently Introduced Terms

- Count on (Students count up from one addend to the total.)
- Track (Students use different objects to track the count on from one addend to the total.)
- Expression (e.g., $2 + 1$ or $5 + 5$.)
- Addend (One of the numbers being added.)
- Doubles (e.g., $3 + 3$ or $4 + 4$.)
- Doubles plus 1 (e.g., $3 + 4$ or $4 + 5$.)

Familiar Terms and Symbols

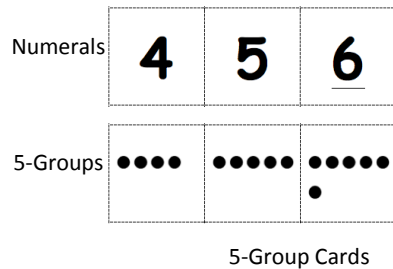
- Part (e.g., “What is the unknown part? $3 + \underline{\quad} = 8$ ”)
- Total and whole (“What is the total when we add 3 and 5?” Use interchangeably instead of sum.)
- Label (Students label math drawings using letters or words to indicate the referents from the story’s context.)
- Addition, equal, and subtraction signs
- Equation and number sentence (Use interchangeably throughout the module.)
- Number Bond, a graphic showing part/part/whole
- Equal sign (=)
- 5-groups (as pictured in the dot cards to the right), 2 rows of 5



Hide Zero Cards

Suggested Tools and Representations

- Number Bonds
- Addition Chart
- Rekenrek
- Counters
- Number Path
- 5-Group Cards
- Hide Zero Cards



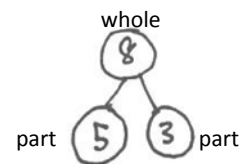
1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9
2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	
3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7		
4+0	4+1	4+2	4+3	4+4	4+5	4+6			
5+0	5+1	5+2	5+3	5+4	5+5				
6+0	6+1	6+2	6+3	6+4					
7+0	7+1	7+2	7+3						
8+0	8+1	8+2							
9+0	9+1								
10+0									



Rekenrek



$6 + \underline{\quad} = 9$
 $9 - 6 = \underline{\quad}$
 Number Path

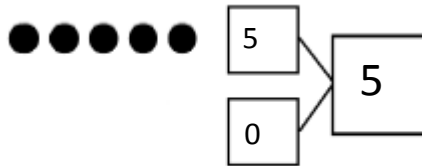


Number Bond

Lesson 1

Objective: Analyze and describe embedded numbers (to 10) using 5-groups and number bonds.

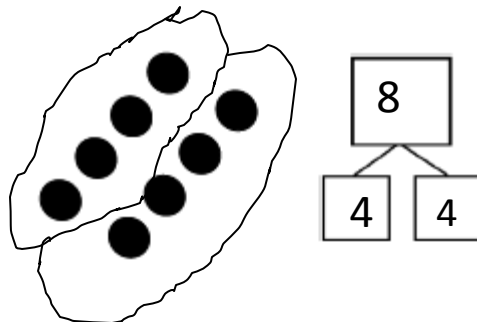
Directions: *Make a number bond that shows 5 as one part.*



Lesson 2

Objective: Reason about embedded numbers in varied configurations using number bonds.

Directions: *Circle 2 parts you see. Make a number bond to match.*



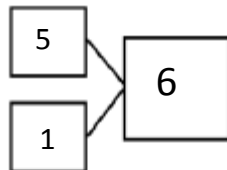
Lesson 3

Objective: See and describe numbers of objects using *1 more* within 5-group configurations.

Directions: Draw one more in the 5-group. In the box, write the numbers to describe the new picture.



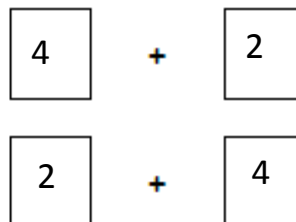
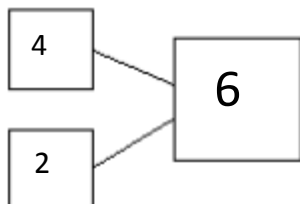
1 more than 5 is <u>6</u> .
$5 + 1 = \underline{6}$



Lesson 4

Objective: Represent *put together* situations with number bonds. Count on from one embedded number or part to totals of 6 and 7 and generate all addition expressions for each total.

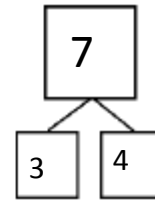
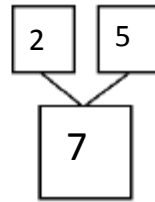
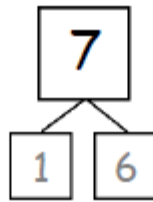
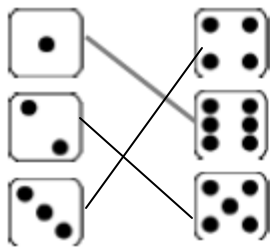
Directions: Find different combinations to make 6.



Lesson 5

Objective: Represent *put together* situations with number bonds. Count on from one embedded number or part to totals of 6 and 7 and generate all addition expressions for each total.

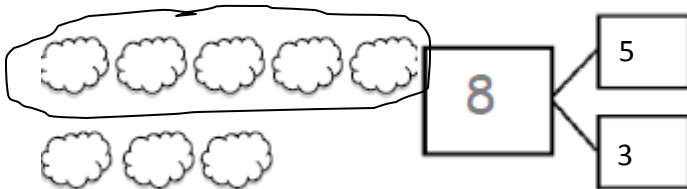
Match the dice to show different ways to make 7. Then draw a number bond for each pair of dice.



Lesson 6

Objective: Represent *put together* situations with number bonds. Count on from one embedded number or part to totals of 8 and 9 and generate all expressions for each total.

Circle 5. How many more does 5 need to make 8?

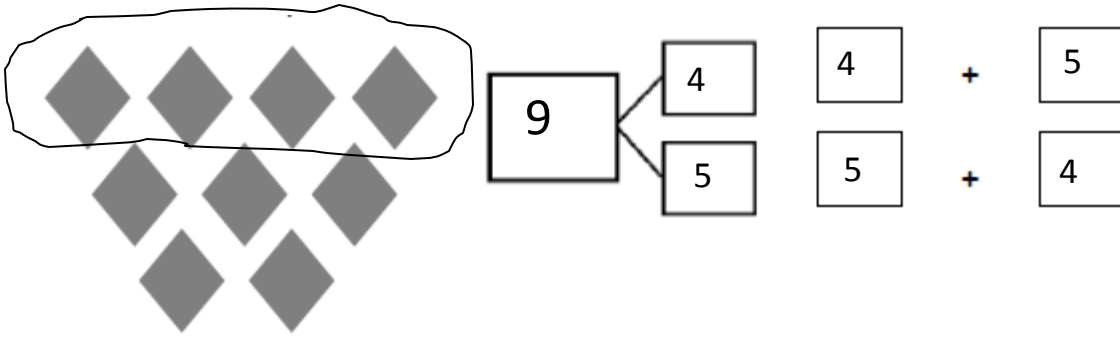


$$\begin{array}{r} \boxed{5} + \boxed{3} \\ \boxed{3} + \boxed{5} \end{array}$$

Lesson 7

Objective: Represent *put together* situations with number bonds. Count on from one embedded number or part to totals of 8 and 9 and generate all expressions for each total. D

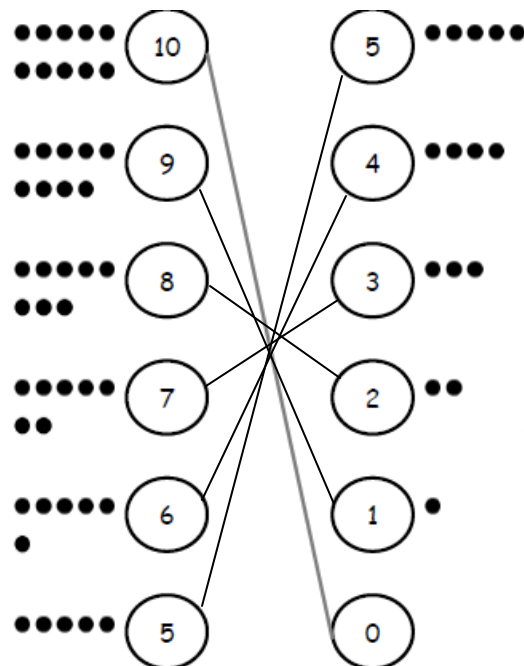
Directions: Circle 4. How many more does 4 need to make 9?



Lesson 8

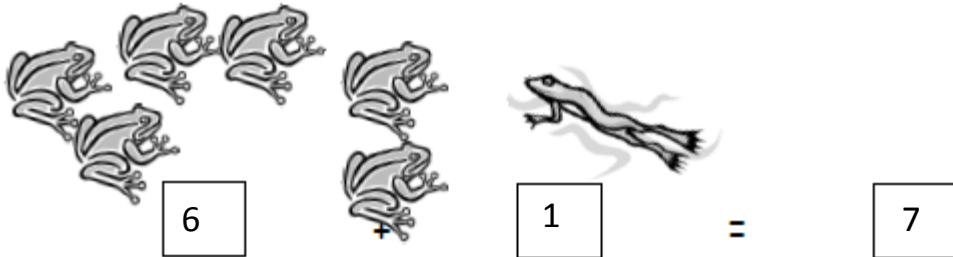
Objective: Represent all the number pairs of 10 as number bond diagrams from a given scenario and generate all expressions equal to 10.

Directions: Match the partners of 10.



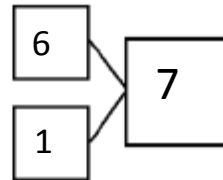
Lesson 9

Objective: Solve *add to with result unknown* and *put together with result unknown* math stories by drawing, writing equations, and making statements of the solution.



6 frogs are here. 1 more hops over. Now, there are 7 frogs.

Make a number bond to match the story.



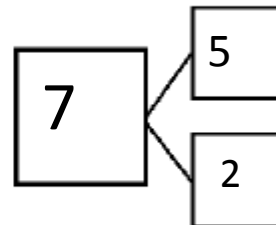
Lesson 10

Objective: Solve *put together with result unknown* math stories by drawing and using 5-group cards.

Directions: Use the picture to write the number sentence and the number bond.



5 pigs + 2 pigs in mud = 7 pigs

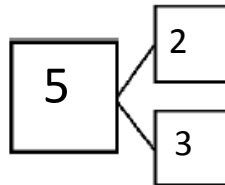
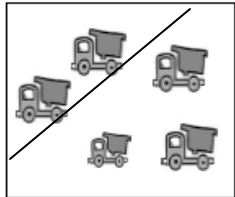


Lesson 11

Objective: Solve *add to with change unknown* math stories as a context for counting on by drawing, writing equations, and making statements of the solution.

Directions: Show the parts. Write a number bond to match the story.

Bill has 2 trucks. His friend, James came over with some more. Together they had 5 trucks. How many trucks did James bring over?



James brought over 3 trucks.

Write a number sentence to explain the story.

$$\boxed{2} + \boxed{3} = \boxed{5}$$

Lesson 12

Objective: Solve *add to with change unknown* math stories using 5-group cards.

Directions: Fill in the missing numbers.



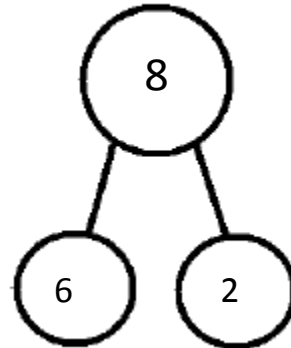
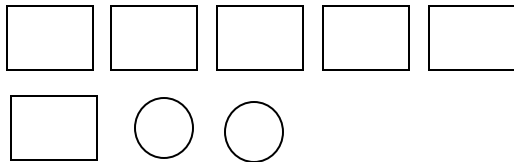
$$4 + \underline{6} = 10$$

Lesson 13

Objective: Tell *put together with result unknown*, *add to with result unknown*, and *add to with change unknown* stories from equations.

Directions: *With a partner, create a story for each of the number sentences below. Draw a picture to show. Write the number bond to match the story.*

$$6 + 2 = \square$$



Lesson 14

Objective: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Directions: *Count on to add.*



$$\square 7 \square = \square 5 \square + \square 2 \square$$

There are 7 oranges in all.

Lesson 15

Objective: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Directions: *Count on to add.*



$$\boxed{7} = \boxed{4} \oplus \boxed{3}$$

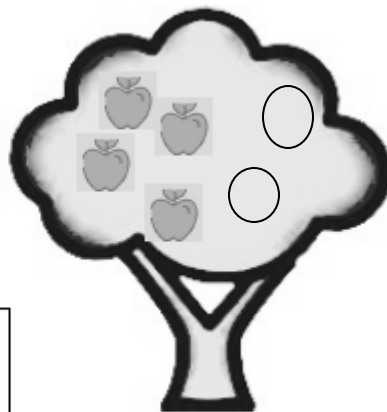
In all, there are 7 pencils.

Lesson 16

Objective: Count on to find the unknown part in missing addend equations such as $6 + \underline{\quad} = 9$. Answer, “How many more to make 6, 7, 8, 9, and 10?”

Directions: *Draw more apples to solve $4 + ? = 6$.*

$$\boxed{4} \oplus \boxed{2} = \boxed{6}$$

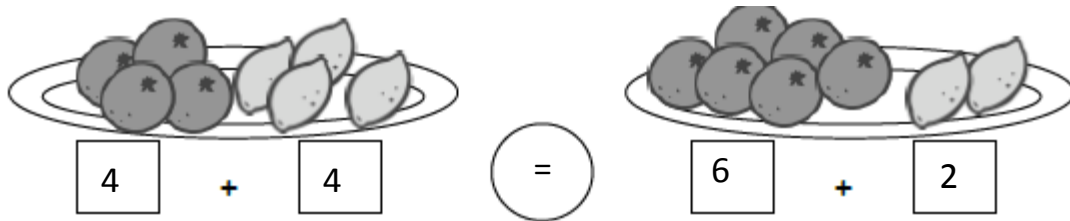


I added 2 apples to the tree.

Lesson 17

Objective: Understand the meaning of the equal sign by pairing equivalent expressions and constructing true number sentences.

Directions: Write an expression that matches the groups on each plate. If the plates have the same amount of fruit, write the equal sign between the expressions.



Lesson 18

Objective: Understand the meaning of the equal sign by pairing equivalent expressions and constructing true number sentences.

Directions: Is the number sentence true? Write yes or no. If it is not true, change it to make it true.

$$4 + 3 = 3 + 5$$

No

$$4 + 3 = 2 + 5$$

Lesson 19

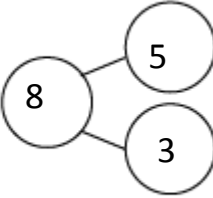
Objective: Represent the same story scenario with addends repositioned (the commutative property).

Directions: Write the number bond to match the picture. Then complete the number sentences.

♥ ♥ ♥ ♥ ♥ ○ ○ ○

$\begin{array}{|c|} \hline 5 \\ \hline \end{array} + \begin{array}{|c|} \hline 3 \\ \hline \end{array} = \begin{array}{|c|} \hline 8 \\ \hline \end{array}$ $\begin{array}{|c|} \hline 8 \\ \hline \end{array} = \begin{array}{|c|} \hline 5 \\ \hline \end{array} + \begin{array}{|c|} \hline 3 \\ \hline \end{array}$ $\begin{array}{|c|} \hline 8 \\ \hline \end{array} = \begin{array}{|c|} \hline 3 \\ \hline \end{array} + \begin{array}{|c|} \hline 5 \\ \hline \end{array}$

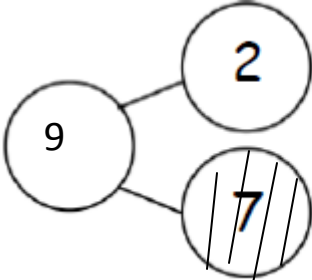
$\begin{array}{|c|} \hline 3 \\ \hline \end{array} + \begin{array}{|c|} \hline 5 \\ \hline \end{array} = \begin{array}{|c|} \hline 8 \\ \hline \end{array}$



Lesson 20

Objective: Apply the commutative property to count on from a larger addend.

Directions: Shade in the larger part of the bond. Count on from that part to find the total.
Rewrite the number sentence to start with the larger number.



$\begin{array}{|c|} \hline 2 \\ \hline \end{array} + \begin{array}{|c|} \hline 7 \\ \hline \end{array} = \begin{array}{|c|} \hline 9 \\ \hline \end{array}$

$\begin{array}{|c|} \hline 7 \\ \hline \end{array} + \begin{array}{|c|} \hline 2 \\ \hline \end{array} = \begin{array}{|c|} \hline 9 \\ \hline \end{array}$

Lesson 21

Objective: Visualize and solve doubles and doubles plus 1 with 5-group cards.

Directions: Write the double and double plus 1 number sentence for the 5-group card.



$$\begin{array}{r} 3 + 3 = 6 \\ \hline 3 + 4 = 7 \\ \hline \end{array}$$



$$\begin{array}{r} 4 + 4 = 8 \\ \hline 4 + 5 = 9 \\ \hline \end{array}$$



$$\begin{array}{r} 5 + 5 = 10 \\ \hline 5 + 6 = 11 \\ \hline \end{array}$$

Lesson 22

Objective: Look for and make use of repeated reasoning on the addition chart by solving and analyzing problems with common addends.

Directions: Some of the addends in this chart are missing! Fill in the missing numbers.

1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9
2+0	2+1	2+2	2+__	2+4	2+5	2+6	2+7	2+8	
3+0	3+1	3+2	3+__	3+4	3+5	3+6	3+7		
4+0	4+__	4+2	4+3	__+4	__+5	__+6			
5+0	5+__	5+2	5+3	5+4	5+5				
6+0	6+__	6+2	6+3	6+4					
7+__	7+1	7+2	7+3						
8+__	8+1	8+2							
9+__	9+1								
10+0									

$2 + 3$

$3 + 3$

$4 + 1, 4 + 4, 4 + 5, 4 + 6$

$5 + 1$

$6 + 1$

$7 + 0$

$8 + 0$

$9 + 0$

Lesson 23

Objective: Look for and make use of structure on the addition chart by looking for and coloring problems with the same total.

Directions: Write a list of number sentences in the chart below.

Totals of 10	Totals of 9	Totals of 8	Totals of 7
$1 + 9 = 10$	$1 + 8 = 9$	$1 + 7 = 8$	$1 + 6 = 7$
$2 + 8 = 10$	$2 + 7 = 9$	$2 + 6 = 8$	$2 + 5 = 7$
$3 + 7 = 10$	$3 + 6 = 9$	$3 + 5 = 8$	$3 + 4 = 7$
$4 + 6 = 10$	$4 + 5 = 9$	$4 + 4 = 8$	$4 + 3 = 7$
$5 + 5 = 10$	$5 + 4 = 9$	$5 + 3 = 8$	$5 + 2 = 7$
$6 + 4 = 10$	$6 + 3 = 9$	$6 + 2 = 8$	$6 + 1 = 7$
$7 + 3 = 10$	$7 + 2 = 9$	$7 + 1 = 8$	$7 + 0 = 7$
$8 + 2 = 10$	$8 + 1 = 9$	$8 + 0 = 8$	
$9 + 1 = 10$	$9 + 0 = 9$		
$10 + 0 = 10$			

Lesson 24

Objective: Practice to build fluency with facts to 10.

Directions: Solve the number sentences. Use the key to color. Once the box is colored, you do not need to color it again.

G	$5 + 2 = \underline{7}$	G	$7 + 2 = \underline{9}$	$2 + 3 = \overset{5}{\underline{\quad}}$	Br
R	$3 + 3 = \underline{6}$	Bl	$7 = 1 + \overset{6}{\underline{\quad}}$	$2 = 1 + \underline{1}$	R
R	$\overset{8}{\underline{\quad}} = 4 + 4$	G	$8 + 2 = \underline{10}$	$3 + 4 = \overset{7}{\underline{\quad}}$	Br
Br	$\overset{9}{\underline{\quad}} = 5 + 4$	Bl	$10 = 1 + \underline{9}$	$10 = 5 + \overset{5}{\underline{\quad}}$	R

Color doubles - Red.

Color +1 - Blue

Color +2 - Green

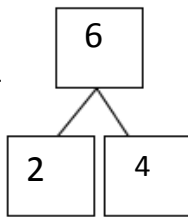
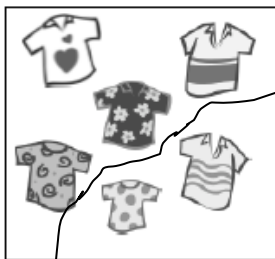
Color doubles +1 - Brown

Lesson 25

Objective: Solve *add to with change unknown* math stories with addition and relate to subtraction. Model with materials and write corresponding number sentences.

Directions: Break the total into parts. Write a number bond and addition and subtraction number sentences to match the story.

Dad bought 6 shirts. The next day he returned some of them. Now he has 2 shirts. How many shirts did Dad return?



$$\boxed{2} + \boxed{4} = \boxed{6}$$

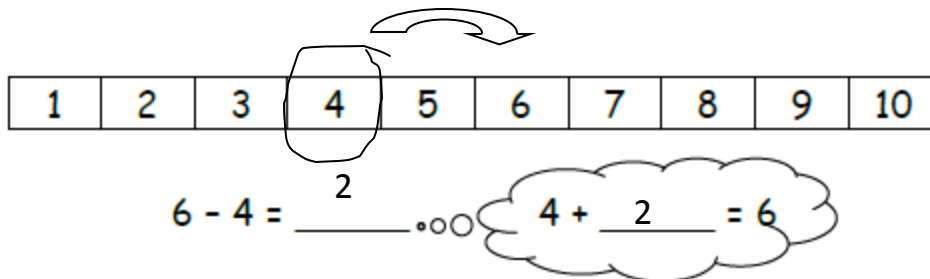
$$\boxed{6} - \boxed{4} = \boxed{2}$$

Dad returned 4 shirts.

Lesson 26

Objective: Count on using the number path to find an unknown part.

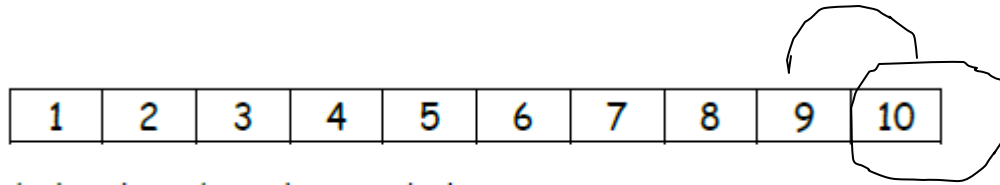
Directions: Use the number path to solve.



Lesson 27

Objective: Count on using the number path to find an unknown part.

Directions:



Hop back on the number path to count back.

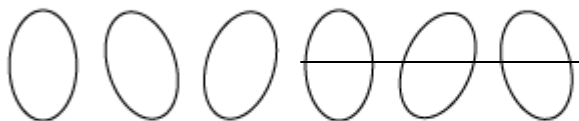
$$10 - 1 = \underline{9}$$

Lesson 28

Objective: Solve *take from with result unknown* math stories with math drawings, true number sentences and statements, using horizontal marks to cross off what is taken away.

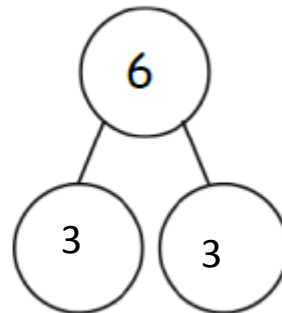
Directions: Read the story. Draw a horizontal line through the items that are leaving the story.

I had 6 eggs from the store.
3 of them were cracked.
How many eggs did I have that were not cracked?



$$6 - \underline{3} = \underline{3}$$

3 eggs were not cracked.

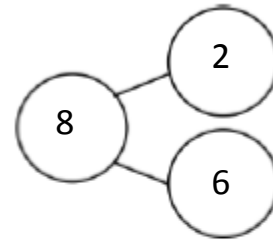
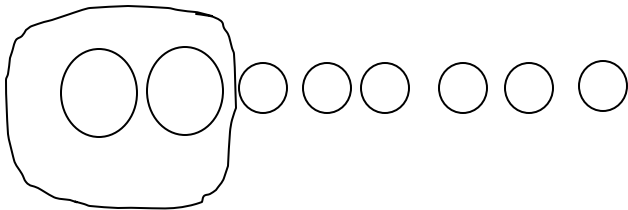


Lesson 29

Objective: Solve *take apart with addend unknown* math stories with math drawings, equations and statements, circling the known part to find the unknown.

Directions: Use number bonds and math drawings in a line to solve.

There are 8 animals at the pond.
2 are big. The rest are small.
How many are small?



$$\boxed{8} - \boxed{2} = \boxed{6}$$

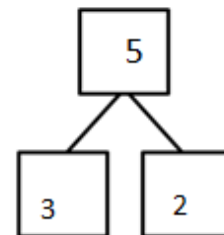
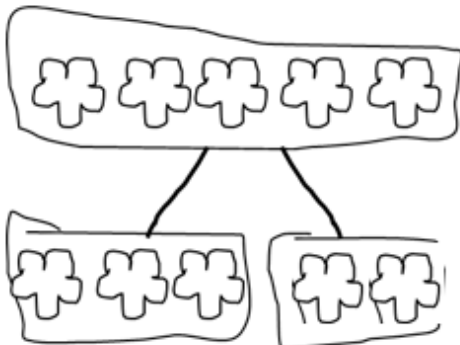
6 animals are small.

Lesson 30

Objective: Solve *add to with change unknown* math stories with drawings, relating addition and subtraction.

Solve the math stories. Complete and label the number bond and the picture number bond. Lightly shade in the solution.

Jill was given a total of 5 flowers for her birthday. She put 3 in one vase and the rest in another vase. How many did she put in the other vase?



$$\boxed{3} + \boxed{2} = \boxed{5}$$
$$\boxed{5} - \boxed{3} = \boxed{2}$$

Lesson 31

Objective: Solve *take from with change unknown* math stories with drawings.

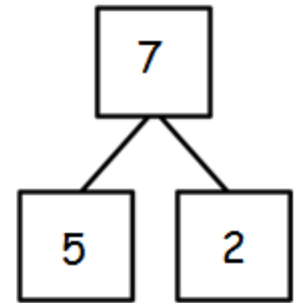
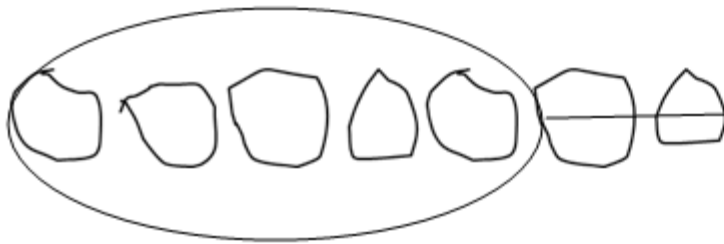
Make a math drawing and circle the part you know. Cross out the unknown part.



Complete the number sentence and number bond.

Kate made 7 cookies. Bill ate some. Now Kate has 5 cookies.

How many cookies did Bill eat?



Bill ate 2 cookies.

$$\boxed{7} - \boxed{5} = \boxed{2}$$

Lesson 32

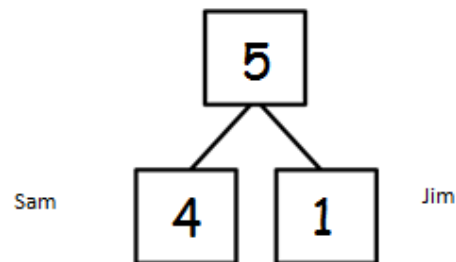
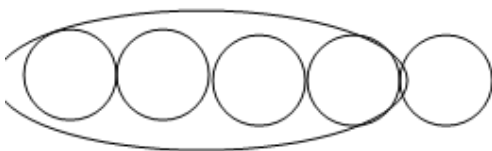
Objective: Solve *put together/take apart with addend unknown* math stories.

Solve. Use simple math drawings to show how to solve with addition and subtraction. Label the number bond.

There are 5 apples.

4 are Sam's. The rest are Jim's.

How many are Jim's?



$$\boxed{4} + \boxed{1} = \boxed{5}$$

$$\boxed{5} - \boxed{4} = \boxed{1}$$

Lesson 33

Objective: Model *0 less and 1 less* pictorially and as subtraction number sentences.

Cross off, when needed, to subtract.



$$6 - 1 = \underline{5}$$



$$6 - 0 = \underline{6}$$



$$8 - 1 = \underline{7}$$

Lesson 34

Objective: Model *n-n* and *n-(n-1)* pictorially and as subtraction sentences.

Cross off to subtract.



$$6 - 6 = 0$$



$$9 - 8 = 1$$

Lesson 35

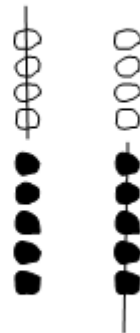
Objective: Relate subtraction facts involving *fives and doubles* to corresponding decompositions.

Solve the sets of number sentences. Look for "easy groups" to cross off.



$$6 - 5 = 1$$

$$6 - 1 = 5$$



$$9 - 4 = 5$$

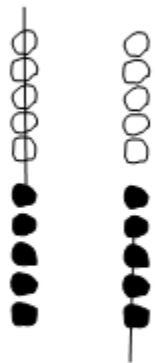
$$9 - 5 = 4$$

Lesson 36

Objective: Relate subtraction from ten to corresponding decompositions.

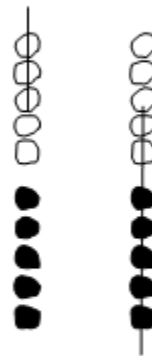
Solve the sets. Cross off on the 5-groups.

Use the first number sentence to help you solve the next.



$$10 - 6 = 4$$

$$10 - 4 = 6$$



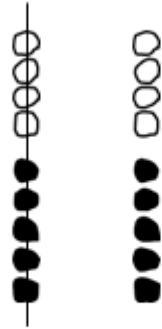
$$10 - 3 = 7$$

$$10 - 7 = 3$$

Lesson 37

Objective: Relate subtraction from nine to corresponding decomposi-

Solve the sets. Cross off on the 5-groups. Write the related subtraction sentence that would have the same number bond.



$$9 - 9 = 0$$

$$9 - 0 = 9$$

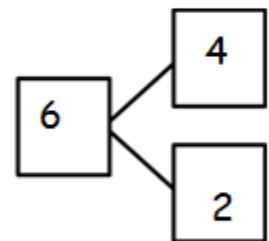
Lesson 38

Objective: Look for and make use of repeated reasoning and structure using the addition chart to solve subtraction problems.

Directions: On your addition chart shade a square orange. Write the related subtraction fact in a space below with its number bond. Color all the totals orange

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

$$6 - 4 = 2$$



Lesson 39

Objective: Analyze the addition chart to create sets of related addition and subtraction facts.

Directions: Choose an expression card and write 4 problems that use the same parts and totals.

$$9 - 1 = 8$$

$$8 + 1 = 9$$

$$9 - 8 = 1$$

$$1 + 8 = 9$$

$$7 - 5 = 2$$

$$2 + 5 = 7$$

$$7 - 2 = 5$$

$$5 + 2 = 7$$

Technology Resources

www.k-5mathteachingresources.com -This site provides an extensive collection of free resources, math games, and hands-on math activities aligned with the Common Core State Standards for Mathematics.

www.parccgames.com – fun games to help kids master the common core standards.

<http://www.mathplayground.com> –common core educational math games and videos.

www.learnzillion.com – math video tutorials.

www.ixl.com – practice common core interactive math skills practice.

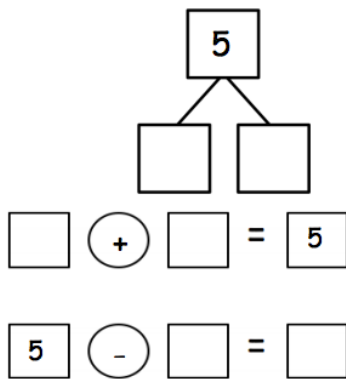
www.mathnook.com –common core interactive math skill practice/ games, worksheets and tutorials.

www.adaptedmind.com – common core interactive practice, video lessons and worksheets

www.brainpop.com – animated tutorials of curriculum content that engages students. Can use a limited free version or buy a subscription.

Sums and Differences to 10

In this first module of Grade 1, students make significant progress toward fluency with addition and subtraction of numbers to 10. They are presented with opportunities designed to advance them from counting all to counting on. This leads many students to decomposing and composing total amounts. This module is an important foundational piece for our first grade mathematicians.



Number bonds are used to relate addition and subtraction

$1 + 2$	$1 + 3$
$2 + 2$	
$3 + 2$	$3 + 3$

Students will learn to solve related addition problems

What Comes After this Module?

Module: In Module 2, students begin to problem-solve with teen numbers. Students will go beyond the beginning strategies of counting on and counting back and learn to use more sophisticated strategies that involve working with groups of 10 as a basic unit, either taking away ten or making ten to solve problems.

Terms, Phrases, and Strategies in this Module:

Count on: Students count up from one addend to the total, e.g. for $5 + 4$ they would start with 5, then count 6..7..8..9 to get the total of 9

Expression: e.g., $2 + 1$ or $5 + 5$ (expressions do not have an equals sign, thus are not equations)

Addend: One of the numbers being added in an addition problem

Doubles: e.g., $3 + 3$ or $4 + 4$

Doubles plus 1: e.g., $3 + 4$ or $4 + 5$

Part: e.g., “What is the unknown part? $3 + \underline{\quad} = 8$ ”

Equation and number sentence: these words are used interchangeably throughout the module

Number Bond: a graphic showing part/part/whole (see reverse side for more information)

+ How you can help at home:

- Practice “counting on” as a strategy for addition, e.g. if you have 7 LEGO pieces, and then you get 3 more, encourage your student to start with the number 7 and count “8...9...10” to find the total.
- Discuss various ways to take apart a given number, e.g. 6 is made of 1 and 5, 2 and 4, 3 and 3, etc.

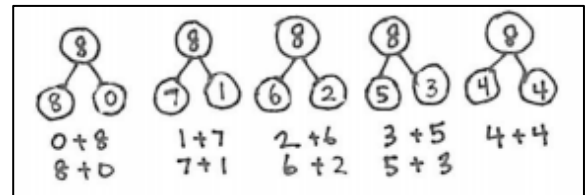
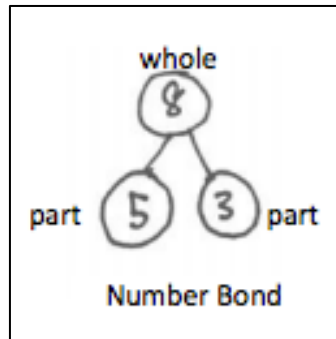
Key Common Core Standards:

- Represent and solve problems involving addition and subtraction**
 - Use addition and subtraction within 10 to solve word problems
- Understand and apply properties of operations and the relationship between addition and subtraction**
 - Apply properties of operations as strategies to add and subtract
 - Understand subtraction as an unknown-addend problem
- Add and subtract within 10 (eventually within 20)**
 - Relate counting to addition and subtraction
- Work with addition and subtraction equations**
 - Understand the meaning of the equal sign
 - Determine the unknown whole number in an addition or subtraction equation relating three whole numbers

Welcome to A Story of Units!

Each module's parent tip sheet will highlight a new strategy or math model your student will be working on.

In Module 1, first grade students will use Number Bonds to understand the part-part-whole relationships inherent to addition and subtraction. The Number Bond is a powerful mathematical model that students will return to throughout *A Story of Units*.



Number Bonds showing ways to make 8

Read on to learn a little bit about *Eureka Math*, the creators of *A Story of Units*:

Eureka Math is a complete, PreK-12 curriculum and professional development platform. It follows the focus and coherence of the Common Core State Standards (CCSS) and carefully sequences the progression of mathematical ideas into expertly crafted instructional modules.

This curriculum is distinguished not only by its adherence to the CCSS; it is also based on a theory of teaching math that is proven to work. That theory posits that mathematical knowledge is conveyed most effectively when it is taught in a sequence that follows the “story” of mathematics itself. This is why we call the elementary portion of *Eureka Math* “A Story of Units.” The sequencing has been joined with methods of instruction that have been proven to work, in this nation and abroad. These methods drive student understanding beyond process, to deep mastery of mathematical concepts.

The goal of *Eureka Math* is to produce students who are not merely literate, but fluent, in mathematics. Your student has an exciting year of discovering the story of mathematics ahead!

Sample Problem from Module 1: (Example taken from Module 1, Lesson 2)

How many animals do you see?

Write at least 2 different number bonds to show different ways to break apart the total.

