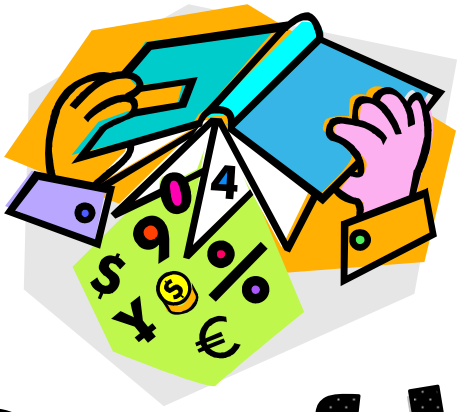
Mathematics:



'A Story of Units'

Parent Handbook

Grade 1

Module 2

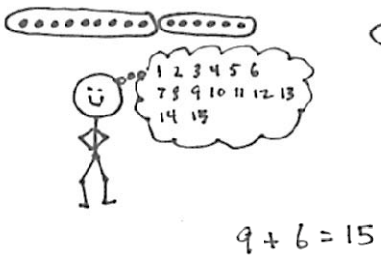
Grade 1 • Module 2

Introduction to Place Value Through Addition and Subtraction Within 20

OVERVIEW

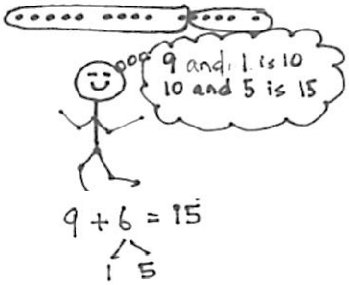
Module 2 serves as a bridge from problem solving within 10 to work within 100 as students begin to solve addition and subtraction problems involving teen number. In Module 1, students were encouraged to move beyond the Level 1 strategy of counting all to the more efficient counting on. Now they go beyond Level 2 to learn Level 3 decomposition and composition strategies, informally called make ten or take from ten.

Level 1: Count all



Level 2: Count on

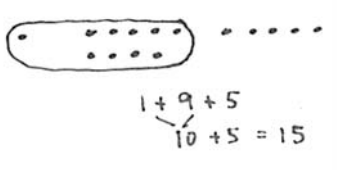
Level 3: Decompose an addend to compose ten

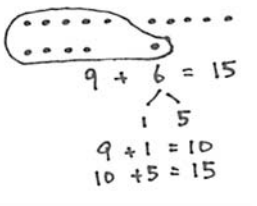


Though many students may continue to count on as their primary means of adding and subtracting, the larger purpose of composing and decomposing ten is to lay the foundation for the role of place value units in addition and subtraction. Meanwhile, from the beginning of the year, fluency activities have focused on the three prerequisite skills for the Level 3 decomposition and composition methods:

Partners to ten.
Decompositions for all numbers within 10.
Representations of teen numbers as 10 + n. For example, students practice counting the Say Ten way (i.e., ten 1, ten 2, …) from kindergarten on.

To introduce students to the make ten strategy, in Topic A students solve problems with three addends and realize it is sometimes possible to use the associative and commutative properties to compose ten, e.g., “Maria made 1 snowball. Tony made 5 and their father made 9. How many snowballs did they make in all?” 1 + 5 + 9 = (9 + 1) + 5 = 10 + 5 = 15. Since we can add in any order, we can pair the 1 with the 9 to make a ten first. Having seen how to use partners to ten to simplify addition, students next decompose a second addend in order to compose a ten from 9 or 8, e.g., “Maria has 9 snowballs and Tony has 6. How many do they have in all?” 9 + 6 = 9 + (1 + 5) = (9 + 1) + 5 = 10 + 5 = 15. Between intensive work with addends of 8 and 9 is a lesson exploring commutativity so that students realize they can compose ten from the larger addend.

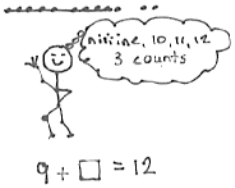




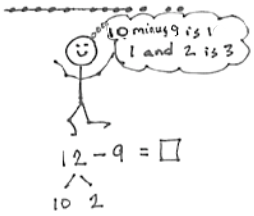
Throughout Topic A, students also count on to add. Students begin by modeling the situations with concrete materials, move to representations of 5-groups and progress to modeling with number bonds. The representations and models make the connection between the two strategies clear. For example, using the 5-groups pictured above, students can simply count on from 9 to 15, tracking the number of counts on their fingers just as they did in Module 1. They repeatedly compare and contrast counting on with making ten, seeing that the latter is a convenient shortcut. Many start to make the important move from counting on, a Level 2 strategy, to make ten, a Level 3 strategy, persuaded by confidence in their increasing skill and the joy of the shortcut. This is a critical step in building flexible part–whole thinking whereby students see numbers as parts and wholes, rather than as discrete counts or one part and some ones. 5-groups will begin to be thought of as ten-frames, focusing on the usefulness of trying to group 10 when possible. This empowers them in later modules and future grade levels to compose and decompose place value units and work adeptly with the four operations. For example, in Grade 1, this will be applied in later modules to solve problems such as 18 + 6, 27 + 9, 36 + 6, 49 + 7, and others.

To introduce students to the take from ten strategy, Topic B opens with questions such as, "Mary has two plates of cookies, one with 10 and one with 2. At the party, 9 cookies were eaten from the plate with 10 cookies. How many cookies were left after the party?" 10 – 9 = 1 and 1 + 2 = 3. Students then reinterpret the story to see its solution can also be written as 12 – 9.

Level 2: Count



Level 3: Decompose ten



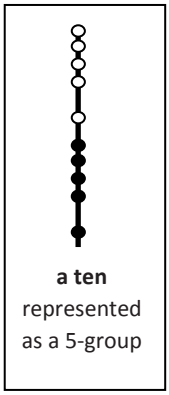
Students relate counting on and subtraction as pictured above. Notice the model is identical but the thinking is very different.

> "To solve 12 – 9, I count on from 9 to 12, nine, 10, 11, 12, three counts. To solve 12 – 9, I make 12 into 10 and 2 and subtract 9 from ten. 1 + 2 = 3."

Students practice a pattern of action, take from ten and add the ones, as they face different contexts in word problems, e.g., "Maria has 12 snowballs. She threw 8 of them. How many does she have left?" . This is important foundational work for decomposing in the context of subtraction problem solving in Grade 2, e.g., "Hmmm. 32 – 17, do I take 7 ones from 2 ones or from a ten?" Students will use horizontal linear models of 5-groups, or ten-frames to begin the transition towards a unit of ten, as shown in the above image.

Topic C presents students with opportunities to solve varied *add to with change unknown*, *take from with change unknown*, *put together with addend unknown,* and *take apart with addend unknown* word problems. These situations give ample time for exploring strategies for finding a missing part. The module has focused on counting on and subtracting by decomposing and composing. These lessons open up the possibilities to include other Level 3 strategies, e.g., 12 – 3 = 12 – 2 - 1. Teachers can include or adjust such strategy use, as they feel the new perspective will enhance understanding or if it will overwhelm or undermine. The topic closes with a lesson to further solidify their understanding of the equal sign as it has been applied throughout the module. Students match equivalent expressions to construct true number sentences and explain their reasoning using words, pictures, and numbers, e.g., 12 – 7 = 3 + 2, 10 + 5 = 9 + 6.

In Topic D, after all their work with 10, the module culminates naming a ten. Familiar representations of teen numbers, such as two 5-groups, the Rekenrek, and 10 fingers, are all renamed as a ten and some ones rather than 10 ones and some more ones. The ten is shifting to being one unit, a structure from which they can compose and decompose teen numbers. This significant step forward sets the stage for understanding all the numbers within 100 as composed of a number of units of ten and some ones. The horizontal linear 5-groups modeling of 10 will be moved to a vertical representation in preparation for this next stage, in Module 4, as shown in the image on the right. This topic's work is done while solving both abstract equations and contextualized word problems.



a ten
represented
as a 5-group

These are terms and symbols students have seen previously.

Terminology

a ten represented as a 5-group column

New or Recently Introduced Terms

A ten (Students will focus mainly on *one* ten during this module.)

Ones (These are individual units, ten of which become a ten.)

Familiar Terms and Symbols

5-Groups

Add

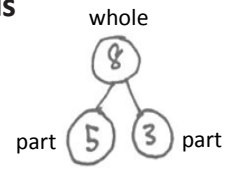
Equals

Number Bonds

Partners to ten

Subtract

Teen numbers



Number Bond

Suggested Tools and Representations

5-Group formations: 5-groups (and 5-group cards), 5-group rows, 5-group column

Hide Zero cards

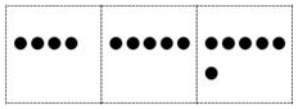
Number bonds

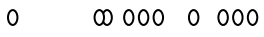
Number path

Rekenrek

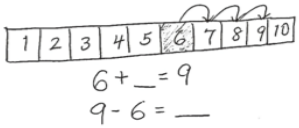
Numerals

5-groups

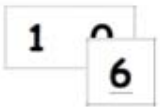


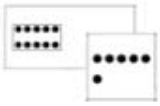


5-Group Rows



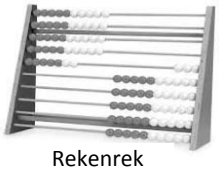
Number Path





Hide Zero

5-Group



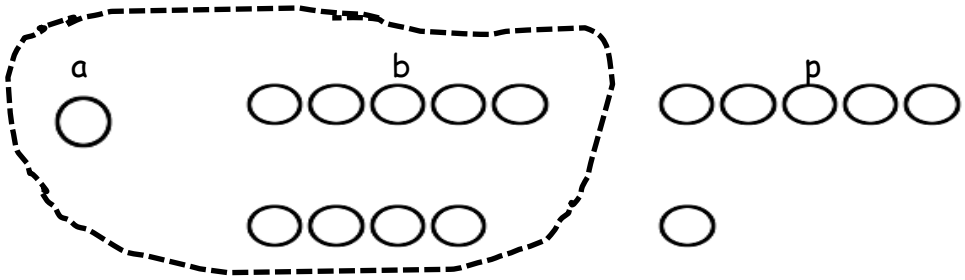
Rekenrek

Lesson 1

Objective: Solve word problems with three addends, two of which make ten.

Read the math story. Make a simple math drawing with labels. Circle 10 and solve.

Bill went to the store. He bought 1 apple, 9 bananas, and 6 pears. How many pieces of fruit did he buy in all?



_9__ + __1_ + _6__ = _16__

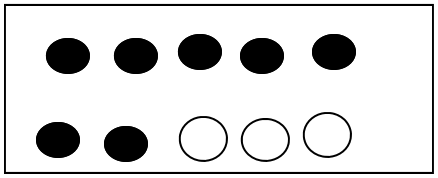
10 + _6__ = _16__

Lesson 2

Objective: Use the associative and commutative properties to make ten with three addends.

Circle the numbers that make ten. Draw a picture. Complete the number sentence.

7 + 3 + 4 = ☐



X X X X

10

__7__ + _3___ + __4__

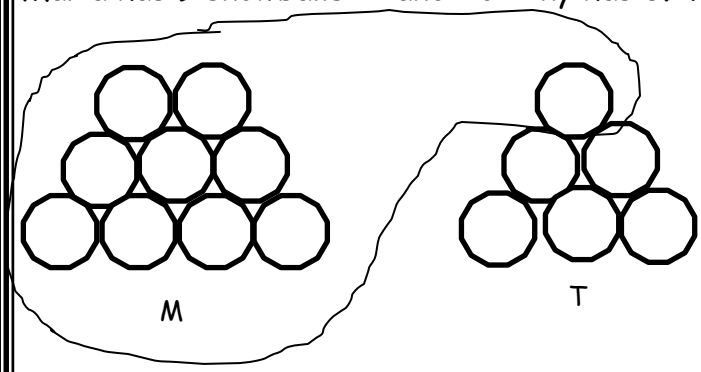
10 + 4 = 14

Lesson 3

Objective: Make ten when one addend is 9.

Draw and circle to show how you made ten to help you solve the problem.

Maria has 9 snowballs and To- ny has 6. How many snowballs do they have in all?



9 and ___6___ make __15____

10 and __5____ make __15____

Maria and Tony have ___15___ snow-balls in all.

Lesson 4

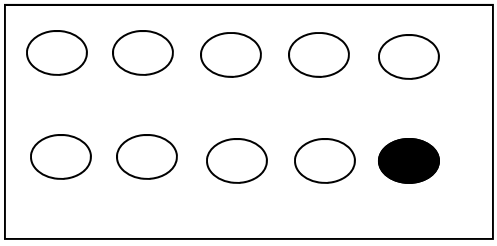
Objective: Make ten when one addend is 9.

Solve. Make math drawings using the ten-frame to show how you made 10 to solve.

9 + 5 = _14__

1 4

__10__ + __4_ = __14___



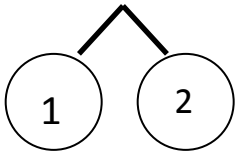
Lesson 5

Objective: Compare efficiency of counting on and making ten when one addend is 9.

Make ten to solve. Use the number bond to show how you took the 1 out.

Sue has 9 tennis balls and 3 soccer balls. How many balls does she have?

9 + 3 = 12



10 + 2 = 12

Sue has __12___ balls.

Lesson 6

Objective: Use the commutative property to make ten.

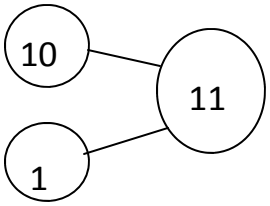
Solve. Write the bond for the related 10 fact.

9 + 2 = 11

1 1

2 + 9 = 11

1 1

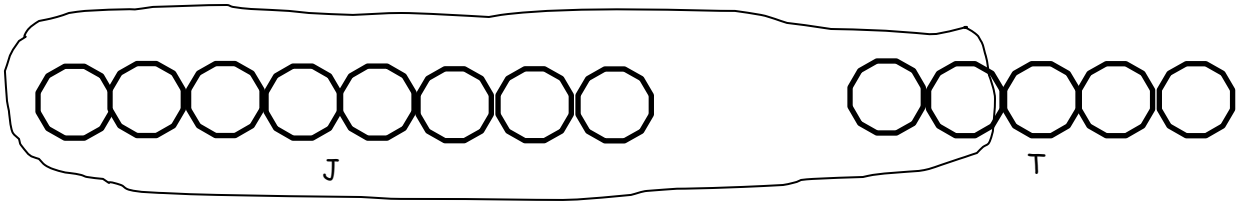


Lesson 7

Objective: Make ten when one addend is 8.

Draw and circle to show how you made ten to help you solve.

John has 8 tennis balls. Toni has 5. How many tennis balls do they have in all?



8 and __5____ make ___13___.

10 and __3____ make ___13___.

John and Toni have __13____ tennis balls in all.

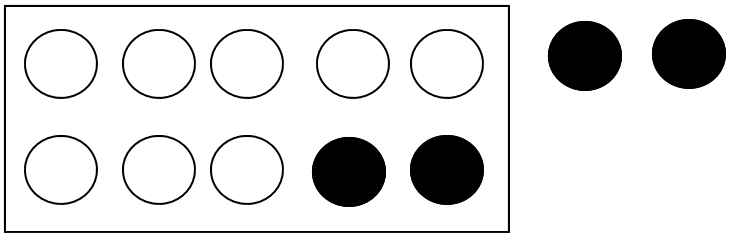
Lesson 8

Objective: Make ten when one addend is 8.

Solve. Make math drawings using the ten-frame to show how you made ten to solve.

8 + 4 = _12__ __10__ + __2__ = __12___

2 2



Lesson 9

Objective: Compare efficiency of counting on and making ten when one addend is 8.

Make ten to solve. Use a number bond to show how you took 2 out to make ten.

Ben has 8 green grapes and 3 purple grapes. How many grapes does he have?

8 + 3 = _11___

2 1

10 + __1__ = __11__

Ben has _11__ grapes.

Lesson 10:

Objective: Solve problems with addends of 7, 8, and 9.

Solve. If you want to, use drawings or number bonds. Write the equal 10+ fact.

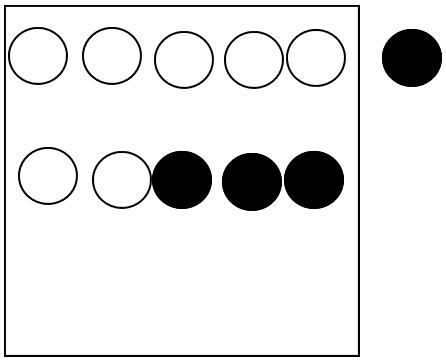
4 + 9 = __13_

3 1

6 + 8 = _14__

4 2

7 + 4 = _11__



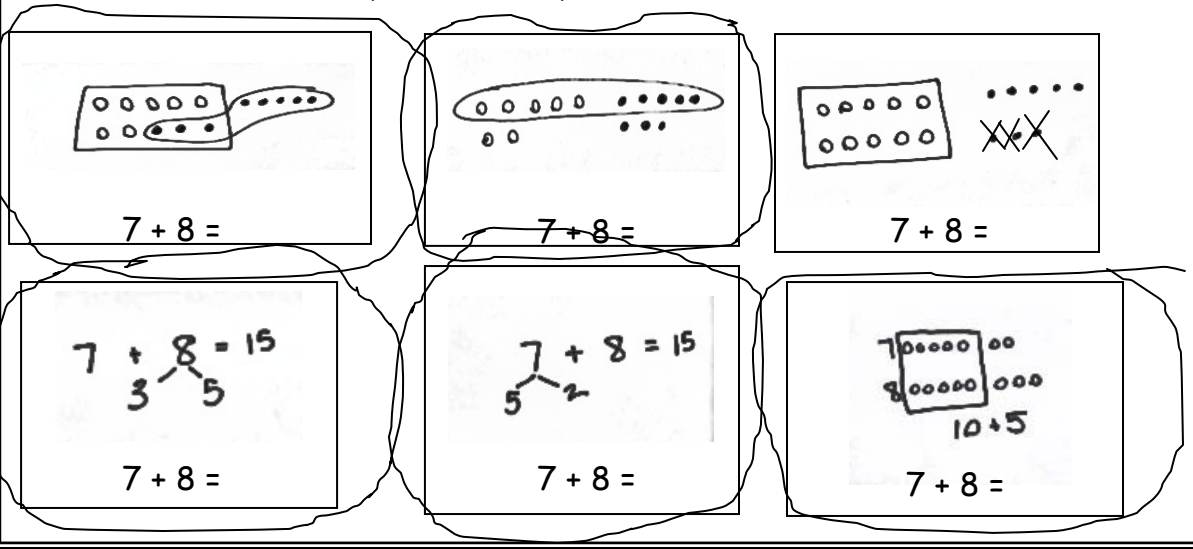
Lesson 11:

Objective: Share and critique peer solution strategies for *put together with total unknown* word problems.

Jeremy had 7 big rocks and 8 little rocks in his pocket.

How many rocks does Jeremy have?

Circle all student work that correctly matches the story. Fix work that was incorrect.

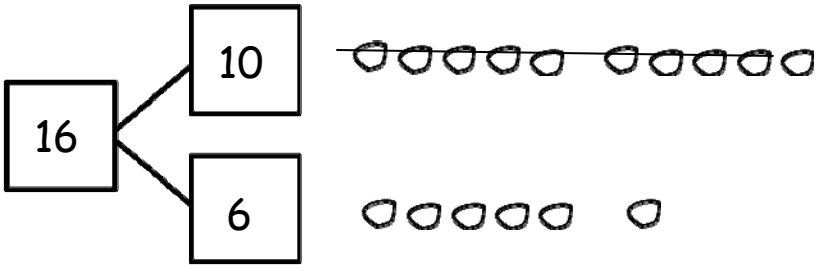


Lesson 12:

Objective: Solve word problems with subtraction of 9 from 10.

Make a simple math drawing. Cross out from the 10 ones or the other part, in order to show what happens in the stories.

Bill has 16 grapes. 10 are on one vine and 6 are on the ground.
Bill eats 9 grapes from the vine. How many grapes does Bill have left?



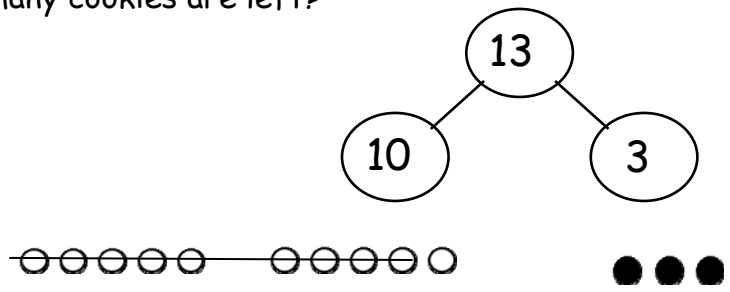
Bill has 7 grapes now.

Lesson 13:

Objective: Solve word problems with subtraction of 9 from 10.

Solve. Use 5-group rows and cross out to show your work.

Mike has 10 cookies on a plate and 3 cookies in a box. He eats 9 cookies from the plate. How many cookies are left?



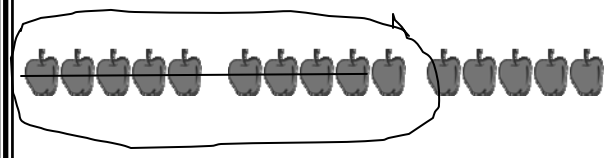
Mike has _4__ cookies left.

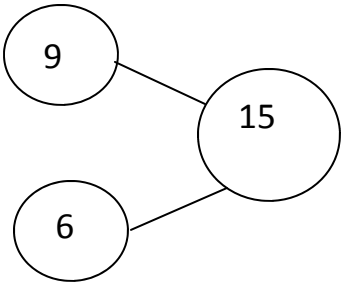
Lesson 14:

Objective: Model subtraction of 9 from teen numbers.

Directions: Circle 10 and subtract. Make a number bond.

15 - 9 = _6___

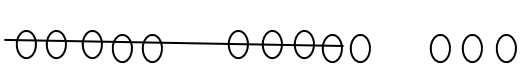




Lesson 15:

Objective: Model subtraction of 9 from teen numbers.

Directions: Draw 5-group rows. Visualize and then cross out to solve. Complete the number sentences.

13 - 9 = _4___ 

Lesson 16:

Objective: Relate counting on to making ten and taking from ten.

Directions: Solve the problem by counting on (a) and using a number bond to take from ten (b).

Lucy had 12 balloons at her birthday party. She gave 9 balloons to her friends. How many balloons did she have left?

(a) 12 - 9 = __3__ 9 ◯ ◯ ◯ 10, 11, 12

(b) 12 – 9 = _3__

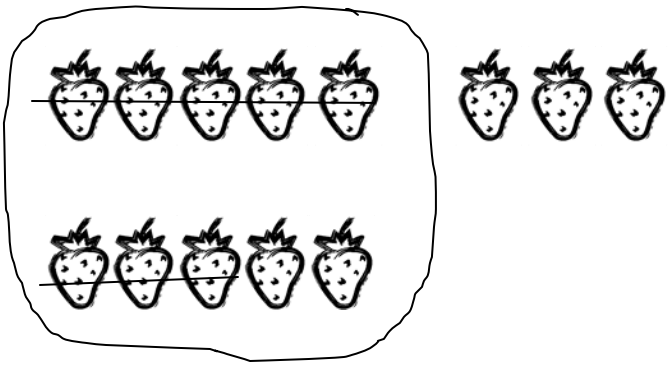
10 2

Lesson 17:

Objective: Model subtraction of 8 from teen numbers.

Directions: Circle 10 and subtract.

13 – 8 = __5__



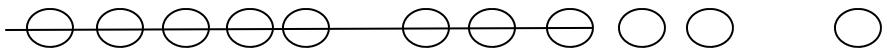
Lesson 18:

Objective: Model subtraction of 8 from teen numbers.

Directions:

Make a math drawing of a 5-group row and some ones to solve the following problems. Write the addition sentence that shows how to add the parts after subtracting 8.

11 – 8 = __3__



2 + 1 = 3

Lesson 19:

Objective: Compare efficiency of counting on and taking from ten.

Directions: Use a number bond to show how you used the take from ten strategy to solve the problem.

Kevin had 14 crayons. 8 of the crayons were broken. How many of his crayons were not broken?

Think 10—8 = 2

Think 2 + 4 = 6

14 - 8 = __6__

10 4

Kevin had __6_ crayons that were not broken.

Lesson 20:

Objective: Subtract 7, 8, and 9 from teen numbers.

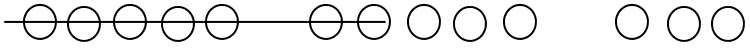
Directions: Complete the number sentences to make them true. Use drawings or number bonds.

13 - 9 = __4__ Think 10—9 = 1

10 3

Think 1 + 3 = 4

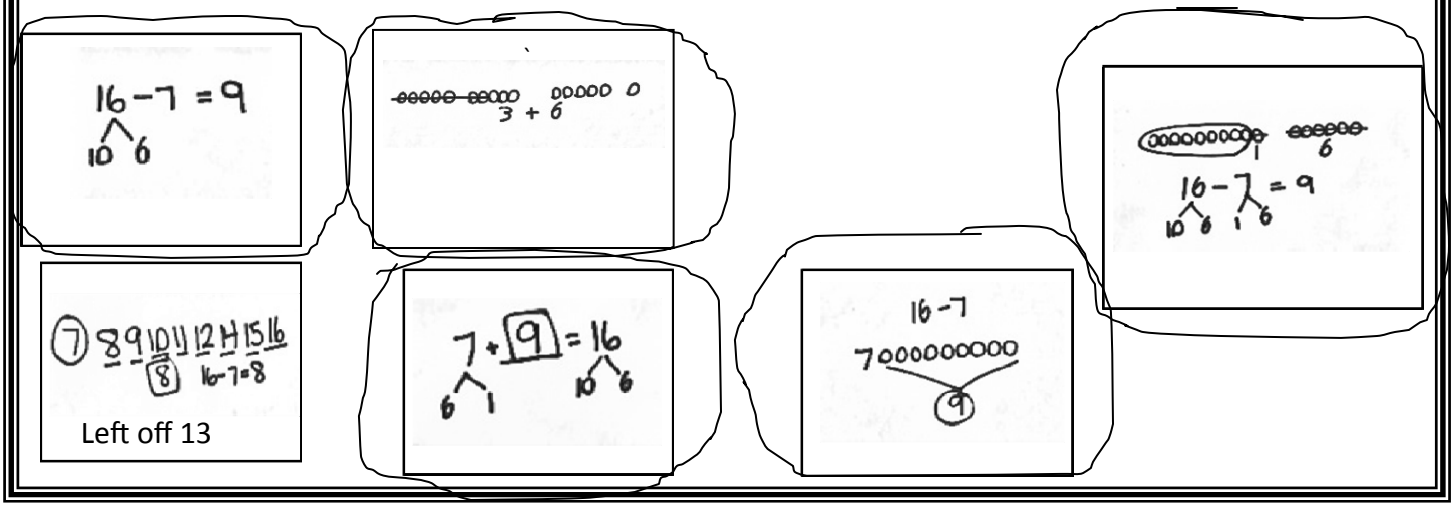
13 - 7 = _6___



Lesson 21:

Objective: Share and critique peer solution strategies for *take from with result unknown* and *take apart with addend unknown* word problems from the teens.

Directions: There were 16 dogs playing at the park. 7 of the dogs went home. How many of the dogs are still at the park? Circle all work that correctly matches the story. Fix what is incorrect.



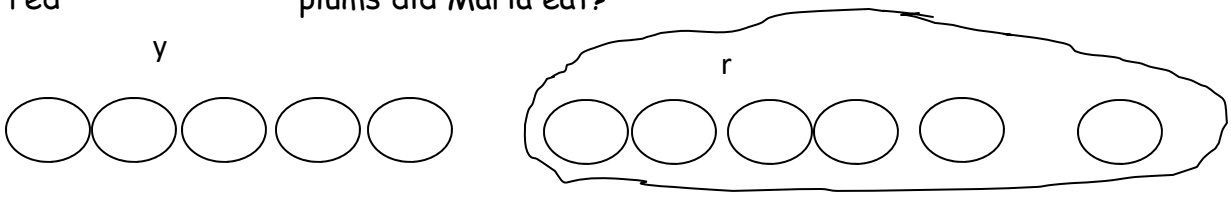
Left off 13

Lesson 22:

Objective: Solve *put together/take apart with addend unknown* problems and relate counting on to the take from ten strategy.

Directions: **R**ead the word problem. **D**raw and label. **W**rite a number sentence and a statement that matches the story.

This week, Maria ate 5 yellow plums and some red plums. If she ate 11 plums in all, how many red plums did Maria eat?



5 + 6 = 11

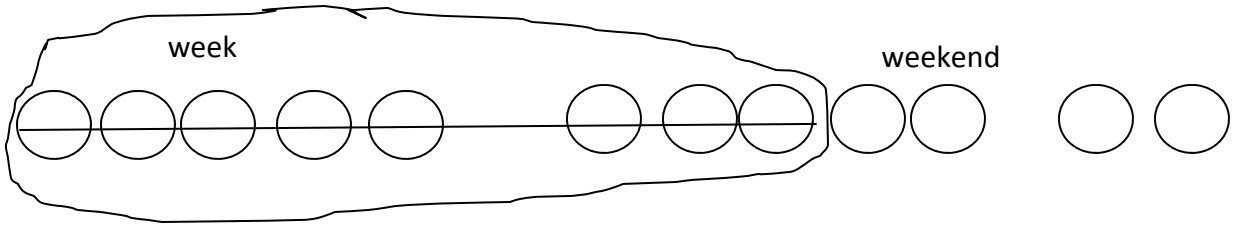
Maria ate 6 red plums.

Lesson 23:

Objective: Solve *add to with change unknown* problems, relating varied addition and subtraction strategies.

Read the word problem.
Draw and label.
Write a number sentence and a statement that matches the story.

Janet read 8 books during the week. She read some more books on the weekend. She read 12 books total. How many books did Janet read on the weekend?



12—8 = 4

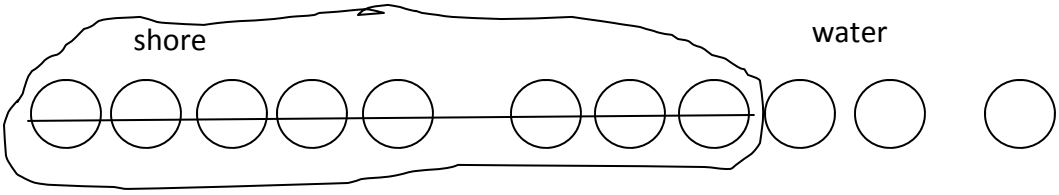
Janet read 4 books on the weekend.

Lesson 24:

Objective: Strategize to solve *take from with change unknown* problems.

Read the word problem.
Draw and label.
Write a number sentence and a statement that matches the story.

Jose sees 11 frogs on the shore. Some of the frogs hop into the water. Now there are 8 frogs on the shore. How many frogs hopped into the water.



3 frogs hopped into the water.

11—8 = 3

Lesson 25:

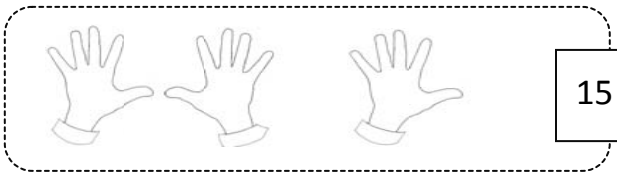
Objective: Strategize and apply understanding of the equal sign to solve equivalent expressions. Directions: Circle "true" or "false."

Equation	True or False?
2 + 3 = 5 + 1	True / False
7 + 9 = 6 + 10	True / False
11 – 8 = 12 – 9	True / False
15 – 4 = 14 – 5	True / False
18 – 6 = 2 + 10	True / False
15 - 8 = 2 + 5	True / False

Lesson 26:

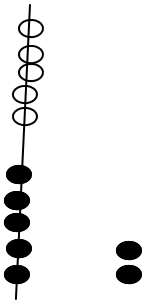
Objective: Identify 1 ten as a unit by renaming representations of 10.

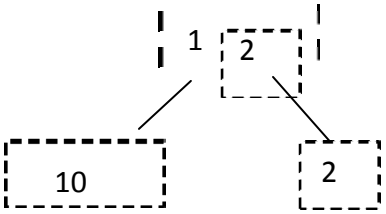
Directions: Circle **ten**. How many **tens** and **ones**?



is the same as

1 ten and 5 ones.





Is the same as

1 ten and 2 ones

Lesson 27:

Objective: Solve addition and subtraction problems decomposing and composing teen numbers as 1 ten and some ones.

Directions: Solve the problems. Write the answers to show how many **tens** and **ones**. If there is only 1 ten, cross off the "s."

12 + 6 = | 1 | 8 |

_1___ ten and _8___ ones

Lesson 28:

Objective: Solve addition problems using ten as a unit, and write two-step solutions.

Directions: Solve the problems. Show your solution in two steps:

Step 1: Write one number sentence to make ten.

Step 2: Write one number sentence to add to ten.

9 + 5 = | 1 | 4 |

__9__ + __1__ = __10__

__10__ + __4__ = __14__

Lesson 29:

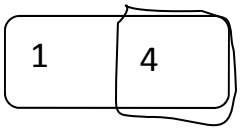
Objective: Solve subtraction problems using ten as a unit, and write two -step solutions.

Directions: Solve the problems. Write your answers to show how many **tens** and **ones**.

Show your solution in two steps:

Step 1: Write one number sentence to subtract from ten.

Step 2: Write one number sentence to add the remaining parts.



- 5 = __9___

10—5 = 5

5 + 4 = 9