

A Story of Units

Session Objectives

- Examine the sequence of concepts across the module.
- Study mathematical models and instructional strategies from *A Story of Units*.
- Prepare to implement this and subsequent modules of *A Story of Units*.

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A Story of Units

Agenda



Lesson Structure
Instructional Sequence
Module Review
Preparation for Implementation


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A Story of Units

Introduction to the Lesson Structure

Math Fingers Flash





Lesson 1, Fluency Practice


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A Story of Units

Introduction to the Lesson Structure

SPRINT: Count Dots

Problem	1	2	3	4	5	6	7	8	9	10
1	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10
6	10	10	10	10	10	10	10	10	10	10
7	10	10	10	10	10	10	10	10	10	10
8	10	10	10	10	10	10	10	10	10	10
9	10	10	10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10	10	10	10



Lesson 1, Fluency Practice

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Introduction to the Lesson Structure

SPRINT: Count Dots

Problem	1	2	3	4	5	6	7	8	9	10
1	10	10	10	10	10	10	10	10	10	10
2	10	10	10	10	10	10	10	10	10	10
3	10	10	10	10	10	10	10	10	10	10
4	10	10	10	10	10	10	10	10	10	10
5	10	10	10	10	10	10	10	10	10	10
6	10	10	10	10	10	10	10	10	10	10
7	10	10	10	10	10	10	10	10	10	10
8	10	10	10	10	10	10	10	10	10	10
9	10	10	10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10	10	10	10



Lesson 1, Fluency Practice

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The Role of Fluency

- Maintenance** staying sharp on previously learned skills
- Preparation** targeted practice for the current lesson
- Anticipation** skills that ensure that students will be ready for the in-depth work of upcoming lessons


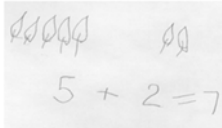
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A Story of Units

Introduction to the Lesson Structure

Dora found 5 leaves that blew in through the window.
Then, she found 2 more leaves that blew in.
Draw a picture and use numbers to show
how many leaves Dora found in all.



Lesson 1, Application Problem

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Application Problems

- Real world problem solving
- Placement in lesson depends on function
- Opportunity for informal assessment

Problem-solving process:

- Read** the problem
- Draw** and label a model to represent the problem
- Write** an equation and a complete word sentence

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Application Problems – HIDDEN SLIDE (p.2 of notes)

- Real world problem solving
- Placement in lesson depends on function
- Opportunity for informal assessment

Problem-solving process:

- Read** the problem
- Draw** and label a model to represent the problem
- Write** an equation and a complete word sentence

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Application Problems – HIDDEN SLIDE (p.3 of notes)

- Real world problem solving
- Placement in lesson depends on function
- Opportunity for informal assessment

Problem-solving process:

Read the problem

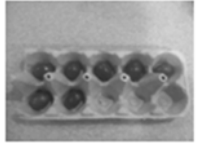
Draw and label a model to represent the problem

Write an equation and a complete word sentence

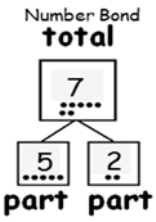
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Introduction to the Lesson Structure



Egg carton with two slots cut off.



Number Bond
total
7
part part
5 2

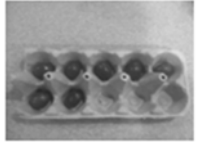


Lesson 1, Concept Development

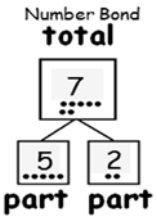
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Introduction to the Lesson Structure – HIDDEN SLIDE (p.2 of notes)



Egg carton with two slots cut off.



Number Bond
total
7
part part
5 2



Lesson 1, Concept Development

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Introduction to the Lesson Structure

2.

11.

3.

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A Story of Units

Concept Development

- New material
- Timing includes 10 minutes for Problem Set
- Moves from simple to complex

Problem Set

- Time frame rather than task frame
- Closely related to the other lesson components
- A good place to begin lesson planning

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Concept Development – HIDDEN SLIDE (p. 2 of notes)

- New material
- Timing includes 10 minutes for Problem Set
- Moves from simple to complex

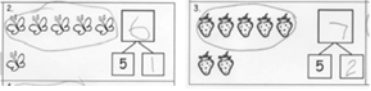
Problem Set

- Time frame rather than task frame
- Closely related to the other lesson components
- A good place to begin lesson planning

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A Story of Units

Introduction to the Lesson Structure

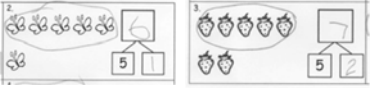


Look at Problems 2 and 3. Are there 5 butterflies? Where? What about strawberries?
Can you show me five fingers? Can you show me 5 fingers on 2 hands?
Look at your Application Problem. What were the 2 parts in our story problem?
Lesson 1, Student Debrief

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Introduction to the Lesson Structure – HIDDEN SLIDE (p. 2 of Notes)



Look at Problems 2 and 3. Are there 5 butterflies? Where? What about strawberries?
Can you show me five fingers? Can you show me 5 fingers on 2 hands?
Look at your Application Problem. What were the 2 parts in our story problem?
Lesson 1, Student Debrief

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Student Debrief

- Class conversation to reflect on the day's learning
- Make connections between parts of the lesson, concepts, strategies, and tools
- Students ultimately articulate the learning objective

Exit Ticket

- Daily formative assessment to drive instruction
- Time frame rather than task frame
- Tool for lesson planning

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Student Debrief – HIDDEN SLIDE (p. 2 of notes)

- Class conversation to reflect on the day’s learning
- Make connections between parts of the lesson, concepts, strategies, and tools
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Agenda

- Lesson Structure**
- Instructional Sequence**
- Module Review**
- Preparation for Implementation**

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A Story of Units

Instructional Sequence

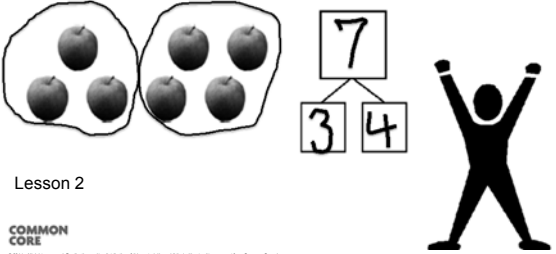
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Topic B: Counting On from Embedded Numbers	1.B.1
Topic C: Addition Word Problems	1.C.1
Topic D: Strategies for Counting On	1.D.1
Topic E: The Commutative Property of Addition and the Equal Sign	1.E.1
Topic F: Development of Addition Fluency Within 10	1.F.1
Topic G: Subtraction as an Unknown Addend Problem	1.G.1
Topic H: Subtraction Word Problems	1.H.1
Topic I: Decomposition Strategies for Subtraction	1.I.1
Topic J: Development of Subtraction Fluency Within 10	1.J.1

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A Story of Units

Embedded Numbers

Finding Embedded Partners within a Group



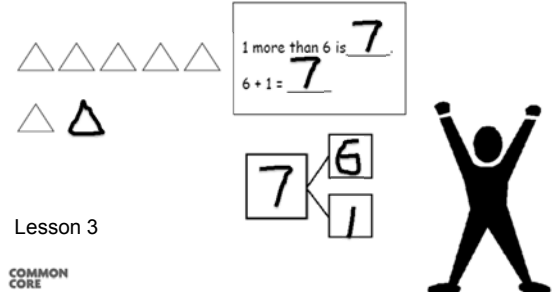
Lesson 2

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A Story of Units

Embedded Numbers

Identifying "1 more"

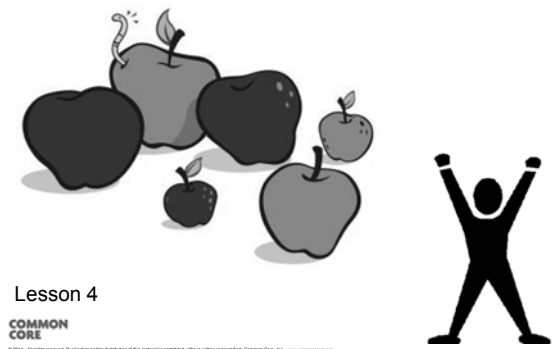


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Counting On


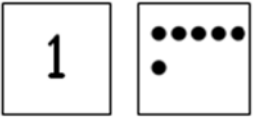


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A Story of Units

Counting On




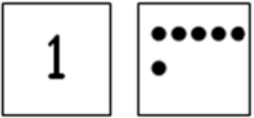
Lesson 5

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Counting On – HIDDEN SLIDE (p. 2 of Notes)





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A Story of Units

Counting On



Lesson 6



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A Story of Units

Counting On

Rekenrek bracelet with 5 white beads and 5 red beads.


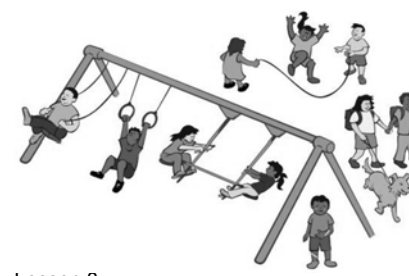


Lesson 8

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A Story of Units

Counting On



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A Story of Units

Addition Word Problems

Add To with Result Unknown

Put Together with Total Unknown



Lesson 9 and 10

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A Story of Units

Addition Word Problems

Add To with Result Unknown or **Put Together** with Total Unknown?

*There are 4 inch-worms on a giant leaf.
3 more inch-worms crawled onto the leaf.
How many inch-worms are there now?*

Lesson 9



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A Story of Units

Addition Word Problems

Add To with Result Unknown or **Put Together** with Total Unknown?

*There are 3 students sitting at recess.
There are 7 students standing at recess.
How many students are at recess?*

Lesson 10



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A Story of Units

Addition Word Problems

Add To with *Change* Unknown

*Once upon a time, 3 little bears went to play tag in the forest.
Then, some more bears came over.
In the end, there were 5 little bears playing tag in the woods altogether.
How many bears came over to play?*

Lesson 11





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A Story of Units

Addition Word Problems

Add To with Change Unknown



$$5 + \underline{\quad} = 9$$


Lesson 12

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A Story of Units

Addition Word Problems

Add To with Change Unknown

$7 + \square = 8$

$8 = 6 + \square$



Lesson 12

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A Story of Units

Addition Word Problems

Students tell stories from equations:
Add To with Result Unknown
Put Together with Total Unknown
Add to with Change Unknown.

$$6 + 2 = \square \quad 5 + \square = 7$$

$$5 + 5 = \square \quad 6 + \square = 10$$


Lesson 13

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A Story of Units

Strategies for Counting On

Tracking

- 5-group cards
- Fingers

$6 + 3 = \square$

Lesson 14 and 15

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A Story of Units

Strategies for Counting On

Let's play Count On!

3
+

=
5

4
+

=
6

6
=
5
+

Lesson 15

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A Story of Units

Strategies for Counting On

Counting On to Find the Unknown Addend

4

+

=

7

8

=

5

+

10

=

+

8

Lesson 16

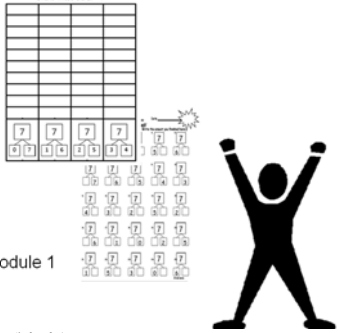
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A Story of Units

Fluency to Practice Topics A through C

Shake Those Disks
Number Bond Dash
Count On Drums
Penny Drop
Fluency Activities within Module 1

Shake Those Disks - 7

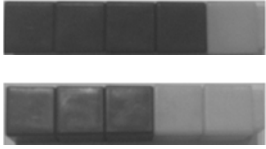


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A Story of Units

Commutative Property of Addition and the Equal Sign

Pairs of Expressions and the Meaning of the Equal Sign



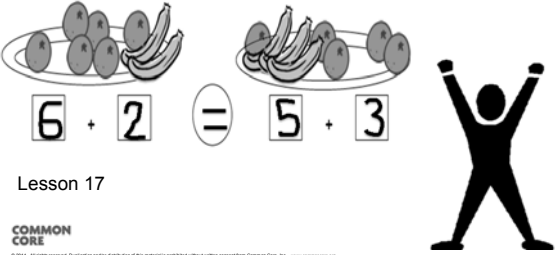
Lesson 17

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A Story of Units

Commutative Property of Addition and the Equal Sign

Pairs of Expressions and the Meaning of the Equal Sign



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A Story of Units

Commutative Property of Addition and the Equal Sign

True and False Number Sentences

$4 + 2 = 5 + 3$



Lesson 18

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A Story of Units

Commutative Property of Addition and the Equal Sign – HIDDEN SLIDE (p. 2 of notes)

True and False Number Sentences

$4 + 2 = 5 + 3$



Lesson 18


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A Story of Units

Commutative Property of Addition and the Equal Sign

True and False Number Sentences



$5 + 1 = 3 + 3$



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A Story of Units

Commutative Property of Addition and the Equal Sign

The Commutative Property



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A Story of Units

Commutative Property of Addition and the Equal Sign

Counting On from the Larger Addend

$1 + 7 = 7 + 1$

Knowing $1 + 7$ is the same as $7 + 1$, which would be a faster way to find out the total?

- Should we start at 1 and count on 7?
- Should we start at 7 and count on 1?

Lesson 20

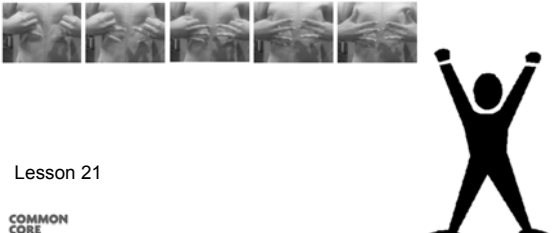
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A Story of Units

Development of Addition Fluency Within 10

Using one math fact to solve another:
Use Doubles.....



Lesson 21

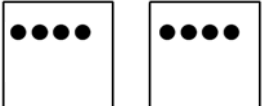
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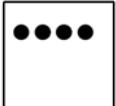
A Story of Units

Development of Addition Fluency within 10


Using one math fact to solve another:
....To Solve Doubles Plus One



$4 + 4 = \square$



$4 + 5 = \square$



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A Story of Units

Development of Addition Fluency within 10

Using one math fact to solve another:

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






Lesson 22

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A Story of Units

Development of Addition Fluency within 10

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								



Lesson 22

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A Story of Units

Development of Addition Fluency within 10


Using one math fact to solve another:

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								

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A Story of Units

Development of Addition Fluency within 10

Using one math fact to solve another:


Use your chart to write a list of number sentences in the space below.

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

Lesson 23

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A Story of Units

Development of Addition Fluency within 10


Using one math fact to solve another:

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

Lesson 24

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A Story of Units

Development of Addition Fluency within 10

Using one math fact to solve another:

4 + 3
5 + 2
5 + 1
4 + 2

4 + 4
5 + 5
3 + 5
4 + 4



Lesson 24


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A Story of Units

Subtraction as an Unknown Addend

Once upon a time, 4 little bears went to play tag in the forest. Some more bears came over. In the end, there were 6 little bears playing tag in the woods.

How many more bears came to play?



Lesson 25


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A Story of Units

Subtraction as an Unknown Addend - HIDDEN SLIDE (p.2 of notes)

Once upon a time, 4 little bears went to play tag in the forest. Some more bears came over. In the end, there were 6 little bears playing tag in the woods.

How many more bears came to play?



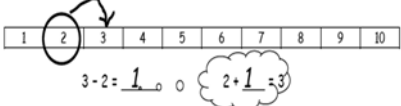
Lesson 25

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A Story of Units

Subtraction as an Unknown Addend


Using a Number Path



$3 - 2 = \underline{\quad} \circ$ $2 + 1 = 3$

Lesson 26 and 27

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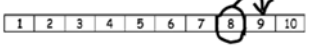
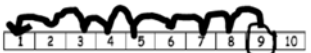


A Story of Units

Subtraction as an Unknown Addend

Should we count on or count back?


9 - 8



What about 9 - 2?

Lesson 26 and 27

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A Story of Units

Subtraction Word Problems

Take From with Result Unknown


Put Together/Take Apart with Addend Unknown

Add To with Change Unknown

Take From with Change Unknown

Lessons 28 - 32

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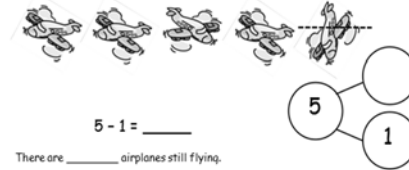


A Story of Units

Subtraction Word Problems

Is this a **Take From** or **Take Apart** Problem?

There are 5 toy airplanes flying at the park.
1 went down and broke.
How many airplanes are still flying?



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

There are airplanes still flying.

Lessons 28

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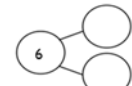
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A Story of Units

Subtraction Word Problems

Is this a **Take From** or **Take Apart** Problem?

There are apples.
 have worms. Yuck!
How many good apples are there?

$6 - \square = \square$

There are good apples.

Lessons 29

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
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A Story of Units

Subtraction Word Problems

Add To with *Change Unknown*

2. Kate and Nana were baking cookies. They made 5 heart-shaped cookies and then made some square cookies. They made 8 cookies altogether. How many square cookies did they make? Draw and solve.

$5 + \square = 8$

$8 - 5 = \square$

Lessons 30

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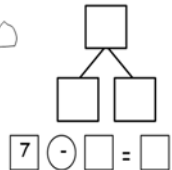

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A Story of Units

Subtraction Word Problems

Take From with Change Unknown

1. Kate made 7 cookies. Bill ate some. Now Kate has 5 cookies.
How many cookies did Bill eat?

Bill ate _____ cookies.

Lessons 31



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A Story of Units

Decomposition Strategies for Subtraction

How many beads on our number bracelet? Take one bead away.
How many beads do you have now?

$10 - 1 = 9$
 $9 - 1 = 8$
 $8 - 1 = 7$
 $7 - 1 = 6$



Lessons 33


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A Story of Units

Decomposition Strategies for Subtraction

Take away 0 beads. How many beads do we have now?



$4 - 0 = 4$
 $5 - 0 = 5$
 $6 - 0 = 6$
 $7 - 0 = 7$
 $8 - 0 = 8$
 $9 - 0 = 9$
 $10 - 0 = 10$



Lessons 33


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A Story of Units

Decomposition Strategies for Subtraction

How many beads do we have on our bracelet?




Take away 10 beads.
How many do we have now?

$10 - 10 = 0$
 $9 - 9 = 0$
 $8 - 8 = 0$
 $7 - 7 = 0$

Lessons 34

How are these problems similar to each other?




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A Story of Units

Decomposition Strategies for Subtraction

How many beads do we have on our bracelet?




Take away 9 beads.
How many do we have now?

$10 - 9 = 1$
 $8 - 7 = 1$
 $7 - 6 = 1$

Lessons 34

How are these problems similar to each other?




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A Story of Units

Decomposition Strategies for Subtraction

Show 7 on your hands the Math Way.
Use your hands to show $7 - 5$.
 $7 - 5 = 2$
Use your hands to show $7 - 2$.
 $7 - 2 = 5$



Lessons 35




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A Story of Units

Decomposition Strategies for Subtraction

Consider doubles when subtracting....



Which of the expressions below is made by splitting up a double?

$7 - 3$ $8 - 4$ $9 - 2$

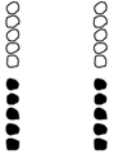
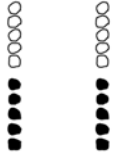
Lessons 35

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A Story of Units

Decomposition Strategies for Subtraction

Subtracting from 10 using partners

1.  2. 

$10 - 9 = \underline{\quad}$ $10 - 6 = \underline{\quad}$

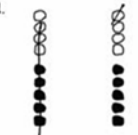
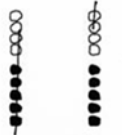
Lessons 36 $10 - 1 = \underline{\quad}$ $10 - 4 = \underline{\quad}$

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A Story of Units

Decomposition Strategies for Subtraction

Subtracting from 9 using partners

1.  2. 

$9 - 8 = \underline{1}$ $9 - 7 = \underline{2}$

Lessons 36 $9 - 1 = \underline{8}$ $9 - 2 = \underline{7}$

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A Story of Units

Development of Subtraction Fluency Within 10

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									

Pick a subtraction flashcard.
Find the related addition fact on the chart and shade it in.
Write the subtraction sentence and a number bond to match.
Continue for at least 6 turns.

Lesson 38 & 39

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A Story of Units

End-of-Module Assessment

There are 9 ducks swimming along in a line. There are 2 grown-up ducks, and the rest are babies. How many of the ducks are babies?

a. Explain your thinking using pictures, numbers or words.

b. Write a number sentence that shows how you solved the problem.

How would you solve this problem?

End-of-Module Assessment

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A Story of Units

Agenda

Lesson Structure
Instructional Sequence
Module Review
Preparation for Implementation


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A Story of Units

Progression Study

- What are the Progressions?
- Explore: *K-5, Operations and Algebraic Thinking Progression*
 - Read page 6
 - Scan page 9
 - Read pages 13-15 (starting with the 2nd full paragraph on p.13, ending with the 2nd full paragraph on p. 15)
- Highlight the information relevant to the content of this module.



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A Story of Units

Progression Study

Study Lessons 6, 14, and 25.

Then, turn and talk:

- How do these lessons engage students in the work described in the Progression?



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A Story of Units

Coherence Within the Module

Analyze the progression of each lesson component across the Module.

- What does the sequence of Fluency Practices accomplish as a whole?
- How does the sequence of Application Problems connect to topic/module?
- How does the sequence of Concept Development and Student Debrief build toward mastery of the topic/module?



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A Story of Units

Coherence Within the Module

Analyze the progression of each lesson component across the Module.

- What does the sequence of Fluency Practices accomplish as a whole?
- How does the sequence of Application Problems connect to topic/module?
- How does the sequence of Concept Development and Student Debrief build toward mastery of the topic/module?



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A Story of Units

Agenda

- Lesson Structure**
- Instructional Sequence**
- Module Review**
- Preparation for Implementation**

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A Story of Units

Practice a Planning Protocol

- With any topic from *A Story of Units*, read the module overview and the topic opener.
- Study the module assessment, paying particular attention to the sample responses provided.

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A Story of Units

Practice a Planning Protocol

- Read through the first lesson of the topic.
- Then, take note of the lesson objective and re-examine the exit ticket with the objective in mind. What major concept is necessary to successfully complete the exit ticket?
- Study the concept development and problem set. How do the CD/PS develop the major concept that is required in the exit ticket? What parts of the CD/PS go beyond this major concept?

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A Story of Units

Practice a Planning Protocol

- How will this knowledge empower teachers to support specific groups of learners?
- Turn to the subsequent lesson, and examine the exit ticket. How does this exit ticket build on the last? How are the two exit tickets similar and how are they different?
- Will students have an opportunity in the second lesson to continue development of the first lesson's objective? What level of mastery of the first lesson's objective is necessary in preparation for the second lesson?

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A Story of Units

Practice a Planning Protocol

- How does the new plan for implementation impact the student debrief?
- Are any adjustments needed to the fluency and/or application components of the lesson?

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A Story of Units

Practice a Planning Protocol

Repeat this process for each lesson.

- Read lesson.
- Study exit ticket. Identify critical portions of concept development and problem set.
- Consider needs of specific students.
- Refer to subsequent exit ticket. Revise implementation plan as needed.
- Make adjustments to the student debrief as needed.
- Consider the other lesson components, ensuring a balance of rigor.

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A Story of Units

Biggest Takeaway

I now know...

I need to figure out...



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A Story of Units


Key Points

- When making instructional decisions in order to meet the needs of specific students, there are only two rules:
 - Honor the objective!
 - Honor the balance of rigor!
- *Add key points about the content of M1 here...*

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A Story of Units

Next Step
The first thing I'll do to prepare is...



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