Lesson Plan #2, Kate Waldron

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| Standard |
| 2.OA.1 - Use addition and subtraction within 100 to solve one- ~~and two~~-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g, by using drawings and equations with a symbol for the unknown number to represent the problem.  *Note: In this lesson, we will only be addressing one-step word problems since it’s an introductory lesson. You can differentiate this lesson by doing two-step word problems for students who need a challenge. You can also teach two-step word problems as a follow up from this lesson.* |
| Objective |
| Students will learn to solve one-step subtraction word problems using a part-part-whole box diagram.  Student Language: I can solve one-step subtraction problems using the part-part-whole model. |
| Background Knowledge |
| * We have been working with the concept of part + part = whole and whole – part = part. Students are familiar with how to solve addition and subtraction problems using a part-part-whole box diagram when the diagram is given to them with two of the numbers already in it. This lesson will build on that concept, but students will need to determine if the number is a part or a whole and then place the numbers in the diagram based on what the word problem is asking. * Students will need to be able to add and subtract fluently within 100 using strategies. * Students will need to be familiar with word clues to determine if the numbers in the word problem are parts or a whole. |
| Possible Misconceptions |
| I anticipate that students might confuse which pieces of parts and whole to group together in the box diagram. After reading the word problems, they may also confuse which operation needs to be done. I actually hope that these misconceptions come up and that student either discover their own mistake while explaining their thinking process or that other students will notice and help the other student clarify their thinking. |
| DOK Levels/Activities |
| Level 3: Construct knowledge and develop a logical argument. The goal is for students to apply their previously learned knowledge about part-part-whole in a new way and then explain their thinking. |
| Materials |
| *Bunny Money* by Rosemary Wells  Whiteboard & dry erase markers  Class Poster  Student work mat (part-part-whole) |
| Engage |
| Today, we are going to investigate how to solve word problems. We are going to look at the numbers and words that are given to us and determine if the numbers given to us are a part or whole. To do this, we will use the part-part-whole concept that we have been working on.  With a show of thumbs, how many of you have ever wanted to buy a gift for someone? Well, in this story, *Bunny Money*, Max and Ruby want to buy their Grandma a birthday present. They run into a few problems. Let’s read this story about Max and Ruby and figure out what’s happening to all of their money.  T will read *Bunny Money*. T will ask the following questions:   * Page 1: Let’s count the money that Ruby has in her wallet. How much money did they start out with? (T & S count the money shown in Ruby’s wallet: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15) So Ruby and Max start out with $15. Is this a part or a whole? How do you know? * Why are Max and Ruby going shopping? * Page 3: Let’s make a prediction. Will this be a problem where we are taking parts away from a whole or putting parts together to make a whole? How do you know? (Taking parts away from a whole $15 - $1 for bus ride) * Page 10: Soap cost a dollar, the washer cost a dollar, and the dryer cost a dollar. How much money is that total? ($3) Using the part-part-whole diagram, where do we need to place the numbers in the boxes? ($14 whole - $3 part = $11 part for the laundromat) * Page 12: Let’s create a part-part-whole box. Max and Ruby just spent another $4. What would be my whole? ($11: the part from the previous page becomes our new whole) What would be my part? ($4) So what is the missing part? ($7) What are some of the things that Max and Ruby have spent money on? Are these parts or wholes? * Page 14: Will Max and Ruby have enough money to buy a birthday gift for their grandma? How do you know? * Page 16: Let’s create a part-part-whole box together. (follow steps from page 12) * Page 20: How are Max and Ruby going to solve their problem of getting home? * Page 22: Let’s look at all of the part-part-whole boxes we have created throughout the story. What do you notice about the parts and the whole in this story? |
| Examine |
| Max and Ruby’s adventure about getting their grandma a birthday present is just like putting a whole bunch of word problems together. Let’s take a look at some other examples of word problems and how we might set them up. We will work together to determine what numbers are the parts and what numbers are the whole.   1. T shows example: Max went shopping for grandma’s birthday party and bought 15 balloons. Some were red and some were blue. If 7 were red, how many balloons were blue?  * How would we set this problem up? How do you know? * Are there other strategies we could use to help us clarify our thinking? (word clues) * Let’s look at the number 15. Is this a part or a whole? How do you know? * Let’s look at the number 7. Is this a part or a whole? How do you know? * What would our equation look like?   T will show part-part-whole box and subtraction number sentence.   1. Example 2 (S work with a partner) following same steps for example 1: Ruby made 30 cupcakes for the party. She gave 27 cupcakes to the guests at the party. How many cupcakes does she have left? 2. Example 3 (S will try on their own): Grandma received 45 gifts at her birthday party. Ruby and Max helped carry all of her gifts home. On their way to Grandma’s house, they lost 18 of the gifts. How many gifts did they still have? |
| Explore |
| We are going to be math detectives and solve some math mysteries. With your partner, you will need to first read your word problem and decide if the information in the problems in part information or whole information. Then you can use any of your tools and strategies to solve for your answer. You will need to be able to explain how you know which pieces of the problem are parts and which is the whole. You will also need to explain what to do to solve your mystery and how you got your answer.  (S will be partnered up and given one of three problems to solve. T will move around and support and facilitate discussion. T will also take note of which S to share on the ELMO. S who finish early can try a second word problem.) |
| Explain |
| Okay, mathematicians, it is time for us to look at our work.  T will call students to share their thinking. T will call on students who solved the same problem using a different strategy as well as a student who has a misconception if available. S will explain their thinking and receive feedback from peers. |
| Extend/Closing |
| When I say go, turn to your elbow partner and tell them one thing new you learned today.  T 🡪 S “Can any mathematician share with the class what we learned about today?”  T “Great, we learned about solving word problems using the part-part-whole box strategy.”  S will be given an exit ticket assessment: “Now you will each be given a word problem. On your own, you will need to solve the problem using the part-part-whole strategy and explain your thinking in words. This is an independent activity so I need our voice level at 0.”  Once students complete the exit ticket, they may start a math workstation activity. |
| Evidence of Learning/Assessment |
| Students will complete their individual exit ticket. They will solve a word problem using the part-part-whole model, provide a number sentence, and explain their thinking in words.  S will also show evidence of learning when explaining their thinking verbally in presenting their solutions in the “explore” portion of the lesson. |

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Problem A

Directions: Read each word problem. Solve the word problem using the part-part-whole diagram and write a number sentence. Then, explain your thinking.

Max had $35 that he got for his birthday. He decided to buy Ruby a book at the book fair that cost $19. How much money does Max have left over?

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Number sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain your thinking:

How did you solve this problem? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Problem B

Directions: Read each word problem. Solve the word problem using the part-part-whole diagram and write a number sentence. Then, explain your thinking.

Ruby and Max’s parents gave them 42 books. Ruby and Max decided to donate 16 books to their school. How many books did they keep for themselves?

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Number sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain your thinking:

How did you solve this problem? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Problem C

Directions: Read each word problem. Solve the word problem using the part-part-whole diagram and write a number sentence. Then, explain your thinking.

Max was feeling sick. His mom gave him a box of 53 tissues. He used 32 tissues to blow his nose. How many tissues remain in the box?

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Number sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain your thinking:

How did you solve this problem? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exit Ticket Assessment

Directions: Read the word problem. Solve the word problem by using the part-part-whole strategy and provide a number sentence. Then, explain your thinking in words.

Johnny had $30 when he went to the store. He bought some apples for $18. How much money does he have left?

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Number sentence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain your thinking:

How did you solve this problem? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Max went shopping for grandma’s birthday party and bought 15 balloons. Some were red and some were blue. If 7 were red, how many balloons were blue?

Ruby made 30 cupcakes for the party. She gave 27 cupcakes to the guests at the party. How many cupcakes does she have left?

Grandma received 45 gifts at her birthday party. Ruby and Max helped carry all of her gifts home. On their way to Grandma’s house, they lost 18 of the gifts. How many gifts did they still have?