Task: Addie's Equation	**2nd Grade**

Addie needs your help! She cannot find the answer to this math problem. She needs you to help her fill in the box with the correct number.

$$24+7=6+\square$$

(1) What number should go in the box? Explain your thinking using words and a drawing.

(2) Write your own story problem to model this situation. Be creative.

Teacher Notes:

For part 1, students could approach the problem a number of ways. They could add the left side of the equation first by using a number line, ten frames, or drawing a picture. Then, they could subtract 6 from their result or they could think what number added to 6 equals 31. Encourage students to think about this in more than one way. Another way is to think of equality as "balance." For example, regardless of the sum on the left side of the equation, they should reason that since 6 is 1 less than 7, the number that fills in the box should be one more than 24.

For part 2, student answers can vary greatly. Stress to the students that they need to be creative, but that their stories need to deal with a situation that ends in a question. For example, Suzy had 24 lilies then bought 7 more lilies. Sally had 6 lilies. How many lilies does Sally need to buy to have the same amount as Suzy?

Common Core State Standards for Mathematical Content	**Common Core State Standards for Mathematical Practice**
2.OA.A.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. **2.NBT.B.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**1. Make sense of problems and persevere in solving them.** **2. Reason abstractly and quantitatively.** 3. Construct viable arguments and critique the reasoning of others. **4. Model with mathematics.** 5. Use appropriate tools strategically. **6. Attend to precision.** 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

Essential Understandings

- Missing numbers in a math sentence/equation or word problem can be found using addition and subtraction.
- Subtraction has an inverse relationship with addition.
- Part-part-whole relationships can be expressed by using number sentences like a + b = c or c – b = a, where a and b are the parts and c is the whole.

<table>
<tr><th colspan="2">Explore Phase</th></tr>
<tr><th>Possible Solution Path</th><th>Assessing and Advancing Questions</th></tr>
<tr><td>(1) (a) Students could reason that since 6 is 1 less than 7, the number that fills in the box should be one more than 24.
(b) Students could state they added the left side first and then subtracted 6 from 31.
$24 + 7 = 6 + ?$
$31 = 6 + ?$
$31 - 6 = ?$
$25 = ?$
(c) Students could state they added the left side first and then thought about what number they would need to add to six to obtain 31.
(d) Students could draw various pictures including: ten frames, a number line, a hundreds board, or any item of their choice.
(2) Students could write a variety of story problems for this equation as long as the equation can be derived from the story.</td><td>Assessing Questions
▪ (1) How did you find the missing number? Do your pictures match up with what you are saying?
▪ (2) Does your word problem or story model the equation you are given? How?
Advancing Questions
▪ (1) Is there another way to think about this problem? How else could you find the missing number?
▪ (2) Can you come up with your own equation and write a word problem to go with it?</td></tr>
<tr><th colspan="2">Possible Student Misconceptions</th></tr>
<tr><td>▪ (1) Students could add 24 and 7 incorrectly by regrouping incorrectly.
▪ (1) Students could make an error when subtracting 6 from 31.
▪ (1) Students may try to subtract 31 from 6.
▪ (2) Students could write a story that does not model the equation given.</td><td>Assessing Questions
▪ (1) What side of the equation should we start with? How do you know? Draw a picture or number line to help you do the math.
▪ (2) Read your story. Try to write an equation based on your story. Does it match the one given in the problem? What could you do to your story to make it match the equation given?</td></tr>
<tr><th>Entry/Extensions</th><th>Assessing and Advancing Questions</th></tr>
<tr><td>If students can’t get started….</td><td>Assessing Questions
▪ (1) Where do you think you should start? What do you know you can do? Draw a picture to help you.
▪ (2) Think about your favorite game or candy. Using these ideas, try to write a story based on those things. Can you come up with a game or activity to make this fun to read?</td></tr>
<tr><td>If students finish early….</td><td>Assessing Questions
▪ (1) How did you solve for the missing number? Discuss your method with a peer.
▪ (2) Trade stories with a partner. Are you able to write out the equation the story is telling you about? Does it match the equation given in the problem?
Advancing Questions
▪ (1) Instead of a 6, make that number a 12. How does that change the missing number? Can you compute this mentally? How?
▪ (2) Come up with your own equation. Switch with a partner and write a story based on your partner’s equation.</td></tr>
</table>

Discuss/Analyze
Whole Group Questions
Write the key understandings that students should come to in the discussion of this task and questions you can ask in the whole group setting to support arrival at these key understandings.
Part-Part-Whole ▪ Can anyone tell me some ways you solved for the missing number? Why did you choose this method? ▪ Why do these give you the same answer? Explain.
Comparing Stories ▪ How do we know that these stories match the equation? What are some key words that help us out? ▪ Are there words that help us know when to add and subtract in each story?

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