

<b>1<sup>st</sup> Grade</b>	
<b>Task: Happy Birthday Austin!</b>	
It is Austin’s birthday today! Austin’s sister, Tina, is 11 years old and is 5 years older than Austin.	
(1) How old is Austin? Explain your answer using words and pictures.	
(2) If Austin’s mom is 40 years older than Austin, how old is Austin’s mom? Explain your answer using words and pictures.	
(3) Austin’s brother Zach is 7 years older than him. How old is Zach? Explain your answer using words and pictures.	
(4) Put Austin’s family in order from oldest to youngest. Explain your answer using words and mathematical symbols.	
<b>Teacher Notes:</b>	
For Question 1, students can use a number line, ten frames, or pictures to assist them with subtracting. Students can also use part-part-whole to explain their reasoning. They should be encouraged to include measurement (years) in their answers.	
For Question 2, students should be encouraged to mentally compute this value since it is a multiple of ten. They could explain their reasoning by a number line, using a hundreds board, ten frame, or by simply stating they added 4 to the tens place.	
For Question 3, students can use techniques similar to those in Question 1. They should be encouraged to look at Tina’s age to determine Zach’s age as well.	
For Question 4, students should use < or > symbols to compare each age. They need to be able to state who is the oldest, middle, and youngest. They should be encouraged to start using phrases like greater than or less than.	
<b>Common Core State Standards for Mathematical Content</b>	<b>Common Core State Standards for Mathematical Practice</b>
<p><b>1.OA.B.3</b> Apply properties of operations as strategies to add and subtract.<sup>2</sup>  <i>Examples: If <math>8 + 3 = 11</math> is known, then <math>3 + 8 = 11</math> is also known. (Commutative property of addition.) To add <math>2 + 6 + 4</math>, the second two numbers can be added to make a ten, so <math>2 + 6 + 4 = 2 + 10 = 12</math>. (Associative property of addition.)</i></p> <p><b>1.NBT.B.3</b> Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols &gt;, =, and &lt;.</p> <p><b>1.NBT.C.5</b> Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.</p>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>
<b>Essential Understandings</b>	
<ul style="list-style-type: none"> <li>▪ The commutative and associative properties for addition of whole numbers allow computations to be performed flexibly.</li> <li>▪ Place-value concepts provide a convenient way to compose and decompose numbers to facilitate addition and subtraction computations.</li> <li>▪ Properties of addition are central in justifying the correctness of computational algorithms.</li> </ul>	

Explore Phase	
<b>Possible Solution Path</b>	<b>Assessing and Advancing Questions</b>
<p>(1) Students may write <math>5 + \underline{\quad} = 11</math> and then proceed to solve using subtraction. They could also think about how much they need to add to 5 to obtain 11. They can use manipulatives such as a ten-frame to help with carrying over.</p> <p>(2) Students could simply do the mental math by adding 4 to the tens place to get an answer of 46. Modeling could take the form of a number line, ten frame, or hundreds board that explains how they know without having to do the addition.</p> <p>(3) Students would have to know that Austin is 6 years old. They could then do the addition and use manipulatives if needed. Some students will make the connection between Tina's sister age and add <math>2 + 11</math> to get Zach's age.</p> <p>(4) Students would have to correctly identify each person's age and proceed to put them in order from oldest to youngest. They then need to state <math>46 &gt; 13 &gt; 11 &gt; 6</math> in order to utilize mathematical symbols.</p>	<p><b>Assessing Questions</b></p> <ul style="list-style-type: none"> <li>▪ (1) Tell me why you chose to draw/use manipulatives/add the way you did to get your final answer?</li> <li>▪ (2) What method did you use to add 40 to your answer in 1?</li> <li>▪ (3) What did you add 7 to? How do you know?</li> <li>▪ (4) Why did you choose that mathematical symbol? Does it match your words?</li> </ul> <p><b>Advancing Questions</b></p> <ul style="list-style-type: none"> <li>▪ (1) Is there another way to solve this problem?</li> <li>▪ (2) If we added 34 to Austin's age, how would that change your answer?</li> <li>▪ (3) How does Zach's age compare to Tina's? Could you have used Tina's age to find Zach's age?</li> <li>▪ (4) What if Tina was actually 19. How would that change your answer?</li> </ul>
<b>Possible Student Misconceptions</b>	<b>Assessing Questions</b>
<ul style="list-style-type: none"> <li>▪ (1) Students could subtract or add incorrectly since they will need to carry.</li> <li>▪ (2) Students could add four to the ones place instead of the tens place.</li> <li>▪ (3) Students could add 7 incorrectly or add it to Tina's age instead of Austin's.</li> <li>▪ (4) Students could state that each age is greater than another one, but use the wrong symbol.</li> </ul>	<p><b>Assessing Questions</b></p> <ul style="list-style-type: none"> <li>▪ (1) What numbers are you adding or subtracting? Can you use a drawing or manipulative to help you?</li> <li>▪ (2) How does adding ten change a two-digit number? How do you know?</li> <li>▪ (3) What two numbers are we dealing with? How do you know?</li> <li>▪ (4) What numbers are we comparing? Which symbol can you use to match your statement?</li> </ul>
<b>Entry/Extensions</b>	<b>Assessing and Advancing Questions</b>
If students can't get started....	<p><b>Assessing Questions</b></p> <ul style="list-style-type: none"> <li>▪ How do the words in the problem tell us what to do? What numbers are we adding or subtracting? How do you know? Use manipulatives or pictures to help you.</li> </ul> <p><b>Advancing Questions</b></p> <ul style="list-style-type: none"> <li>▪ Now that you have Austin's age, how can you use that to solve parts 2 and 3?</li> <li>▪ Identify each person's age. Now that you can see everyone's age, put them in the correct order. How do you know what symbol to use?</li> </ul>
If students finish early....	<p><b>Assessing Questions</b></p> <ul style="list-style-type: none"> <li>▪ What if Tina was 16 years old? How would this change your answers?</li> </ul> <p><b>Advancing Questions</b></p> <ul style="list-style-type: none"> <li>▪ If Austin had another brother that was the same age as Zach, how would that change your answer? What symbol would you use to compare numbers now?</li> </ul>

**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.

- How many different ways can I find out how old Austin is?
- How can I represent adding four tens without doing the “math”?
- How could I use Tina’s age to find Zach’s age? Is this easier?
- How do I know which symbol to use when a number is greater than another number?

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