

1st Grade	
Task: Farmer Cason’s Animals	
<p>Farmer Cason loves his animals! He has 8 cows, 4 horses, and 2 chickens.</p> <p>(1) How many animals does Farmer Cason have? Explain how you found your answer.</p> <p>(2) If Farmer Cason brings home 10 goats, how many animals does he have now? Explain how you know.</p> <p>(3) Compare the total number of (cows and horses) to the total number of (goats and horses). Which one is greater? Explain your answer using mathematical symbols and words.</p>	
Teacher Notes:	
<p>For Question 1, students can use a Make Ten strategy to add 8 and 2 together first to get 10 and then add 4 to get 14. As a result, they don’t have to “carry over,” and they apply the Commutative Property of Addition as a strategy to get their answer. Students could draw a picture and simply add the animals, but they should be encouraged to draw a number line to see they can add in any order to get the same answer.</p> <p>For Question 2, students should be encouraged to mentally compute this value since it is a multiple of ten. They could explain their reasoning with a number line, using a hundreds board, ten frame, or by simply stating they added 1 to the tens place.</p> <p>For Question 3, students will now need to compare using the symbols $<$, $>$, or $=$. Also, they will need to correctly state that there are a total of 12 (cows and horses), and a total of 14 (goats and horses), and that 12 is less than 14. They might also recognize that the number of horses is the same in both, so you really only have to compare cows to goats. Since 8 cows is less than 10 goats, then a combination of (cows and horses) will be less than a combination of (goats and horses).</p>	
Common Core State Standards for Mathematical Content	Common Core State Standards for Mathematical Practice
<p>1.OA.A.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.</p> <p>1.OA.B.3 Apply properties of operations as strategies to add and subtract.² <i>Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)</i></p> <p>1. NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.</p> <p>1.NBT.C.5 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"> 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	
<ul style="list-style-type: none"> ▪ The commutative and associative properties for addition of whole numbers allow computations to be performed flexibly. ▪ Place-value concepts provide a convenient way to compose and decompose numbers to facilitate addition and subtraction computations. ▪ Properties of addition are central in justifying the correctness of computational algorithms. 	
Explore Phase	
Possible Solution Path	Assessing and Advancing Questions
<p>(1) Students may draw out how many animals there are and add the animals using their picture. They could use manipulatives that are made available to them. They could also break apart the problem by $8 + 2 = 10$ and $10 + 4 = 14$. They could also use a ten-frame.</p> <p>(2) Students could simply do the mental math by adding 1 to the tens place so 14 would become 24. 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 will need to correctly state that there are a total of 12 (cows and horses), and a total of 14 (goats and horses), and that 12 is less than 14 (e.g., $12 < 14$ or that $14 > 12$). They might also recognize that the number of horses is the same in both, so you really only have to compare cows to goats. Since 8 cows is less than 10 goats ($8 < 10$), then a combination of (cows and horses) will be less than a combination of (goats and horses).</p>	<p>Assessing Questions</p> <ul style="list-style-type: none"> • (1) Tell me why you chose to draw/use manipulatives/add the way you did to get your final answer. • (2) What method did you use to add 10 to your answer in Part 1? • (3) Why did you choose that mathematical symbol? Does it match your words? <p>Advancing Questions</p> <ul style="list-style-type: none"> ▪ (1) Could you add in a different order and get the same answer? ▪ (2) If we added 30 instead of ten, what would your answer be? ▪ (3) If Farmer Cason bought 5 more horses, would this change your answer? Why or why not?
Possible Student Misconceptions	
<ul style="list-style-type: none"> ▪ (1) Students could add incorrectly since there are 3 numbers. ▪ (2) Students could add one to the ones place instead of the tens place. ▪ (3) Students could state that 12 is less than 14, but use the wrong symbol. 	<p>Assessing Questions</p> <ul style="list-style-type: none"> ▪ (1) How many numbers are you adding? Can you represent this by drawing a model? ▪ (2) How does adding ten change a two-digit number? How do you know? ▪ (3) What two numbers are we comparing? Which symbol represents what you are stating to be true?
Entry/Extensions	Assessing and Advancing Questions

<p>If students can't get started....</p>	<p>Assessing Questions</p> <ul style="list-style-type: none"> ▪ Draw a picture representing how many cows, chickens, and horses you have. Can you count how many there are total? <p>Advancing Questions</p> <ul style="list-style-type: none"> ▪ Now that you have a total number of animals, how could you represent ten more animals? ▪ Identify how many horses, goats, and cows you have. How can you compare the total number of cows/horses with the total number of goats/horses using a symbol?
<p>If students finish early....</p>	<p>Assessing Questions</p> <ul style="list-style-type: none"> ▪ What if Farmer Cason sold 4 cows in exchange for 8 chickens? How many animals does he have now? <p>Advancing Questions</p> <ul style="list-style-type: none"> ▪ If Old MacDonald did sell 4 cows and got 8 chickens in return, which animal would he have more of (cows, chickens, or horses)? How do you know? Explain in your own words and use appropriate mathematical symbols to compare the three numbers.
<p>Discuss/Analyze</p>	
<p>Whole Group Questions</p>	
<p>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</p>	
<ul style="list-style-type: none"> ▪ How many different ways can I find out how many animals Farmer Cason has? ▪ How can I represent adding ten without counting by ones? ▪ How do I know which symbol to use when a number is greater than another number? 	



Farmer Cason loves his animals!
He has 8 cows, 4 horses, and 2 chickens.

- (1) How many animals does Farmer Cason have? Explain how you found your answer.

- (2) If Farmer Cason brings home 10 goats, how many animals does he have now? Explain how you know.

- (3) Compare the total number of (cows and horses) to the total number of (goats and horses). Which one is greater? Explain your answer using mathematical symbols and words.