Purpose of Instruction:

- **What key concepts or procedures will be taught?** This lesson is designed for students with basic skills who learn best through explicit instruction due to difficulties learning math. This strategy will also benefit students who are proficient at mathematics computation but whose struggles with reading impact their understanding of word based math problems. They will be taught to interpret written phrases into algebraic expressions. They will study the importance of the order of terms when writing algebraic expressions. Specifically they will be taught the Turn Around Strategy for writing expressions when the terms are not in the same order as the written words. The Turn Around Strategy lesson here will deal with addition and subtraction with phrases using the word “than”. For example, five more than b or eight less than w.

- **What purposes or objectives will I explicitly communicate to students? Students will have the following objectives:**

  I can identify keywords and interpret words into numbers and symbols when writing algebraic expressions.

  I can write expressions using the Turn Around Strategy to reflect the proper order of terms.

Materials Needed:

- **What materials will be needed?** The materials include four handouts. The Turn Around and Guided Practice Sheets are intended as worksheets. The other two handouts can be used as a single sheet or cut and made into cards. Students may want to take notes. Teacher may want to use a whiteboard or document reader and projector to demonstrate strategy steps on handout.

- **What advance preparation is needed?** Aside from the handouts there is no additional preparation.
Introduction & Explanation:

- **How will I get and hold students’ attention?** Students will be shown a comic that compares learning a foreign language to learning math. Then we will discuss whether they have had that experience before and how those experiences might be similarly difficult. Next we’ll do a quick activity that has students interpreting and translating words into mathematical operation symbols. I will give the the handout “words of comparison” and have them complete it. We will quickly discuss their findings. This will relate to their independent assignment later.

This particular lesson will come after lessons introducing them to the basics of writing expressions with numbers and letters. They will have completed previous lessons identifying operational terms and symbols, commutative property, terminology of expressions, including variable. They will have studied examples of very basic phrases translated into expressions without any need to re-order.

- **What questions might I ask to stimulate student thinking?** How important are words in math? How important is order when it comes to math expressions? What do you remember about the order as it relates to addition and subtraction? How do we interpret words to complete math problems? This question introduces the “Words of Comparison” handout exercise.

- **How will I introduce and explain key skills and concepts (e.g. inductive method, mini-lecture, demonstration, notes, etc.)?** I will introduce the concept of order when writing expressions by having students compare the difference that occurs when the terms of the expression are reordered. The specific strategy and the steps are explicitly stated on a handout and I will demonstrate how to follow them with the students aloud. Students will have guided practice and independent practice exercises.

Modeling:

- **How will I model this skill or strategy for my students (e.g. exemplars, demonstrations, discussions)?** The major emphasis of the lesson is on the Turn Around Strategy. We will view the Turn Around handout together and I will demonstrate the process step-by-step as students follow along and complete their own handout.

- **How will I break complex skills or bodies of information into understandable components?** The purpose of this strategy and the steps of its process are explicitly stated. Having students follow along one step at a time prior to more independent guided practice will allow for discussion should there be a need for further explanation.

Guided Practice:

- **How will students practice using the skill or concept targeted by the standard?** Once we have completed the Turn Around sheet together, students will be given the handout “Guided Practice”. Students will be able to work on the examples at their own pace. This will allow me to move to each student and observe how well they understand and apply the strategy.
How will I gradually withdraw support as students become capable of independent performance? They will be provided with a handout for independent completion. The handout is titled “Turn Around Strategy for THAN”. This will challenge them to extend their skill to longer written statements as opposed to phrases. These do not include the words “more” and “less”. Instead they are based on the comparative words the students translated earlier into addition and subtraction. Examples are “wider than” and “cheaper than.”

Evaluation of Student Understanding

How will I evaluate students’ understanding and their readiness to move forward? As students complete their guided practice, I will observe each of them and ask them to explain their process. The second half of the guided practice asks students to reverse the process and translate algebraic expressions into written words. This will demonstrate if they understand the concept of order in writing expressions rather than simply applying the rote steps of the process.

How will I correct misunderstandings and reinforce learning? Engaging in discussions with the students and observing sample work will demonstrate what part of the process they may need to review. This will include reviewing successful examples and revisiting the steps of the process.

What activities will I suggest for enrichment and remediation? For successful students they can create word problems and examples to share them with each other. They could also move on to more complex expressions involving multiplication or multiple operations. I would work individually with students who need remediation to identify what part of the process they need to review.

Reflection, Closure, & Connection:

How will I engage students in reflecting on what they have learned? I will ask in what ways they found this strategy helpful and ask them to rate their confidence using the method.

What will I use to draw ideas together for students at the end? I will revisit our opening discussion about the role of language and math. Do they feel more capable of interpreting and translating one into the other?

What lessons can I preview for students that will follow as a result of this lesson? This particular lesson focused on the Turn Around strategy involving only addition and subtraction. Other keywords were mentioned on the initial handout--from, to, into--they could be shown a phrase and asked to predict how those are written. The next step would be to introduce “from” next since it deals solely with subtraction. Multiplication and Division could also be introduced as could expressions with multiple operations. These handouts could also be used to learn how to evaluate expressions by giving them values for the variables.