



DISTINGUISH CORRECT
LOGIC FROM
INCORRECT LOGIC

Students who understand math well are able to

- make sense of their work,
- communicate how they solve various math problems to others, and
- understand math on a deeper level.

It is important that students have plenty of opportunities to regularly practice defending their strategies for solving different types of math problems. Doing this will support them with thinking about *why* one strategy will work and another will not, or why one strategy works better than another.

When students work on the skill Distinguish Correct Logic from Incorrect Logic, they are able to look at their own math work or a peer’s math work to decide whether the work makes sense or not. When it doesn’t, students have the chance to think about *why* the work doesn’t make sense and can fix the error.

Questions students can ask themselves:

- How do I know my strategy makes sense?
- How could I explain my strategy to someone else?
- Would someone else understand how I arrived at my solution without me explaining it to them?

Examples:

Example A (Correct Logic)	Example B (Incorrect Logic)
$7 + 8 = \underline{\quad}$	$7 + 8 = \underline{\quad}$
<p>Solution: $7 + (7 + 1) =$ $(7 + 7) + 1 = 15$</p> <p>Defense of Strategy: <i>I looked at the problem, $7 + 8$, and decided to decompose (break apart) the 8 into 7 and 1. This made it easier for me to solve.</i></p> <p>How do I know my strategy makes sense? <i>I know that $7 + 7$ is a doubles fact and it equals 14. I added the remaining 1 onto that and found the solution to be 15.</i></p>	<p>Solution: $(7 + 1) + 8 = 16$</p> <p>Defense of Strategy: <i>I looked at the problem, $7 + 8$, and decided to add 1 more to the 7. This made it easier for me to solve because I know that $8 + 8$ is a doubles fact and it equals 16.</i></p> <p>How do I know my strategy makes sense? <i>I know that $8 + 8$ is a doubles fact and it equals 16 . . . but wait . . . the original problem was $7 + 8$, so I forgot a step! I should have subtracted the 1 that I originally added onto the 7. Then the solution would be 15.</i></p>

How You Can Help Your Child with This Strategy at Home

1. As your child completes their math work, ask them to explain their work and how they know they found an accurate solution. You may ask them follow-up questions such as
 - a. *How do you know your strategy makes sense?*
 - b. *Why does this strategy work in this problem?*
2. If your child gets stuck, ask them,
 - a. *What is the problem asking you to solve?*
 - b. *How can you find this solution?*
3. Model for your child how you solve everyday math problems, explaining to them how you solved the problem, as well as how you know your solution is correct.