(1.3) **Number, operation, and quantitative reasoning.** The student recognizes and solves problems in addition and subtraction situations.	**1.3B:** The student is expected to use concrete and pictorial models to apply basic addition and subtraction facts (up to 9+9=18 and 18-9=9).

Materials: Counters (counting bears, or chips, or similar materials), Base ten blocks, paper and markers

Procedure: Students will answer basic addition problems up to 9+9=18 using their model of choice. Place the materials in front of the student and tell him/her that any material can be used to solve the problem. Vary the order of numbers presented for addition. Sometimes the larger should be first and sometimes the smaller. Optional approaches include questions using doubles (e.g., 5+5), patterns (e.g., 4+3, 4+4, 4+5), and plus one (5+1, 6+1), etc.

It is not necessary to present a large number of problems at once, but by presenting them by increasing levels of difficulty, you will be able to document student progress.

What is [number] plus [number]?

If the student does not use a concrete or pictorial model to solve the problem, ask the student to show how to solve the problem with one of the concrete models provided or by drawing a picture.

(Prompt if no model used) Please show me how you solved the problem with one of these [point to manipulatives] or by drawing a picture.

Check Student's response:	**Check Student's model:**
1. Numbers _____ + _____ Response: Correct | Incorrect _____ Addition Strategy: count all | count on Other: _____	Concrete: fingers | counters | Base-10 blocks On Paper: drawings | tallies | numerals Other: _____ Did not use model until prompted
2. Numbers _____ + _____ Response: Correct | Incorrect _____ Addition Strategy: count all | count on Other: _____	Concrete: fingers | counters | Base-10 blocks On Paper: drawings | tallies | numerals Other: _____ Did not use model until prompted
3. Numbers _____ + _____ Response: Correct | Incorrect _____ Addition Strategy: count all | count on Other: _____	Concrete: fingers | counters | Base-10 blocks On Paper: drawings | tallies | numerals Other: _____ Did not use model until prompted

Repeat this task with other numbers as needed.

Notes:

1.3B: The student is expected to use concrete and pictorial models to apply basic addition and subtraction facts (up to 9+9=18 and 18-9=9).	**Possible interpretations, issues for follow up, and implications for instruction.**

This task requires students to solve basic addition problems using their model of choice. Take note of the student's choice of model(s) and addition strategies. Pay attention to the student's errors, if any, and plan further questions and teaching strategies to address these errors.

The student used fingers or counters (concrete models):

- If the student counted all, a teaching strategy might include more practice with simple addition problems using concrete models to become more fluent with computations and to learn to count on with numbers other than one. If the response was incorrect, follow up with additional problems to determine where the student is struggling. Have the child show you how he solved the problem with counters and ask him to point while counting.
- If the student counted on, try some more challenging addition problems with concrete models and also encourage him to try using pictorial models or symbols to represent his thinking. You may also want to begin encouraging him to use the Base ten blocks to represent addition problems with larger numbers.

The student used Base ten blocks (concrete model):

- If the student used both rods and units, but used them all as individual counters, see section above (for fingers or counters). This student does not yet have an understanding of how Base ten blocks represent the base ten system and may not even understand the base ten system.
- If the student used only the unit blocks, find out if he understands that the blocks have different values by asking why there are different sizes and shapes. If the student doesn't know why there are different sizes/shapes, see section above (for fingers or counters). However, if the student is able to communicate that the different blocks represent different values, the student may have some emerging understanding of the base ten system as represented by the Base ten blocks. Try asking the student to represent some larger numbers using the Base ten blocks. A teaching strategy might then include instruction on representing larger numbers using the Base ten blocks or presenting more challenging addition problems and asking the student to solve them with the Base ten blocks.
- If the student used both rods and units appropriately, making exchanges between units and rods, this student demonstrates an understanding of the base ten system. A teaching strategy might include having the student solve problems with larger numbers with Base ten blocks or problems using symbols to scaffold the development of an algorithm.

The student used drawings or tallies (pictorial models):

- Although these models appear to be abstract, the student's understanding of addition may still be limited. See section above (for fingers or counters) for general teaching strategies based on student's addition strategy. However, utilize pictorial models instead of concrete models, where appropriate, and encourage movement towards symbolic models.

The student used numerals (symbolic model):

- If the student solved the problem correctly, have him explain how he solved the problem. Explore the child's mental strategies that accompany the symbolic model. Is the student visualizing concrete materials? Is he then counting all or counting on? Have him demonstrate his strategy using concrete or pictorial models. Is he using memorized or derived facts? If he is visualizing concrete materials, a teaching strategy might include more practice with similar addition problems to encourage greater fluency and the development of more efficient mental strategies.
- If the student solved the problem incorrectly, have him explain how he solved the problem. Explore the child's mental strategies. If he realizes his mistake while explaining his solution, see the section for correct solutions above. If he doesn't realize his mistake, try to identify where the student's strategies are going wrong. Have the student use concrete or pictorial models to check his work.
- If the student did not use concrete or pictorial models initially, how did he figure out the solution? Did he count silently? Did he visualize concrete materials? Ask him how he solved the problem in his head. See section above (for numerals) for general teaching strategies.