



Welcome to Ms. Green's classroom, where students enjoy solving math problems together!

I have been teaching math in elementary school for 30 years. I love engaging students in mathematical discussions that stimulate their thinking. Children learn to explain their ideas, justify their math reasoning to each other, and ask questions to further their understanding. As students engage in making sense of problems, they become more confident and successful in math.

I created Ms. Green's classroom to illustrate students making sense of mathematics. In this classroom, students work on solving accessible, but unfamiliar, problems that challenge them and stimulate their curiosity. Under Ms. Green's guidance, they strengthen their math power as they learn to use the **eight mathematical practices** described in the Common Core.

(Practice Standard 1) In *Monkeys for the Zoo*, Mia and her classmates **make sense of problems and persevere in solving them**. On pages 6 and 7, she and Ben try to agree on what the problem is about. On page 9, Ms. Green acknowledges the difficulty of finding an entry point and invites students to take risks and share their thinking. On page 12, Ellie presents an entry point. Though at first Mia was sure the problem would be too hard for her, she thinks carefully during the discussion on pages 16–19 and then realizes there are many possible answers. She shares a new possibility on page 22.

(Practice Standard 3) Throughout the story, Ms. Green's students **construct viable arguments and critique the reasoning of others**. Confused by the monkey problem, Mia listens to her classmates' ideas in order to further her own thinking. When Carlos claims that math problems can only have one solution, Mia disagrees and offers an additional solution on page 22. On page 24, as students present more possible solutions, Carlos uses the evidence to conclude that they can keep finding more ways to solve the problem. Ben argues that

buying all of the monkeys in the solutions will give the zoo too many monkeys, but on page 27, Mia helps him see how all of the solutions presented are just possibilities, and the zoo will choose only one of them.

(Practice Standard 4) Classroom discussions are integral in helping Mia and others make sense of the problem. Ms. Green’s questions and prompts telegraph her expectation that students explain their math thinking clearly and that they consider each other’s ideas carefully. Once Mia has made sense of the problem and some of its solutions, she **models with mathematics** by using equations and a table on pages 25–27 to show the solutions she has found.

(Practice Standard 5) On pages 12 and 13, Ellie **uses appropriate tools strategically** when she presents a possible solution by using students to represent monkeys. This tool works very well for the class, as they begin to shuffle the student actors to represent different solutions on pages 16–23. On pages 25 and 27, Mia uses a different tool, paper and pencil, to record her solutions.

(Practice Standards 6 and 8) In several instances, Mia and her classmates **attend to precision** by giving pertinent details in their explanations. For example, on page 22, Mia tells how she took away 1 howler monkey and added 1 spider monkey to get the solution of 4 spider monkeys and 9 howler monkeys, thus preserving the total of 13 monkeys. On page 23, Jayden joins her in the practice of **looking for repeated reasoning** by taking away another howler monkey and adding a new spider monkey to make 5 spider monkeys and 8 howler monkeys. Communicating precisely helped these students understand how repeated reasoning can help them find more solutions.

Ms. Green’s students are learning to be successful problem-solvers. Ms. Green guides them in using practices that help them take a flexible approach to a variety of math problems. As you integrate these practices into your math lessons, I feel sure you will see your students “use their math power” to understand and solve math that may be challenging at first.

—Nancy Belkov

PS: You’ll find additional information and suggestions for using this book at www.SDE.com/mathpower.