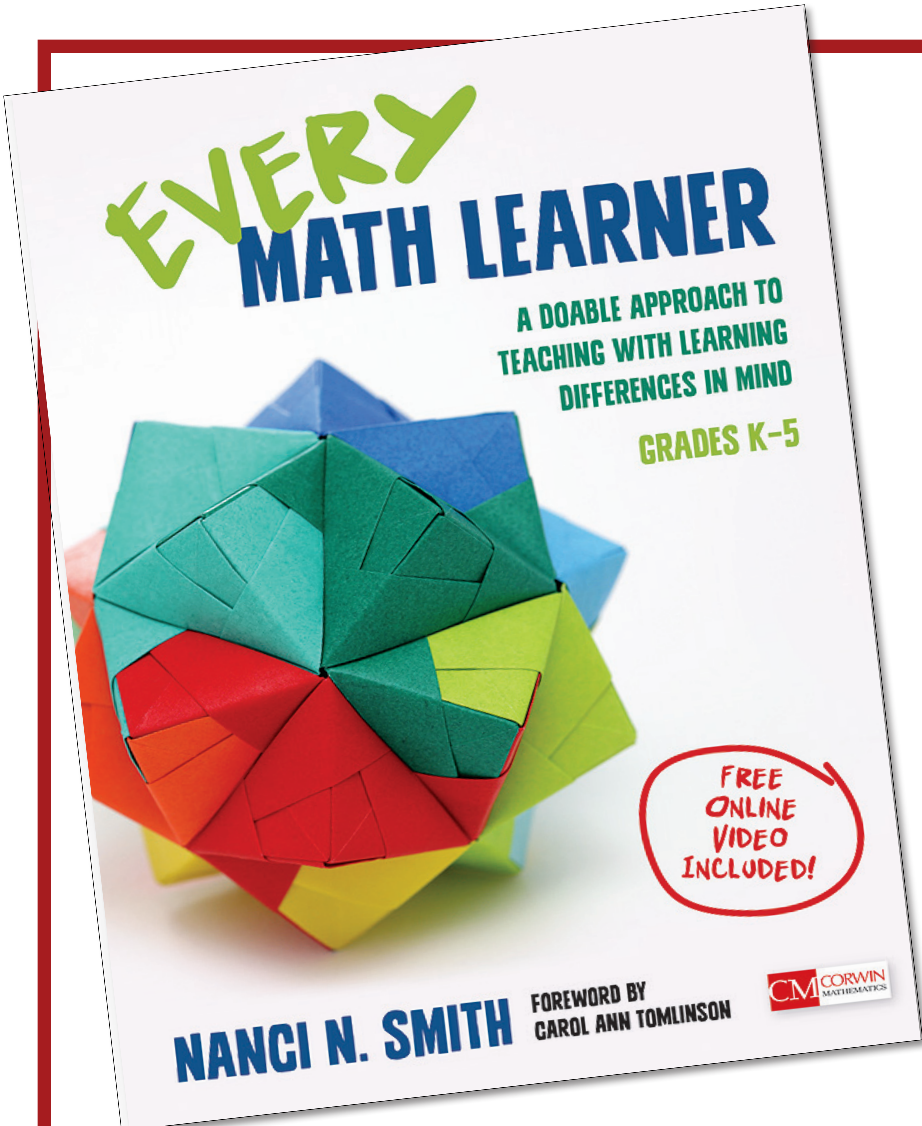

Thank you

FOR YOUR INTEREST IN CORWIN

Please enjoy this complimentary excerpt from *Every Math Learner, Grades K-5*. The Think Dots strategy is best used to develop and assess understandings of math embedded in skills.

LEARN MORE about this title, including Features, Table of Contents, and Reviews.

Think Dots. Think Dots can be used in a variety of ways. Students can roll a die and complete the task they roll, or a group of students can work together with one student rolling a die and facilitating the group's work on the task. The lead and the roll then pass to the next student.

To create a set of Think Dots:

1. Design six questions or tasks that ask for information or are an application of the lesson content. Design this first set at a high level for the highest students in your class. There are a variety of methods by which you can design the six cards:
    a. You could use the six levels of Blooms, one for each card.
    b. Choose six of the eight Standards for Mathematical Practice to design specific questions or tasks for the lesson content.
    c. Consider multiple representations for a task or process.
    d. Use the following prompts to design targeted tasks:
        i. Describe
        ii. Analyze
        iii. Compare and contrast
        iv. Demonstrate or model
        v. Change an element of the problem, and describe how it will affect the results
        vi. Diagram or illustrate
2. Design additional sets to address the various readiness levels in your class. Consider the following ways to design multiple levels:
    a. Manipulatives or models for more concrete examples
    b. Shortened directions or step-by-step directions
    c. Fewer facets per problem
    d. More basic applications
    e. Greater check-in points with the teacher

The Think Dots strategy is best used to develop and assess understandings embedded in skills, so typical numeric problems are not recommended as prompts. The prompts should include high-level verbs such as *explain*, *model*, *generalize*, *describe*, etc.

Figure 4.7 gives a primary example for place value, and figure 4.8 gives a multiplication example.

FIGURE 4.7

PLACE VALUE THINK DOTS

High to Mid-High Students	
•	Arrange the digits 0, 1, 2, 3, and 4 to make at least four different numbers. Explain the differences in their values. Order them from least to greatest.
• •	Roll five 0–9 dice. Make the greatest and least numbers possible. How do you know they are the greatest and least?
• • •	Explain the role place value has in addition and subtraction.
• • • •	Explain how strategically to make the least number possible if you were given certain digits to arrange.
• • • • •	Determine a strategy to make the greatest number possible if you were given digits to arrange.
• • • • • •	Explain how the expanded form of a number relates to place value. How does this help in number operations?
Mid-High to Mid-Low Students	
•	Rearrange the digits in the number 4,213 to make the largest and smallest numbers possible. How do you know they are smallest and largest?
• •	Roll three dice. Make the largest and smallest numbers possible. How do you know they are the greatest and least?
• • •	Describe how you would add two 2- (or 3-) digit numbers. What role does place value have in addition?
• • • •	Explain how strategically to make the least number possible if you were given certain digits to arrange.
• • • • •	Determine a strategy to make the greatest number possible if you were given digits to arrange.
• • • • • •	Writ the number 467 in expanded form. How does this form relate to place value?

Struggling Students	
•	Explain the difference among the numbers 1, 10, and 100. Draw pictures or use models to show the difference.
• •	How many hundreds, tens, and ones are in the number 104? Use ten frames or base 10 blocks to show the number.
• • •	How many tens and how many ones are in the number 74? Use a model to show the number. As a challenge, use your model to determine how many more are needed to reach 100.
• • • •	Rearrange the digits in the number 674 to make the largest numbers possible. How do you know it is the largest?
• • • • •	Rearrange the digits in the number 674 to make the smallest numbers possible. How do you know it is the smallest?
• • • • • •	Use a hundreds chart to show the pattern of ones and tens as numbers go up by one or by tens.

FIGURE 4.8

MULTIPLICATION THINK DOTS

High to Middle Students	
•	There are many ways to remember multiplication facts. Start with 0 and go through 10. Tell how to remember how to multiply by each number. For example, how do you remember how to multiply by 0? By 1? By 2? Etc.?
• •	There are many patterns in the multiplication chart. One pattern deals with pairs of numbers, for example, multiplying by 3 and multiplying by 6 or multiplying by 5 and multiplying by 10. What other pairs of numbers have this same pattern? What is the pattern?
• • •	Russell says that 7×6 is 42. Kadi says that he can't know that because we didn't study the 7 multiplication facts. Russell says he didn't need to, and he is right. How might Russell know his answer is correct?

(Continued)

FIGURE 4.8 (Continued)

	Max says that he can find the answer to a number times 16 simply by knowing how to multiply by 2. Explain how Max can figure it out, and give at least two examples.
	Alicia and her ____ friends each have _____ necklaces. How many necklaces do they have all together? Show the answer to your problem by drawing an array or another picture. Roll a number cube to determine the numbers for each blank.
	What is _____ × _____? Find as many ways to show your answer as possible. Roll the provided dice to determine the factors.
Middle to Struggling Students	
	It's easy to remember how to multiply by 0, 1, 2, and 5! Tell how to remember.
	Jamie says that multiplying by 10 just adds a 0 to the number. Bryan doesn't understand this because any number plus 0 is the same number. Explain what Jamie means, and why her trick can work.
	Explain how multiplying by 2 can help with multiplying by 4 and 8. Give at least 3 examples.
	We never studied the 7 multiplication facts. Explain two different ways to figure out the 7 facts. Try to find a pattern in multiplying by 7.
	Jorge and his ____ friends each have _____ trading cards. How many trading cards do they have all together? Show the answer to your problem by drawing an array or another picture. Roll a number cube to determine the numbers for each blank.
	What is _____ × _____? Find as many ways to show your answer as possible. Roll the provided dice to determine the factors.

TRY IT!

Take an activity you currently use in class. Think about the appropriate readiness level of the task. For which students in class is the task most appropriate? How can you create other tiers of the same task for the remaining students in class? Design the various tiers and try them out.