



Subject: Math

Grade Level: Middle School or High School

DI Strategy: Think Dots, Tiering

### Think Dots for Algebra

After a conceptual unit was presented and students were familiar with the ideas and associated skills, Think Dots was an excellent activity for students to construct meaning for themselves about the concept they were studying. Students were given a formative assessment covering the topics recently covered to determine their correct level of understanding.

Based on the results of the formative assessment, students were placed in homogeneous partnerships and given a tiered Think Dots Worksheet at the correct level of difficulty. In each partnership, partner #1 rolled the die and both partners completed the activity on the card that corresponds to the dots thrown on the die. After both partners have completed the problem, partner #1 revealed his/her answer. Partner #2 shared whether his/her answer agreed or disagreed with his/her partner's answer. If both partners agree on the answer, they place a star in that box. If they do not agree on the answer, they place an "X" letting me know they need help on that problem.

For the next problem, partner #2 rolled the die and shared his/her answer. The game continues like this until all of the questions have been answered.

#### LEVEL 1:

1. a, b, c and d each represent a different value. If  $a = 2$ , find b, c, and d.  
 $a + b = c$   
 $a - c = d$   
 $a + b = 5$
2. Explain the mathematical reasoning involved in solving card 1.
3. Explain in words what the equation  $2x + 4 = 10$  means. Solve the problem.
4. Create an interesting word problem that is modeled by  $8x - 2 = 7x$ .
5. Diagram how to solve  $2x = 8$ .
6. Explain what changing the "3" in  $3x = 9$  to a "2" does to the value of x. Why is

this true?

#### Level 2:

1. a, b, c and d each represent a different value. If  $a = -1$ , find b, c, and d.  
 $a + b = c$   
 $b + b = d$   
 $c - a = -a$
2. Explain the mathematical reasoning involved in solving card 1.



3. Explain how a variable is used to solve word problems.
4. Create an interesting word problem that is modeled by  $2x + 4 = 4x - 10$ . Solve the problem.
5. Diagram how to solve  $3x + 1 = 10$ .
6. Explain why  $x = 4$  in  $2x = 8$ , but  $x = 16$  in  $\frac{1}{2}x = 8$ . Why does this make sense?

**Level 3:**

1. a, b, c and d each represent a different value. If  $a = 4$ , find b, c, and d.  
 $a + c = b$   
 $b - a = c$   
 $cd = -d$   
 $d + d = a$
2. Explain the mathematical reasoning involved in solving card 1.
3. Explain the role of a variable in mathematics. Give examples.
4. Create an interesting word problem that is modeled by:  $3x - 1 \leq 5x + 7$   
Solve the problem.
5. Diagram how to solve  $3x + 4 = x + 12$ .
6. Given  $ax = 15$ , explain how x is changed if a is large or a is small in value.