Connect the Dots

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Topics:
Recursion, Closed Form equations, Mathematical Reasoning.

Purpose:
Students will and practice mathematical reasoning techniques to find a closed form equation using recursive thinking.

Materials:
- 'Dots' worksheet
- Calculator or Excel
- Red Rocks Amphitheater Problem
- Polya's Four Step Problem Solving Process

Time Required:
15 minutes-Introduction, 25 minutes-Group discussion, 20 minutes Whole-Group Discussion...total 1 hour.

Procedure:
1. Problem will be introduced to the class.
2. Polya's Four Step Problem Solving Process will be reviewed in regards to the current problem.
3. Class will brainstorm together.
4. Students will meet into groups to work on problem.
5. Class will have whole-group discussion about problem.
6. Discuss closed form equation.
7. Show data on Excel or on graphing calculators.
8. Review Recursive Thinking.

Explorations and Extensions:
- Have students follow Polya's Four Step sheet to work on 'Red Rocks Amphitheater' problem for homework.

Assessment Tools:
- Students will be evaluated on group participation.
- Knowledge will be evaluated through work on homework problem.

Content Standard Connections:
NCTM standard:

- make and investigate mathematical conjectures;
- formulate generalizations and conjectures about observed regularities;

Maryland Process Standards:

- Select and then apply appropriate problem-solving strategies to solve a problem from visual (draw a picture, create a graph), numerical (guess and check, look for a pattern), and symbolic (write an equation) perspectives.
- Apply what was learned to a new problem.

Internet Sites Related to this Topic:
http://www.colorado.edu/education/DMP/
http://www.cs.colorado.edu/~main/supplements/pdf/notes09.pdf
http://jwilson.coe.uga.edu/DEPT/TME/Issues/v07n1/1abramovich.pdf
http://www.math.ilstu.edu/~day/courses/old/305/contentrecursion.html

Comments:

Peer Feedback: