## Math 4 - Act. 02: Square Numbers

## Summary

Students will use square tiles to help them understand the concept of square numbers.

## Materials

square tiles
Square Facts Worksheet
crayons
Sea Squares, by Joy N. Hulme. 2001 (Buena Vista Books, Inc.)

## Background for Teachers

A squared number is a number that is a result of multiplying an integer by itself. Any squared number of counters can be arranged in a square array. You can write each squared number as a product using an exponent.
$42=16$
"Four squared equals sixteen, or four to the second power equals sixteen."
Intended Learning Outcomes

1. Demonstrate a positive learning attitude toward mathematics.
2. Become mathematical problem solvers.
3. Reason mathematically.
4. Communicate mathematically.
5. Make mathematical connections.
6. Represent mathematical situations.

Instructional Procedures
Invitation to Learn
Read the book Sea Squares. Ask: "What are squared numbers?"
Instructional Procedures
Have students use square tiles to build a $1 \times 1$ square, $2 \times 2$ square, $3 \times 3$ square, etc. Record the total number of cubes added to make each new square, perimeter, and total squares.
Have students look for patterns and record them on a chart. (For example, students may describe patterns they see in the "growing squares," such as the fact that new squares add change in a predictable way-it increases by the next odd number with each new square.)

## Extensions

## Possible Extensions/Adaptations/Integration

Color in the square numbers on a multiplication chart. Look for patterns (e.g., the square numbers are on a diagonal, the square numbers increase by 2 each time, etc.) Use the calculator to further explore square numbers.
Homework \&Family Connections
Ask students to look for arrays at home and record them. Which arrays form a perfect square? Some students may want to bring in arrays to show the class.

Assessment Plan
Journal:

Have students explain what square numbers are. Use pictures, words and numbers to explain what 5 2 is.

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