HIDDEN NUMBERS

Objective: Use proportional reasoning to "guess" a hidden number in the calculator.

Materials: Calculators

Procedures:

1. Hide a two digit number in the calculator. To hide a number:
   1. press ÷ key
   2. key in number
   3. press = key
   4. 0 will appear

2. Explain that you have hidden a two digit number in the calculator using the divide operator. That is, whatever you guess as the number, that number will be divided by the hidden number.

3. Ask someone to make a guess. Key in guess and press = key.

4. Discuss what the display means.
   - If the display is greater than one, the guess was too big.
   - If the display is less than one, the guess was too small.
   - If the display is one, the guess was the number.

5. Identify what is known about the hidden number such as range, etc.

6. Ask for another guess using new information. To enter, key in new guess and press enter. (Do not clear between guesses.)

7. Again refine what is known about the number.
   - It is between ___ and ____.
   - It is smaller than _____.
   - It is larger than _____.

8. Continue until the number is found.

9. Teach participants how to hide a number and have them practice with a partner.

10. Encourage the participants to develop a strategy to guess the hidden number with the objective of finding the hidden number with the fewest guesses.

Notes:

1. Be sure to record the number attempted and the resulting display.

2. This activity works on many different calculators, including the TI-108 and Math Explorer.

3. This activity also works with decimal numbers. It can be quite challenging.