# EXPERIENCES WITH THE HAND-HELD CALCULATOR IN TEACHING COMPUTATION, PROBLEM-SOLVING, AND FRACTIONS

## George Immerzeel

University of Northern Iowa Cedar Falls, Iowa

The activities reprinted here have been selected from booklets which are available from the author.

## ROOTS

Play a guess-and-test game. Solve these root problems in less than 10 tries.

GAME 1	2	=	65536
GAME 2	3	=	117, 649
GAME 3	L <sup>4</sup>	=	456,976
GAME 4	$\square^2$	=	53.29
GAME 5	3	=	91.125

#### **GAME** — **GUESS THE FRACTION**

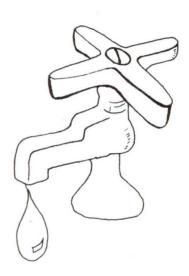
- 1. Each player writes down a "hidden fraction" in  $\frac{a}{b}$  form, (b less than 10) and computes the decimal name.
- 2. Players take turns reading the decimal, while the other players guess the original fraction.
- 3. Correct guesses score 1 point. The first player with 5 points is the winner.

Practice guessing for these decimals:

Calculator display	Guess	Calculator display	Guess
0.5000000		0.4000000	
0.1111111		0.2222222	
0.3333333		1.1250000	
0.3750000		1.6666666	
0.1666666		.28571428	

### **MULTIPLE STEP PROBLEMS**

A. If a water faucet drips 18 drips in 10 seconds, how much water will be lost in 24 hours? Which of these guesses would you choose?



l gallon

10 gallons

100 gallons 1000 gallons

- B. A dollar bill weighs about 1 gram and \$10 bills, \$20 bills, and \$50 bills weigh the same. Of course, you would rather have 100 grams of \$10 bills than 100 grams of one dollar bills, but which of these amounts would you rather have?
  - 1. 20 grams of \$10 bills, 40 grams of one dollar bills, and 40 grams of \$20 bills.
  - 10 grams of \$50 bills, 70 grams of one dollar bills, and 20 grams of \$10 bills.
  - 3. 100 grams made up of half one dollar bills, one-fourth \$10 bills, one-fifth \$20 bills and the rest \$50 bills.

TARGET	
	Partners
Play with a partner.	
1. First player punches any numeral on the	e keyboard and punches "add" key.
2. Second player chooses any digit and pur	nches the "add" key.
3. Play continues until one player chooses	s to punch the "equal" key.

4. The player scores the difference between the target number and the display.

6.

5. The player with the smallest total score wins.

Game 1	Game 2	Player Scores
Target 40	Target 40	1
Game 3	Game 4	2
Target 50	Target 50	3.
Game 5	Game 6	4.
Target 65	Target 75	5

What strategy will win the game?

Can you make up a game for multiplication?