

Down to One

Junior high school

Objective

- Develop a variety of mental methods of computation.
- Develop the use of the four operations to solve problems.
- Use sequence methods of computation when appropriate to a problem.
- Estimate and approximate solutions to problems.

Explanation of the activity

- Use the calculator to generate a 3-digit random number.
- The aim is to get the calculator to display the number 1.
- Players can use any of the numbers 1 – 9 together with any of the keys below:

\div , $-$, \times , \div , $($, $)$, $=$

- You cannot put numbers together to make 2- or 3-digit numbers.
- You can use each number only once.
- The first player to get his/her calculator display to show 1 scores five points.
- If after an agreed time limit no player has reached 1, the player who is closest scores two points.

While working on this activity, students should develop their skills of mental mathematics and their fluency with numerical calculations.

Using the calculator

Calculator functions used: Subtraction, division, last answer memory

Press the following buttons and then start operation.

ON/C MODE 0

Suppose the random number you generate is 567.

Example A:

ON/C 567 \div 9 $=$

\div 7 $=$

$-$ 8 $=$

DEG
567÷9=
N1 63.

DEG
ANS÷7=
N1 9.

DEG
ANS-8=
N1 1.

The answer is 1 and the game is finished.

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Press the following buttons and then start operation.

ON/C MODE 0

Example B:

$567 \div 7 =$

$- 9 =$

$\div 8 =$

You want to subtract 8 from 9, but you cannot since you have already used 8 once.

So...

$\div 3 =$

$- 2 =$

The calculator displays 1 and the game is finished.

DEG
567÷7=
N1 81.

DEG
ANS-9=
N1 72.

DEG
ANS÷8=
N1 9.

DEG
ANS÷3=
N1 3.

DEG
ANS-2=
N1 1.

••••• Using the activity in the classroom •••••

Students should be encouraged to estimate the results of calculations and think about the appropriate operations and numbers to use during the game. Let's start with 864, for example. This number is divisible by 9, 6, 3 and 2. The equation $864 \div 9$ could therefore be a possible first step. This will prompt students to test the divisibility of numbers. Students should also be encouraged to think about the various strategies they use.

The game could be played between small group of students.

••••• Points for students to discuss •••••

For some students, it may be more appropriate to start with a 2-digit number. In this case, the calculator should be set to fixed decimal place mode by pressing the [2ndF] key once and then pressing the [.] key, which has FSE written in yellow above it, until FIX is displayed at the top of the calculator screen. And press [2ndF] [TAB] and [0] keys. Doing this will round answers to 0 decimal places. The starting number can then be generated by multiplying a random number by 100.

N.B. To set the EL-506W, EL-520W, EL-531WH, EL-509W, and EL-531W to fixed decimal place mode, press the [SET UP] key and then press the [0] key twice. Then press the [SET UP], [1] and [0] keys after FIX is displayed at the top of the calculator screen. To set the EL-VV531G to fixed decimal place mode, press the [SET UP] key and then press the [1] and [0] keys then press [0] to 0 decimal place or press [1] to 0.0 decimal place.

Further Ideas

- Play the game using decimal starting numbers.
- Give the students a shuffled set of cards numbered from 1 to 9 and a shuffled set of cards numbered 10, 20, 30, 40, 50. Students choose five cards from the first set, and two cards from the second set. The calculator is then used to generate a random three digit integer, and the students have to make this total by using the numbers on the cards.