Same Answer Every Time!

ACTIVITY

You need: a classmate

Kaprekar was a famous Indian mathematician. He discovered that if you make the largest number you can out of any four different digits and then subtract the smallest number you can make out of the same digits, you always end up with the number 6 174 after doing this no more than seven times.

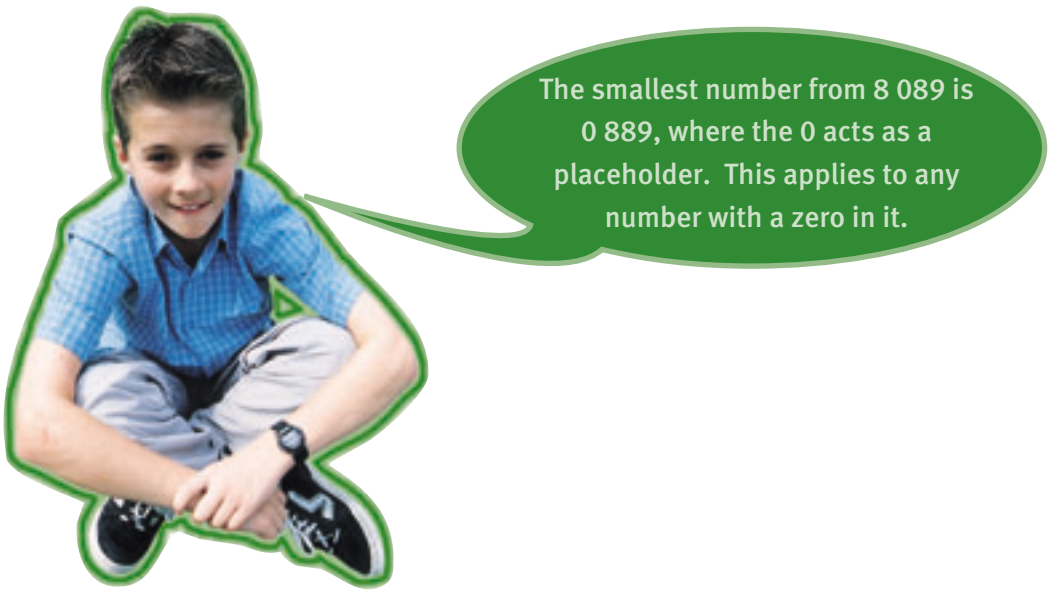
Here's what you do:

- Write a number using four different digits (for example, 7 391).
- Rearrange these digits to form the largest number possible.
- Reorder them again to form the smallest number possible.
- Subtract the smaller number from the larger number.
  9 731 – 1 379 = 8 352
- Repeat the steps with your new number.
  8 532 – 2 358 = 6 174

This is a two-subtraction Kaprekar number.

1. Work with a classmate to find some three-, four-, five-, six-, and seven-subtraction Kaprekar numbers.

2. **a.** What happens if some of the digits are the same? Will it still work?



b. What numbers do you get if you apply the same process to a 3-digit number and a 2-digit number?