# Puzzle of the Week
# *Removing Digits*

THE CHALLENGE: Which ten digits would you remove (they don't need to be next to each other) from the number 123451234512345123451234512345 to make the new number as large as possible? Which ten digits would you remove to make it as small as possible?

123451234512345123451234512345

EXPLORATION: Can you think of other interesting problems similar to this one?

# Puzzle of the Week
# *Removing Digits – Notes*

THE CHALLENGE: To make the number as large as possible, the highest priority has to be putting 5's in the high order digits. So, start by removing 1 to 4 the first two times. Removing those 8 digits produces the number 55123451234512345. Removing the next 1 and 2 is the best you can do, and that produces the answer:

553451234512345

To make the smallest number, we want it to start with 1's. Removing 8 digits by removing the first two groups of 2 to 5 produces the number 11123451234512345. The best we can do is remove the next 4 and 5, and that produces the answer

111231234512345

EXPLORATION: Similar puzzles can be made using different sequences of digits. The theme for all of them is that the highest order digits are the most important.