2.NBT Ordering 3-digit numbers

Alignments to Content Standards: 2.NBT.A.4

Task

1. Arrange the following numbers from least to greatest:

476   647   74   674   467

_____ _____ _____ _____ _____

2. Arrange the following numbers from greatest to least:

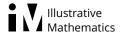326   362   63   623   632

_____ _____ _____ _____ _____

IM Commentary

Each number has at most 3 digits so that students have the opportunity to think about how digit placement affects the size of the number. Each group also contains a two-digit number so that students have to do more than just compare the first digit, the second digit, etc.

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Solution

1. Least to greatest:

Arranging the numbers from least to greatest means writing the numbers in an ordered list according to their values. The smallest number should be written on the left, with the next smallest number written to its immediate right. The process continues for all the given numbers, the largest of which should be on the right.

First we look for the smallest number given. 74 is the smallest number given because it is the only number with no 100s. (There is an implied zero in the hundred's place.)

We now look for the second smallest number. There are two numbers, 476 and 467, with four 100s (fours in the hundred's place). We must now consider the ten's place. 467 is the next smallest number because it only has six $10s$ (a six in the ten's place), while 476 has seven 10s (a seven in the ten's place).

The next smallest number is 476 because it only has four 100s (a four in the hundred's place), while all the other remaining numbers have six 100s (sixes in the hundred's place).

We now have two numbers remaining, 647 and 674. Both numbers have six 100s (sixes in the hundred's place), so we must compare their 10s. 647 is smaller than 674 because in has just four 10s (a four in the ten's place), rather than seven 100s (a seven in the hundred's place).

This leaves 674 as the largest number.

| 74 | 467 | 479 | 647 | 674 |

2. Greatest to least

Arranging the numbers from greatest to least means writing the numbers in an ordered list according to their values. The largest number should be written on the left, with the next largest number written to its immediate right. The process continues for all the given numbers, the smallest of which should be on the right.

First we look for the largest number given. There are three numbers that begin with six: 63, 623 and 632. However, the 6 in 63 is in the tens place, not in the hundreds place. There are zero hundreds, making 63 the smallest number, the only number that

is less than 100.

623 and 632 both have six 100s (sixes in the hundred's place), so it is necessary to compare the digits in the 10's place. 623 has two 10s (a two in the ten's place), while 632 has three 10s (a tens in the ten's place. Since the value of the three in the 10's place is larger than two in the 10's place, 632 is the largest number and 623 is the second largest number.

The two remaining numbers both start with three. Comparing 326 and 362, which both have 3 hundreds (a three in the hundred's place), means comparing the numbers in the ten's place. Six tens (a six in the ten's place) is larger than three tens (a three in the ten's place), so 326 is smaller than 362.

| 632 | 623 | 362 | 326 | 63 |