Puzzle of the Week
Combining Digits – 1 2 4 8

Here are some ways to get 0 and 1 using 1, 2, 4, and 8.

$$0 = 8 - 1 * 2 * 4$$

$$0 = 8 * 1 - 2 * 4$$

$$1 = 8 - 2 * 4 + 1$$

$$1 = 8 - 4 - 2 - 1$$

THE CHALLENGE: How many numbers can you get using each of the numbers 1, 2, 4, and 8 in any order, using addition, subtraction, and multiplication?

EXPLORATION: What happens with other groups of four numbers? What happens if you use the five numbers: 1, 2, 4, 8, and 16?

Puzzle of the Week

Combining Digits – 1 2 4 8 – Notes

THE CHALLENGE: Here are some solutions from 0 to 26. Of course, there are many more. Have fun comparing different people's solutions!

0 = 8 - 1 * 2 * 4
1 = 8 - 4 - 2 - 1
2 = 8 - 4 - 2 * 1
3 = 8 - 4 - 2 + 1
4 = 8 - 4 * (2 - 1)
5 = 8 - 4 + 2 - 1
6 = 8 - 4 + (2 * 1)
7 = 8 - 4 + 2 + 1
8 = 8 * (4 - 2 - 1)
9 = 8 + 4 - 2 - 1
10 = 8 + 4 - (2 * 1)
11 = 8 + 4 - 2 + 1
12 = 8 + 4 * (2 - 1)
13 = 8 + 4 + 2 - 1
14 = 8 + 4 + (2 * 1)
15 = 8 + 4 + 2 + 1
16 = 8 * (4 - (2 * 1))
17 = 8 * (4 - 2) + 1
18 = (8 + 1) * (4 - 2)
19 = 8 * 2 + 4 - 1
20 = 8 * 2 + 4 * 1
21 = 8 * 2 + 4 + 1
22 = 8 * (4 - 1) - 2
23 = (8 - 2) * 4 - 1
24 = (8 - 2) * 4 * 1
25 = (8 - 2) * 4 + 1
26 = 8 * (4 - 1) + 2