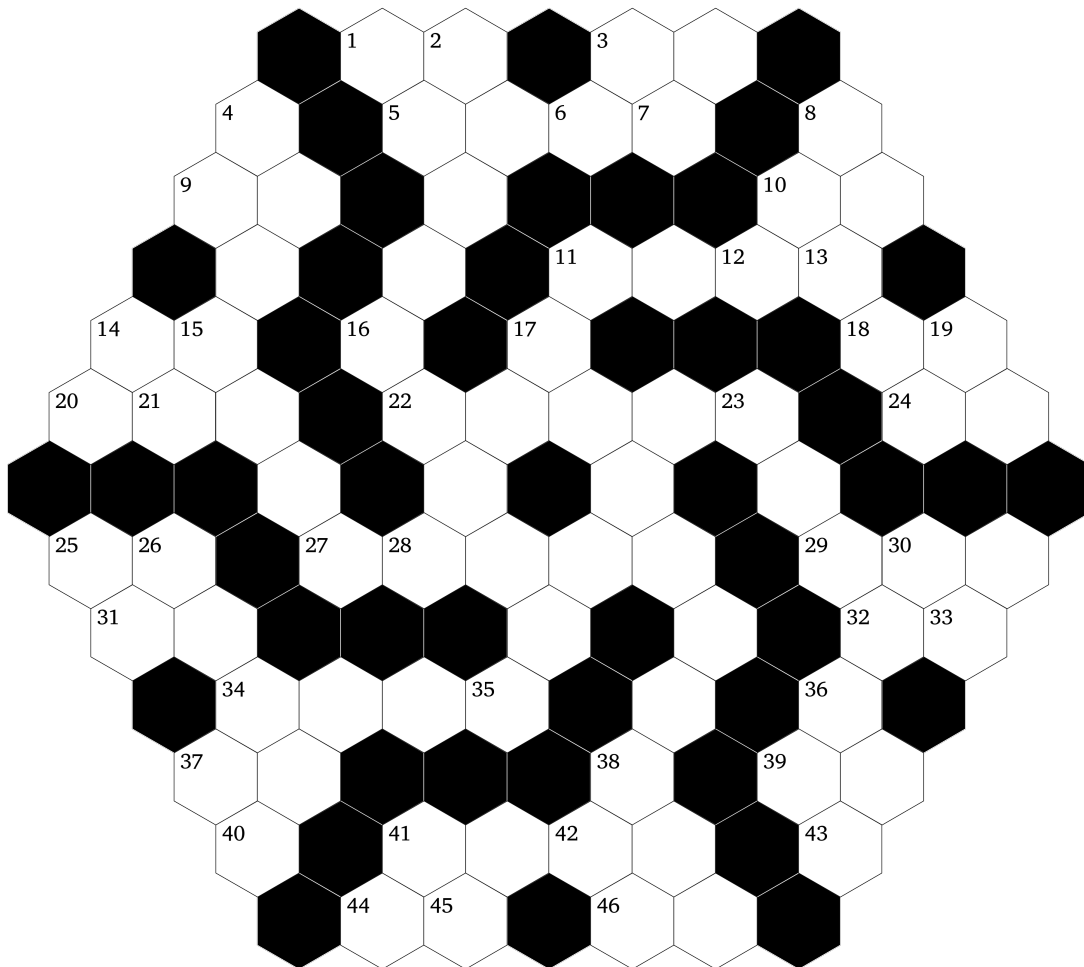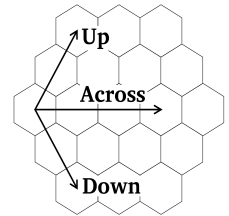Difficulty: ★★★★☆

TripleCross - Hard Puzzle #33

This puzzle is like a crossword, but with numbers. Each digit occupies a hexagonal cell and can be a part of a "word" in the across, up, and down directions.

Rules:
1. "Words" may not start with a zero.
2. "Words" in the 'across' direction read from left to right.
3. "Words" in the 'up' direction read along the upward diagonal to the right.
4. "Words" in the 'down' direction read along the downward diagonal to the right.
5. There is one unique solution which satisfies all the clues given below.
6. Some "words" may not have clues. They will be determined by the "words" which intersect them.

Across

1 40 up divided by 3 across
3 A square
5 A square
9 Mean of 25 down and 7 up
10 25 across minus 45 up
11 23 down plus 21 up
14 A square
18 Mean of 1 across and 5 up
20 11 across divided by 9 down
22 Its digits total 43 up
24 25 across minus 8 down
25 5 across divided by 14 across
27 Last two digits are the same as 1 across
29 45 up plus 37 down
31 Mean of 6 up and 41 down
32 39 across plus 5 up
34 44 across times 24 across
37 46 up plus 24 up
39 37 across minus 25 across
41 23 down minus half of 34 across
44 Mean of 46 up and 9 down
46 5 across divided by 44 up

Up

5 Mean of 43 up and 33 up
6 10 down divided by 9 across
7 2 down plus 46 across
9 46 up plus half of 19 down
12 A prime number
13 29 across minus 45 up
16 Half of 15 down, then subtract 12 up
20 Same as 14 down
21 Four times a prime number
24 37 down minus 46 across
28 8 down plus half of 16 down
31 Mean of 41 down and 25 across
33 38 down divided by 44 up
35 Nineteen thousand one hundred thirty-eight more than 27 across
37 39 across plus 9 across
39 A cube
40 1 across times 14 across
42 A prime number
43 24 across minus 44 across
44 24 across minus 5 up
45 5 across divided by 42 down
46 7 up minus 36 down

Down

1 Four times a prime number
2 31 up minus 18 across
3 A square
4 24 up plus 43 up
8 46 up minus 3 across
9 6 up minus 45 up
10 Last two digits are the same as 3 across
14 1 across minus 8 down
15 Six times a prime number
16 Ninety times a prime number
17 39 up times 39 down
19 25 across plus 43 up
23 Nine hundred twenty-eight less than 42 up
25 5 up plus 42 down
26 35 up divided by forty-nine
30 46 up minus 45 up
36 9 down reversed
37 Same as 13 up
38 Nine times 31 across
39 Same as 30 down
41 44 up minus 8 down
42 Mean of 37 up and 44 across

Solution: