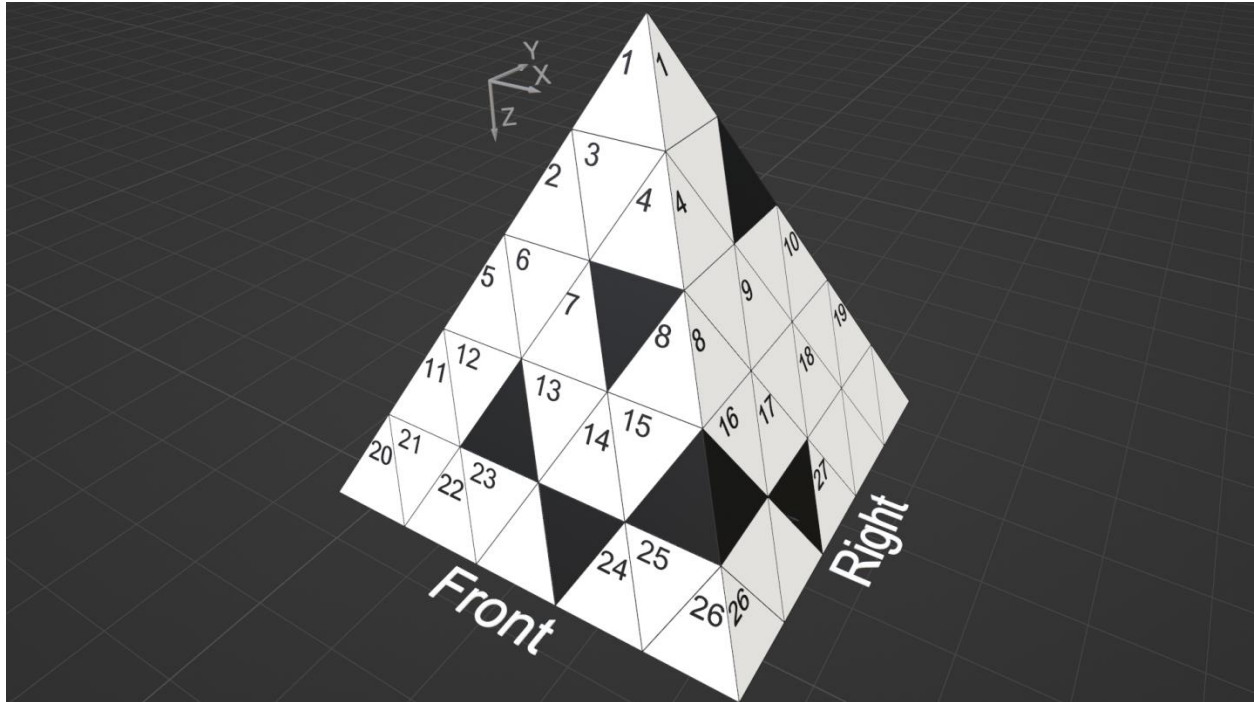


Pyramid

This puzzle is a 3D pyramid.

Here is a view from the corner where the front and right faces meet (The floor has labels for the faces):



There is no good way to lay it flat so I created some animations to help understand the layout.

Here is an animation of the blocks from the front:

<http://3dmathpuzzles.com/animations/Pyramid/front.gif>

Here is an animation of the blocks from the right:

<http://3dmathpuzzles.com/animations/Pyramid/right.gif>

Here is an animation to help you understand the blocks in the Z direction:

<http://3dmathpuzzles.com/animations/Pyramid/z.gif>

This puzzle is like a crossword, but with numbers. Each digit occupies a 3D shape and can be a part of a "word" in the X, Y, and Z directions.

Rules:

1. "Words" may not start with a zero.
2. "Words" read from:
 - a. X Direction: Left to right when facing the pyramid from the front. For example: blocks 2, 3, and 4 form a "word" in the X direction.
 - b. Y Direction: Front to back when facing the pyramid from the front. If you face the pyramid from the right, the digits will read left to right. For example: blocks 8, a non-numbered block, 9, a non-numbered block, and 10 form a "word" in the Y direction.
 - c. Z Direction: Top to bottom of the pyramid, in a vertical line. You can think of these as vertically aligned diamond shapes.
3. There is one unique solution which satisfies all the given clues.
4. Some "words" may not have clues. They will be determined by the "words" which intersect them.

Clues

X Direction

- | | | | |
|----|--|----|---|
| 2 | Y30 plus Z43, then multiply by seven | 47 | Mean of Z18 and Z19 |
| 5 | Y51 divided by the result of X13 minus Y21 | 49 | Sum of X5, Y35, and Z17 |
| 11 | Y25 divided by Z38 | 50 | First, fifth, and sixth digits are the same |
| 13 | Mean of X5 and X45 | 51 | X47 plus twice X49 |
| 20 | Seven times a prime number | 54 | Nine times the sum of X46, Y21, and Y30 |
| 24 | X45 times the median of X67 and Y60 | 55 | Y14 minus Y30, then multiply by a prime number |
| 28 | Y48 rearranged | 57 | Eight times the difference of Z64 and Z41 |
| 29 | Sum of X38, Y8, and Z54, then subtract Z38 | 58 | X54 minus the result of X59 multiplied by ten |
| 31 | Y27 times Z41 | 59 | Add X67 and Y26, then divide by 2 |
| 33 | Z64 minus Y30 | 60 | Y4 times Z1 |
| 34 | Is a prime number | 61 | A 3 digit prime number multiplied by a 4 digit prime number |
| 35 | X45 plus a square, then multiply by two | 62 | Is a prime number |
| 36 | Y30 plus Z4 | 63 | X62 minus Y52 |
| 38 | Z44 minus X67 | 64 | Twice a prime number |
| 39 | X58 plus Y57 | 65 | Is a prime number |
| 41 | Twice Y30 times Y60 | 66 | Y35 minus Z17 |
| 45 | Is a prime number | 67 | Y20 minus Z5, then divide by the reverse of X11 |
| 46 | Three times a prime number | | |

Y Direction

- | | | | |
|----|--|----|--|
| 2 | Same as Y48 | 24 | Rearranged digits of Y2 multiplied by Z18 |
| 3 | X49 plus half of X38 | 25 | X11 times Z38 |
| 4 | Same as Z4 | 26 | Y22 divided by X34 |
| 5 | Second and last digits are the same | 27 | Twice the result of Y8 minus both Y2 and Z56 |
| 6 | X41 plus three, then multiply by Z56 | 30 | Z1 divided by X34 |
| 7 | X20 minus Y53 | 32 | Second and fourth digits are the same |
| 8 | Sum of X58, Y30, and Z38, then subtract X13 | 35 | X66 plus reversed Z41 |
| 11 | Four less than X35 | 37 | Z7 plus Z41 |
| 12 | X34 times Z54 | 42 | Twice Z19, then add X41 and Z40 |
| 13 | X13 times Z2 | 48 | Is a square |
| 14 | X47 plus Z7 | 51 | Five times the sum of Y2, three times Y11, and Z18 |
| 15 | Ten times a prime number | 52 | Second digit is same as fourth |
| 16 | First and last digits are the same | 53 | First and third digits are the same |
| 20 | Sum of X2, Y62, and Z11 | 57 | Twice a prime number |
| 21 | X66 plus Z19 | 60 | Y37 reversed |
| 22 | Z39 minus the reverse of X11, then multiply by X34 | 62 | Three times a prime number |
| 23 | X28 plus Z39, then subtract Z19 | | |

Z Direction

- | | | | |
|----|--|----|------------------------------|
| 1 | Consecutive digits in descending order | 18 | Y24 divided by X28 |
| 2 | Y13 divided by X13 | 19 | Y21 minus X66 |
| 4 | Twice Y3 minus Y21, then divide by Z18 | 38 | Consecutive digits in order |
| 5 | X5 minus the sum of Z18 and Z19 | 39 | Twice the sum of X57 and Z19 |
| 7 | Z54 minus X13, then divide by four | 40 | Four times X36 |
| 8 | X59 plus the mean of X67 and Y60 | 41 | Y48 minus X2 |
| 9 | Four times X47 | 43 | Sum of X67 and Y30 |
| 10 | X55 minus Z41, then divide by Y20 | 44 | X38 plus X67 |
| 11 | Twice the difference of Z44 and Y4 | 54 | Z56 times a prime |
| 14 | Sum of Y14, Y35, and Y42, then divide by X47 | 56 | X50 divided by Y27 |
| 17 | Z41 reversed | 64 | Z18 reversed |

Solution starts on next page

Solution

X Direction

2	763	47	32
5	565	49	652
11	71	50	2,805,228
13	289	51	1,336
20	99,113	54	49,329
24	338	55	867,683
28	874	57	416
29	45,149	58	44,859
31	2,031,372	59	447
33	31	60	2,980,236
34	2,087	61	320,797
35	7,226	62	959,873
36	76	63	310,422
38	44	64	7,127,602
39	88,621	65	743
41	2,268	66	63
45	13	67	25
46	5,349		

Y Direction

2	784	24	32,338
3	674	25	324,257
4	34	26	869
5	54,864	27	96,732
6	65,859	30	42
7	51,623	32	360,682
8	49,179	35	75
11	7,222	37	72
12	1,028,891	42	2,626
13	2,185,707	48	784
14	83	51	112,435
15	9,732,830	52	649,451
16	218,362	53	47,490
20	926	57	43,762
21	90	60	27
22	1,813,603	62	93
23	1,733		

Z Direction

1	87,654	18	37
2	7,563	19	27
4	34	38	4,567
5	501	39	886
7	51	40	304
8	473	41	21
9	128	43	67
10	937	44	69
11	70	54	493
14	87	56	29
17	12	64	73