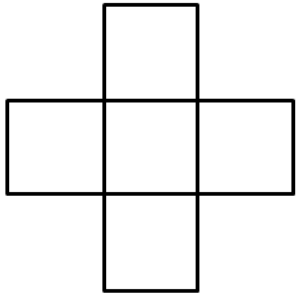
plus

use all of 1, 2, 3, 4 and 5 so that the row and column have the same total

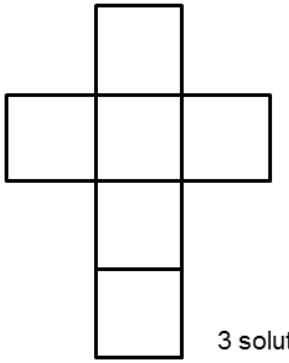


why must the centre number be odd?

why must 5 and 1 be in a line?

cross

use all of 1, 2, 3, 4, 5 and 6
the two lines have the same total



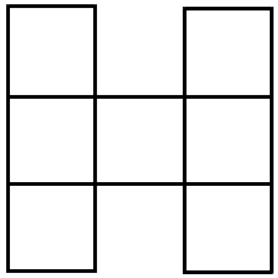
3 solutions

why must the centre number be odd?

why can't the line totals be 10?

haitch

use all of 1, 2, 3, 4, 5 , 6 and 7
the three lines have the same total



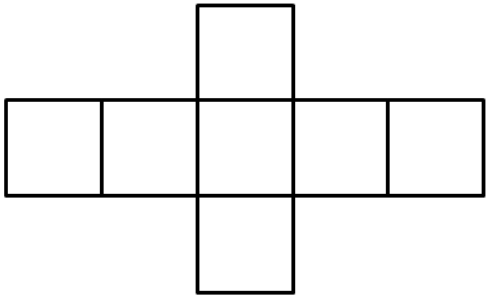
7 solutions

why must the centre number be even?

prove that you cannot have both
7 and 6 in the same line of three

croix

use all of 1, 2, 3, 4, 5, 6 and 7
the row and column have the same total

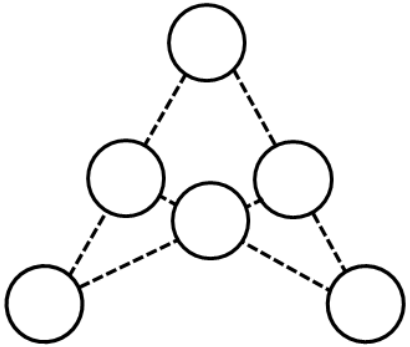


prove that the centre must be even

prove that the line totals must be
15, 16 or 17

pylon

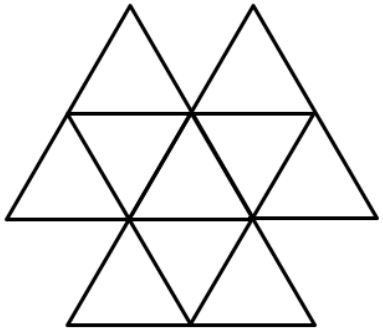
use all of 1, 2, 3, 4, 5 and 6
the lines of three have the same total



using the fact that the numbers to be used sum to 21, prove that this problem is impossible

odds

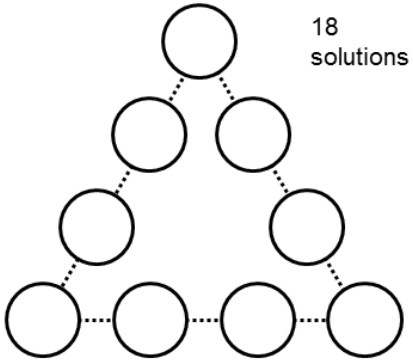
use the first ten odd numbers
the three upward big triangles
each add up to 46



prove that there are (essentially) 2 solutions

larger hollow triangle

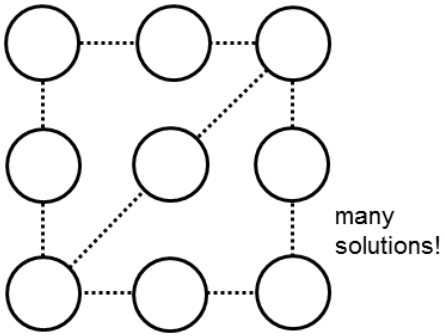
use all of 1, 2, 3, 4, 5, 6, 7, 8 and 9
lines of four have the same total



prove that line totals of 18 and 22 are impossible

five ways

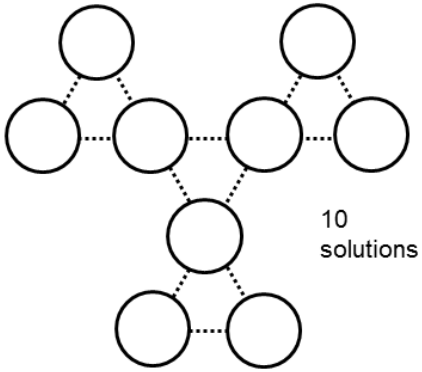
use all of 1, 2, 3, 4, 5, 6, 7, 8 and 9
lines of three have the same total



prove that there is one unique way of solving with a line total of (i) 13 (ii) 17

windmills

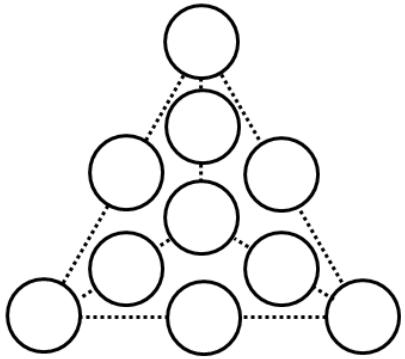
use all of 1, 2, 3, 4, 5, 6, 7, 8 and 9
triangles have the same total



prove that each triangle must sum to one particular odd number

tetra

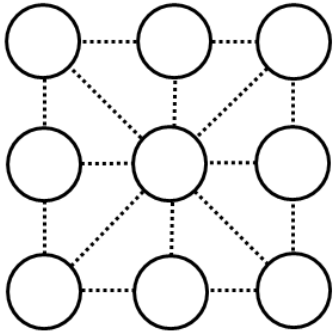
use all of 1, 2, 3, 4, 5, 6, 7, 8 and 9
all lines of three have the same total



prove that this is impossible but all lines bar one of the lines can sum to 12

magic square

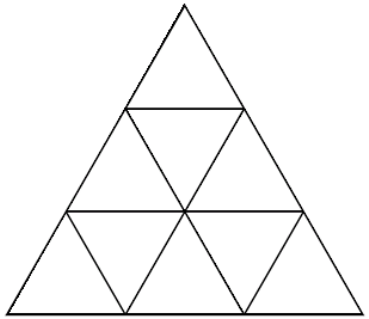
use all of 1, 2, 3, 4, 5, 6, 7, 8 and 9
all lines of three have the same total



prove that there is essentially one unique way of solving this

ninths

use all of 1, 2, 3, 4, 5, 6, 7, 8 and 9
three longest sides have the same total



prove that these lines of 5 triangles must sum to (i) 22 (ii) 25 or (iii) 28