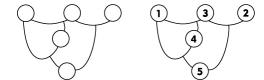
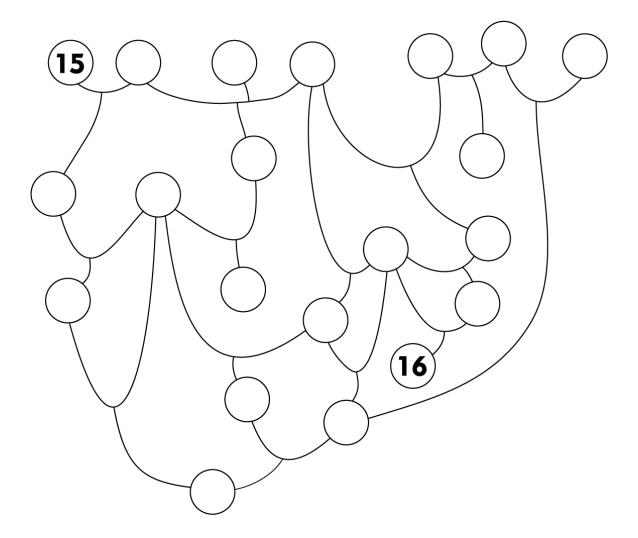


1. Number Tree

Place the numbers 1-21 into the circles (15 and 16 have been placed for you) so that for each branch, the bottom number is the sum of all the connected numbers above it.



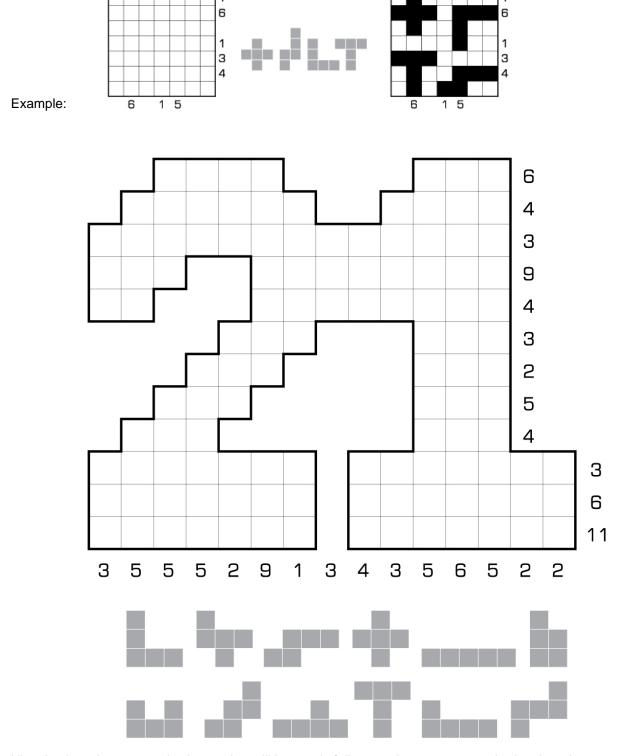
Example:



Hint: Remember that each circle will have a different number. Consider what numbers are possible for the bottom circle.

2. Pentomino

Place the 12 given shapes (known as *pentominoes*) in the grid. The shapes can be rotated or flipped over, but they cannot touch one another, not even at a corner. For each row and column, the number of squares covered by the shapes is given outside the grid.

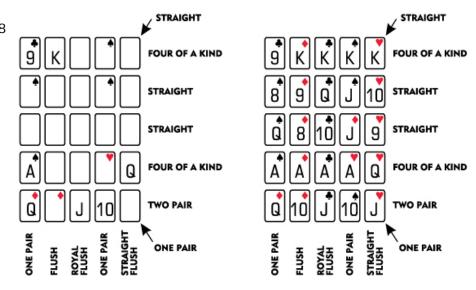


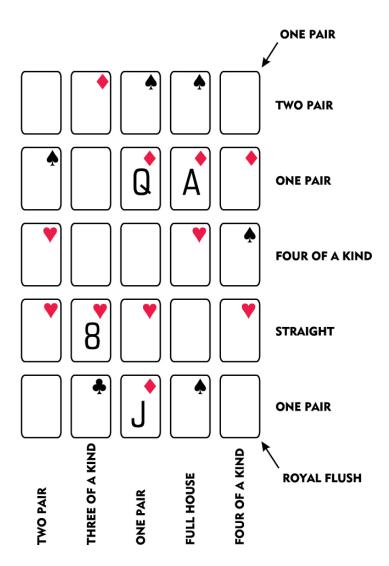
Hint: Analyze the rows and columns that will be nearly full or nearly empty, remembering that pieces cannot touch. Start with the column with the 9 and the row with the 5. Re-evaluate this hint as you make progress.

3. Poker

You have a deck of 28 cards: 8 through ace in four suits. Arrange 25 of these cards in the five-by-five grid so that the 12 named poker hands appear in the rows, columns and diagonals. The location of some cards and suits are given.

Example:

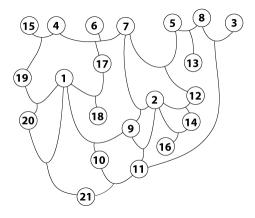




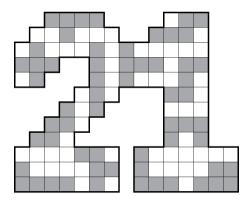
Hint: Consider the cards where the royal flush overlaps with the two four of a kinds.

Solutions

1. Number Tree



2. Pentomino



3. Poker

