Serial/parallel indecomposable resistor networks with 7 edges

Illustration of networks from **OEIS A338487**(7) = 36.
Only the 24 networks without "spikes" (dead ends) are depicted.

Part 1:
Overview over the multigraphs (called h-graphs by Karnofsky).
The ends of the battery edge are named A and Z. They are the "distinguished nodes"

Part 2:
For each network there is a figure with
- schematic drawing (ASCII-graphic)
- resistance value
- related rectangle tiling

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// Figures 7 and 18 are special.
// Common corners "x" in addition to "o".

Part 1: Overview
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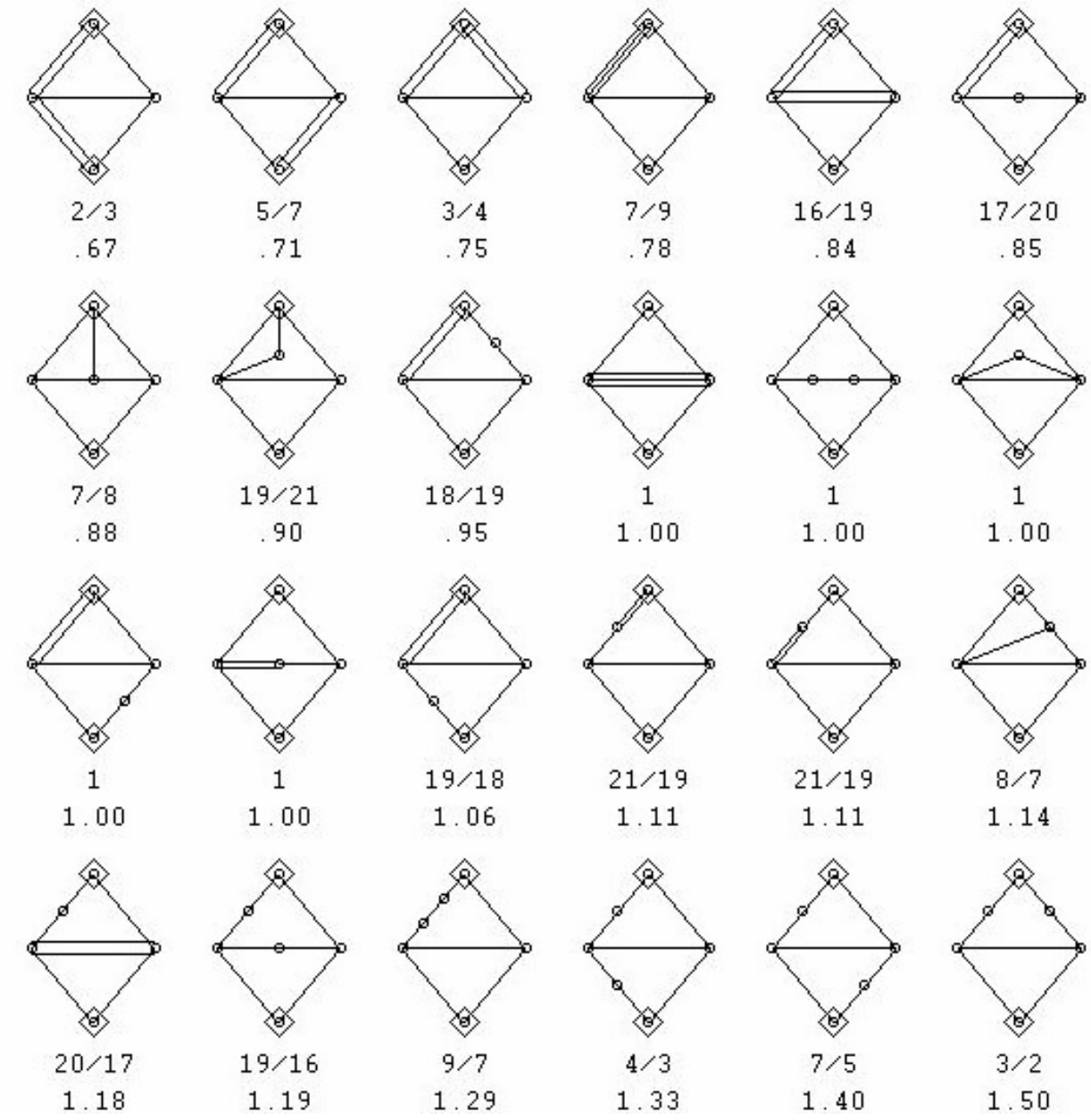

Part 2: Figures for each network
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Each network is an extension of the 'bridge' network. The related rectangle tiling shows the edges as squares. Larger squares correspond to a relatively larger flow of electrical charges. The crosspiece corresponds to the smallest square in the diagrams, which degenerates into a simple crossing point, if there is no flow through it. In that case, it is marked by a little "o". It is the common corner of four squares.

Networks of special interest are shown in figures 7 and 18 with respective resistances 7/8 and 8/7. **They don't contain any trivial serial or parallel subnets,** while all others do. Also interesting: they contain a common corner of four squares, but this does not correspond to a crosspiece with zero flow. This kind of crossing points is marked by "x".

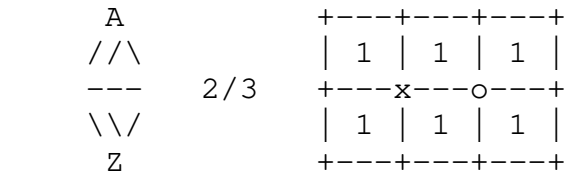

Fig. 1

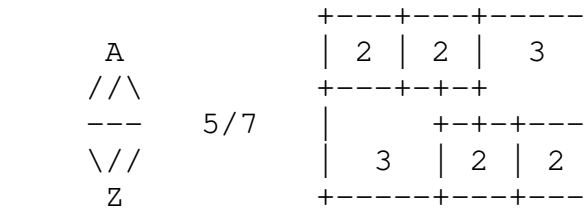

Fig. 2

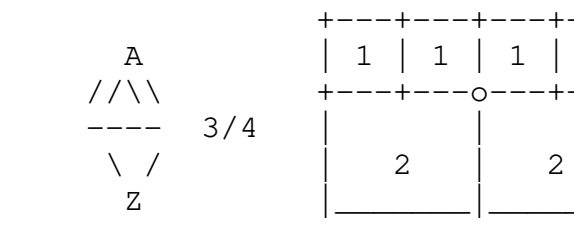

Fig. 3

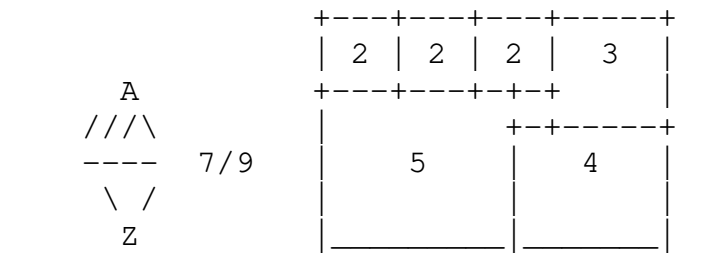

Fig. 4

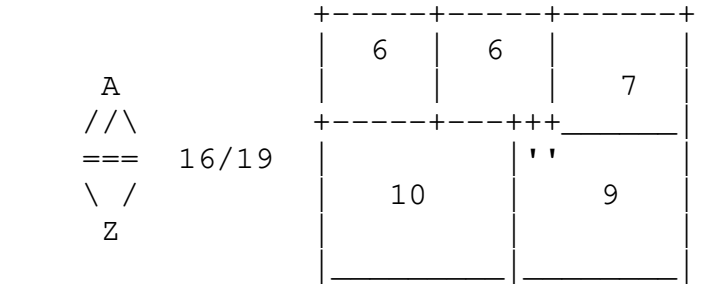

Fig. 5

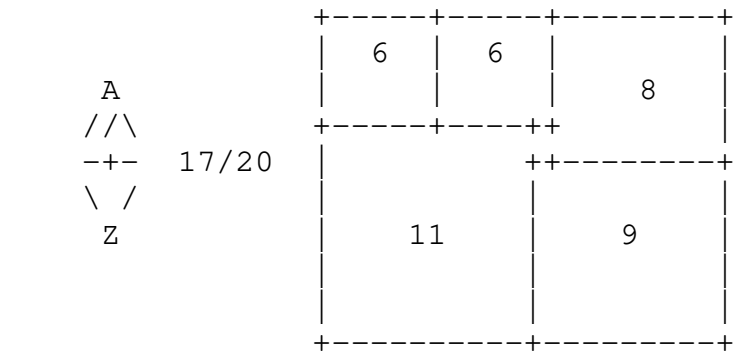

Fig. 6

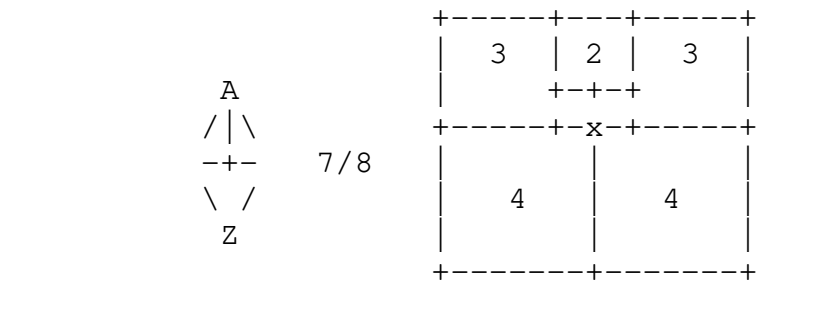

Fig. 7

- No trivial series or parallel subnet.
- Four squares with common corner x.

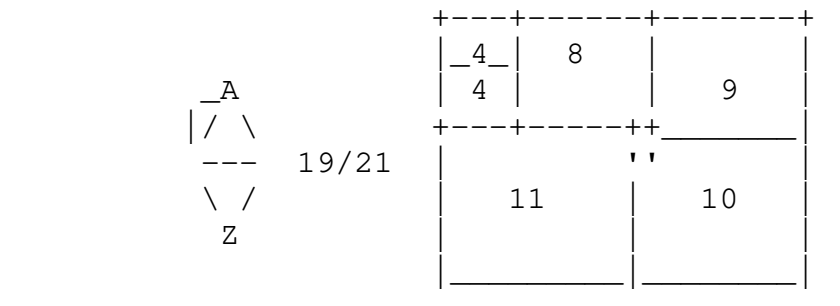

Fig. 8

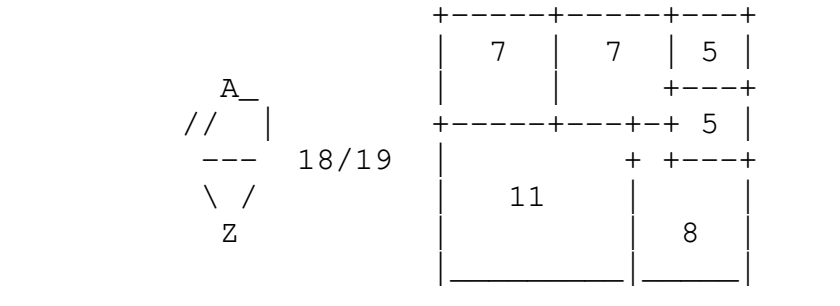

Fig. 9

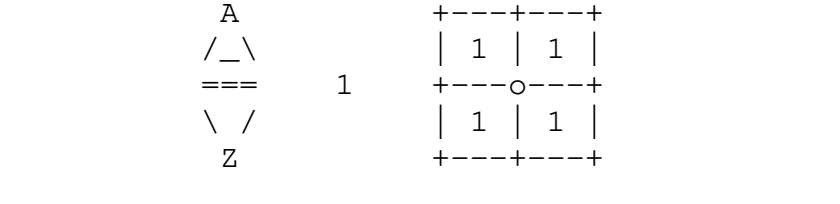

Fig. 10

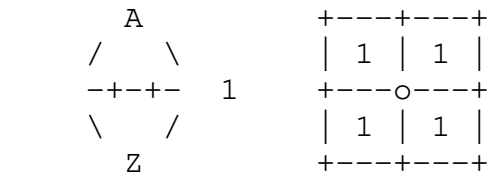

Fig. 11

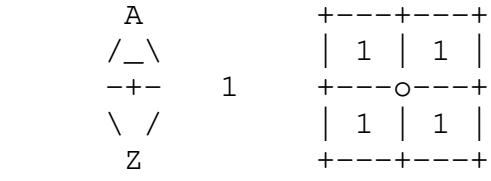

Fig. 12

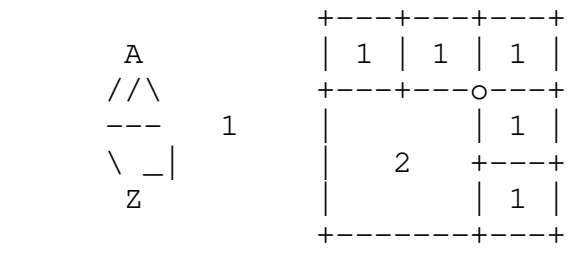

Fig. 13

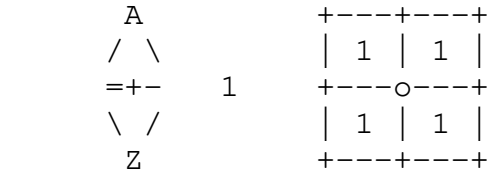

Fig. 14

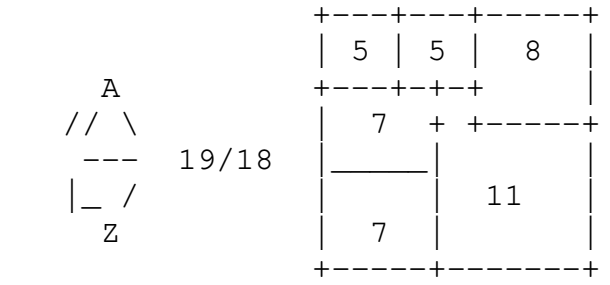

Fig. 15

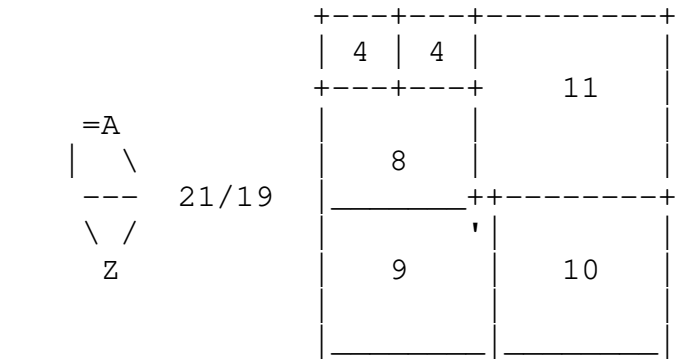

Fig. 16

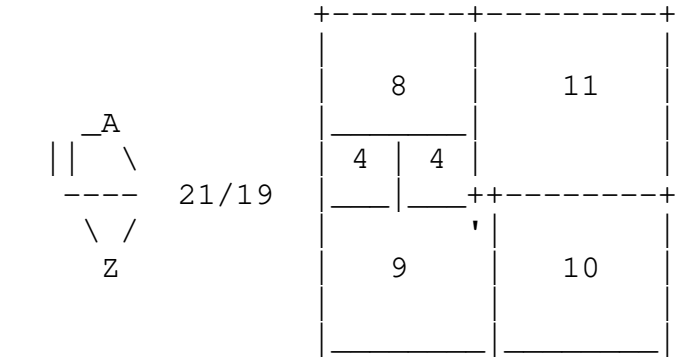

Fig. 17

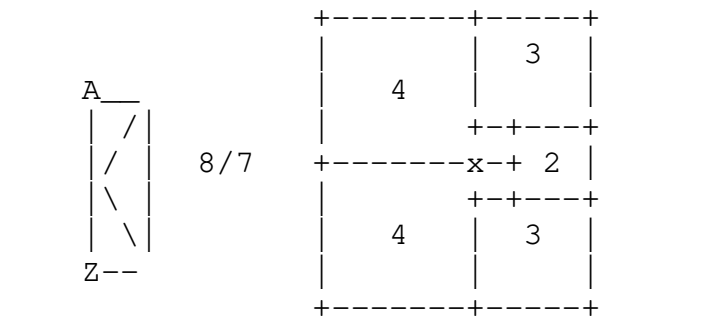

Fig. 18

- No trivial series or parallel subnet.
- Four squares with common corner x.

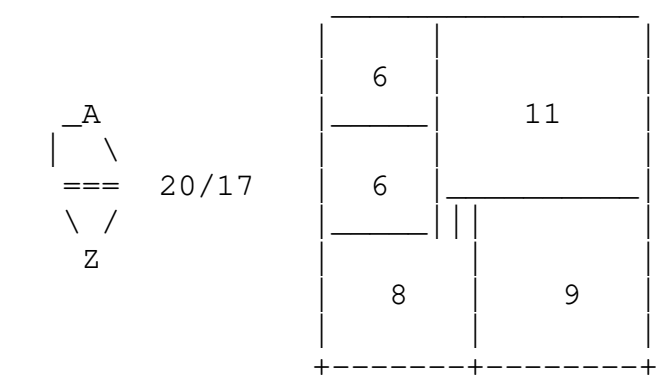

Fig. 19

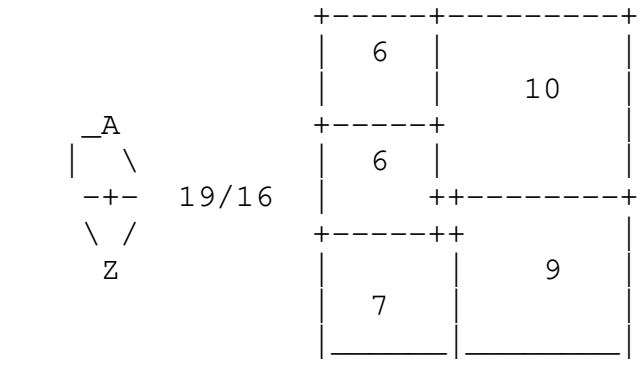

Fig. 20

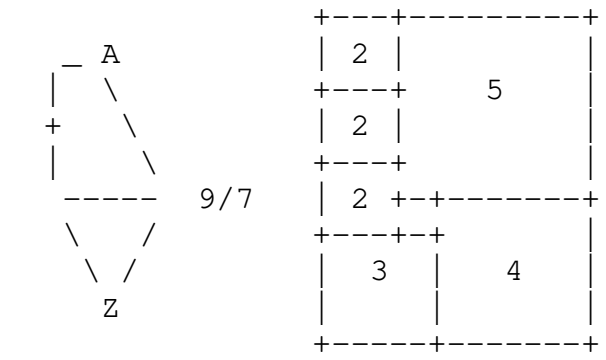

Fig. 21

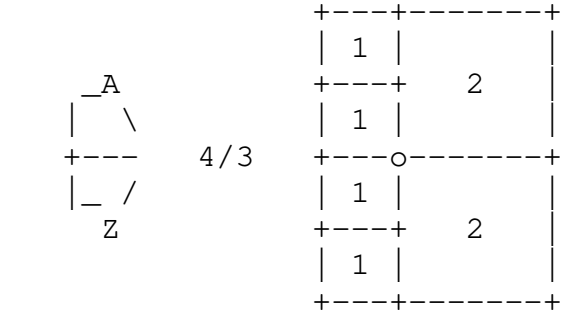

Fig. 22

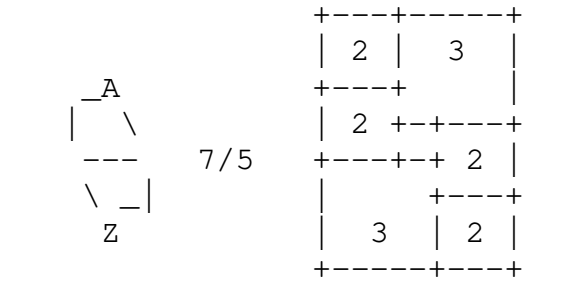

Fig. 23

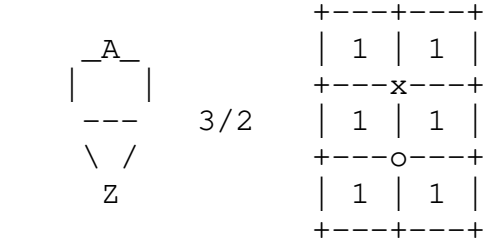

Fig. 24