

$$\begin{aligned}
OF(q_{11}, q_{12}, q_{13}, q_{21}, q_{22}, q_{23}, q_{41}, q_{42}, q_{43}, q_{51}, q_{52}, q_{53}, y_{11}, y_{12}, y_{13}, y_{14}, y_{15}, y_{21}, y_{22}, y_{23}, y_{24}, y_{25}, y_{31}, y_{32}, y_{33}, y_{34}, y_{35}, z_{31}, z_{32}, z_{33}, z_{34}, z_{35}) := & (18 - 6 \cdot q_{11} - 16 \cdot q_{21} - 15 \cdot q_{41} - 12 \cdot q_{51}) \cdot y_{11} \downarrow \\
& + (18 - 6 \cdot q_{12} - 16 \cdot q_{22} - 15 \cdot q_{42} - 12 \cdot q_{52}) \cdot y_{21} \downarrow \\
& + (18 - 6 \cdot q_{13} - 16 \cdot q_{23} - 15 \cdot q_{43} - 12 \cdot q_{53}) \cdot y_{31} \downarrow \\
& + (15 - 6 \cdot q_{11} - 16 \cdot q_{21} - 15 \cdot q_{41} - 12 \cdot q_{51}) \cdot y_{12} \downarrow \\
& + (15 - 6 \cdot q_{12} - 16 \cdot q_{22} - 15 \cdot q_{42} - 12 \cdot q_{52}) \cdot y_{22} \downarrow \\
& + (15 - 6 \cdot q_{13} - 16 \cdot q_{23} - 15 \cdot q_{43} - 12 \cdot q_{53}) \cdot y_{32} \downarrow \\
& + (19 - 6 \cdot q_{11} - 16 \cdot q_{21} - 15 \cdot q_{41} - 12 \cdot q_{51}) \cdot y_{13} \downarrow \\
& + (19 - 6 \cdot q_{12} - 16 \cdot q_{22} - 15 \cdot q_{42} - 12 \cdot q_{52}) \cdot y_{23} \downarrow \\
& + (19 - 6 \cdot q_{13} - 16 \cdot q_{23} - 15 \cdot q_{43} - 12 \cdot q_{53}) \cdot y_{33} \downarrow \\
& + (16 - 6 \cdot q_{11} - 16 \cdot q_{21} - 15 \cdot q_{41} - 12 \cdot q_{51}) \cdot y_{14} \downarrow \\
& + (16 - 6 \cdot q_{12} - 16 \cdot q_{22} - 15 \cdot q_{42} - 12 \cdot q_{52}) \cdot y_{24} \downarrow \\
& + (16 - 6 \cdot q_{13} - 16 \cdot q_{23} - 15 \cdot q_{43} - 12 \cdot q_{53}) \cdot y_{34} \downarrow \\
& + (14 - 6 \cdot q_{11} - 16 \cdot q_{21} - 15 \cdot q_{41} - 12 \cdot q_{51}) \cdot y_{15} \downarrow \\
& + (14 - 6 \cdot q_{12} - 16 \cdot q_{22} - 15 \cdot q_{42} - 12 \cdot q_{52}) \cdot y_{25} \downarrow \\
& + (14 - 6 \cdot q_{13} - 16 \cdot q_{23} - 15 \cdot q_{43} - 12 \cdot q_{53}) \cdot y_{35} \downarrow \\
& + 8 \cdot z_{31} + 5 \cdot z_{32} + 9 \cdot z_{33} + 6 \cdot z_{34} + 4 \cdot z_{35}
\end{aligned}$$

Guess Values

$$\begin{aligned}
q_{11} &:= 0.5 & q_{12} &:= 0.5 & q_{13} &:= 0.5 & q_{41} &:= 0.5 & q_{42} &:= 0.5 & q_{43} &:= 0.5 \\
q_{21} &:= 0.5 & q_{22} &:= 0.5 & q_{23} &:= 0.5 & q_{51} &:= 0.5 & q_{52} &:= 0.5 & q_{53} &:= 0.5 \\
y_{11} &:= 50 & y_{21} &:= 50 & y_{31} &:= 50 & z_{31} &:= 50 \\
y_{12} &:= 100 & y_{22} &:= 100 & y_{32} &:= 100 & z_{32} &:= 100 \\
y_{13} &:= 50 & y_{23} &:= 50 & y_{33} &:= 50 & z_{33} &:= 50 \\
y_{14} &:= 50 & y_{24} &:= 50 & y_{34} &:= 50 & z_{34} &:= 50 \\
y_{15} &:= 50 & y_{25} &:= 50 & y_{35} &:= 50 & z_{35} &:= 50
\end{aligned}$$

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Constraints

$$\begin{aligned}
& q_{41} \cdot (y_{11} + y_{12} + y_{13} + y_{15}) + q_{42} \cdot (y_{21} + y_{22} + y_{23} + y_{24} + y_{25}) + q_{43} \cdot (y_{31} + y_{32} + y_{33} + y_{34} + y_{35}) \leq 50 \\
& y_{11} + y_{21} + y_{31} + z_{31} \leq 100 \\
& y_{12} + y_{22} + y_{32} + z_{32} \leq 200 \\
& y_{13} + y_{23} + y_{33} + z_{33} \leq 100 \\
& y_{14} + y_{24} + y_{34} + z_{34} \leq 100 \\
& y_{15} + y_{25} + y_{35} + z_{35} \leq 100 \\
& (3 \cdot q_{11} + q_{21} + q_{41} + 1.5 \cdot q_{51} - 2.5) \cdot y_{11} \downarrow \leq 0 \\
& + (3 \cdot q_{12} + q_{22} + q_{42} + 1.5 \cdot q_{52} - 2.5) \cdot y_{21} \downarrow \\
& + (3 \cdot q_{13} + q_{23} + q_{43} + 1.5 \cdot q_{53} - 2.5) \cdot y_{31} - 0.5 \cdot z_{31} \\
& (q_{11} + 3 \cdot q_{21} + 2.5 \cdot q_{41} + 2.5 \cdot q_{51} - 2.0) \cdot y_{11} \downarrow \leq 0 & 0 \leq q_{11} \leq 1.0 & 0 \leq q_{12} \leq 1.0 & 0 \leq q_{13} \leq 1.0 \\
& + (q_{12} + 3 \cdot q_{22} + 2.5 \cdot q_{42} + 2.5 \cdot q_{52} - 2.0) \cdot y_{21} \downarrow & 0 \leq q_{21} \leq 1.0 & 0 \leq q_{22} \leq 1.0 & 0 \leq q_{23} \leq 1.0 \\
& + (q_{13} + 3 \cdot q_{23} + 2.5 \cdot q_{43} + 2.5 \cdot q_{53} - 2.0) \cdot y_{31} + 0.5 \cdot z_{31} & 0 \leq q_{41} \leq 1.0 & 0 \leq q_{42} \leq 1.0 & 0 \leq q_{43} \leq 1.0 \\
& (3 \cdot q_{11} + q_{21} + q_{41} + 1.5 \cdot q_{51} - 1.5) \cdot y_{12} \downarrow \leq 0 & 0 \leq q_{51} \leq 1.0 & 0 \leq q_{52} \leq 1.0 & 0 \leq q_{53} \leq 1.0 \\
& + (3 \cdot q_{12} + q_{22} + q_{42} + 1.5 \cdot q_{52} - 1.5) \cdot y_{22} \downarrow \\
& + (3 \cdot q_{13} + q_{23} + q_{43} + 1.5 \cdot q_{53} - 1.5) \cdot y_{32} + 0.5 \cdot z_{32} \\
& (q_{11} + 3 \cdot q_{21} + 2.5 \cdot q_{41} + 2.5 \cdot q_{51} - 2.5) \cdot y_{12} \downarrow \leq 0 & 0 \leq y_{11} \leq 100 & 0 \leq y_{21} \leq 100 & 0 \leq y_{31} \leq 100 & 0 \leq z_{31} \leq 100 \\
& + (q_{12} + 3 \cdot q_{22} + 2.5 \cdot q_{42} + 2.5 \cdot q_{52} - 2.5) \cdot y_{22} \downarrow & 0 \leq y_{12} \leq 200 & 0 \leq y_{22} \leq 200 & 0 \leq y_{32} \leq 200 & 0 \leq z_{32} \leq 200 \\
& + (q_{13} + 3 \cdot q_{23} + 2.5 \cdot q_{43} + 2.5 \cdot q_{53} - 2.5) \cdot y_{32} & 0 \leq y_{13} \leq 100 & 0 \leq y_{23} \leq 100 & 0 \leq y_{33} \leq 100 & 0 \leq z_{33} \leq 100 \\
& & 0 \leq y_{14} \leq 100 & 0 \leq y_{24} \leq 100 & 0 \leq y_{34} \leq 100 & 0 \leq z_{34} \leq 100 \\
& (3 \cdot q_{11} + q_{21} + q_{41} + 1.5 \cdot q_{51} - 2.0) \cdot y_{13} \downarrow \leq 0 & 0 \leq y_{15} \leq 100 & 0 \leq y_{25} \leq 100 & 0 \leq y_{35} \leq 100 & 0 \leq z_{35} \leq 100 \\
& + (3 \cdot q_{12} + q_{22} + q_{42} + 1.5 \cdot q_{52} - 2.0) \cdot y_{23} \downarrow \\
& + (3 \cdot q_{13} + q_{23} + q_{43} + 1.5 \cdot q_{53} - 2.0) \cdot y_{33}
\end{aligned}$$

$$(q_{11} + 3 \cdot q_{21} + 2.5 \cdot q_{41} + 2.5 \cdot q_{51} - 2.6) \cdot y_{13} \downarrow \leq 0$$

$$+ (q_{12} + 3 \cdot q_{22} + 2.5 \cdot q_{42} + 2.5 \cdot q_{52} - 2.6) \cdot y_{23} \downarrow$$

$$+ (q_{13} + 3 \cdot q_{23} + 2.5 \cdot q_{43} + 2.5 \cdot q_{53} - 2.6) \cdot y_{33} - 0.1 \cdot z_{33}$$

$$(3 \cdot q_{11} + q_{21} + q_{41} + 1.5 \cdot q_{51} - 2.0) \cdot y_{14} \downarrow \leq 0$$

$$+ (3 \cdot q_{12} + q_{22} + q_{42} + 1.5 \cdot q_{52} - 2.0) \cdot y_{24} \downarrow$$

$$+ (3 \cdot q_{13} + q_{23} + q_{43} + 1.5 \cdot q_{53} - 2.0) \cdot y_{34}$$

$$(q_{11} + 3 \cdot q_{21} + 2.5 \cdot q_{41} + 2.5 \cdot q_{51} - 2.0) \cdot y_{14} \downarrow \leq 0$$

$$+ (q_{12} + 3 \cdot q_{22} + 2.5 \cdot q_{42} + 2.5 \cdot q_{52} - 2.0) \cdot y_{24} \downarrow$$

$$+ (q_{13} + 3 \cdot q_{23} + 2.5 \cdot q_{43} + 2.5 \cdot q_{53} - 2.0) \cdot y_{34}$$

$$(3 \cdot q_{11} + q_{21} + q_{41} + 1.5 \cdot q_{51} - 2.0) \cdot y_{15} \downarrow \leq 0$$

$$+ (3 \cdot q_{12} + q_{22} + q_{42} + 1.5 \cdot q_{52} - 2.0) \cdot y_{25} \downarrow$$

$$+ (3 \cdot q_{13} + q_{23} + q_{43} + 1.5 \cdot q_{53} - 2.0) \cdot y_{35}$$

$$(q_{11} + 3 \cdot q_{21} + 2.5 \cdot q_{41} + 2.5 \cdot q_{51} - 2.0) \cdot y_{15} \downarrow \leq 0$$

$$+ (q_{12} + 3 \cdot q_{22} + 2.5 \cdot q_{42} + 2.5 \cdot q_{52} - 2.0) \cdot y_{25} \downarrow$$

$$+ (q_{13} + 3 \cdot q_{23} + 2.5 \cdot q_{43} + 2.5 \cdot q_{53} - 2.0) \cdot y_{35}$$

$$q_{11} + q_{21} + q_{41} + q_{51} = 1$$

$$q_{12} + q_{22} + q_{42} + q_{52} = 1$$

$$q_{13} + q_{23} + q_{43} + q_{53} = 1$$

- q11
- q12
- q13
- q21
- q22
- q23
- q41
- q42
- q43
- q51
- q52
- q53
- y11
- y12
- y13
- y14
- y15
- y21
- y22
- y23
- y24
- y25
- y31
- y32
- y33
- y34
- y35
- z31
- z32
- z33
- z34
- z35

:= maximize (OF, q11, q12, q13, q21, q22, q23, q41, q42, q43, q51, q52, q53, y11, y12, y13, y14, y15, y21, y22, y23, y24, y25, y31, y32, y33, y34, y35, z31, z32, z33, z34, z35)

q_{11}	0.138
q_{12}	0.000
q_{13}	0.810
q_{21}	0.000
q_{22}	0.000
q_{23}	0.000
q_{41}	0.000
q_{42}	0.000
q_{43}	0.000
q_{51}	0.862
q_{52}	1.000
q_{53}	0.190
y_{11}	6.765
y_{12}	0.000
y_{13}	14.718
y_{14}	18.343
y_{15}	20.693
y_{21}	3.658
y_{22}	200.000
y_{23}	26.998
y_{24}	18.349
y_{25}	16.195
y_{31}	75.257
y_{32}	0.000
y_{33}	24.919
y_{34}	20.360
y_{35}	19.818
z_{31}	14.320
z_{32}	0.000
z_{33}	33.366
z_{34}	42.948
z_{35}	43.294

$$OF(q_{11}, q_{12}, q_{13}, q_{21}, q_{22}, q_{23}, q_{41}, q_{42}, q_{43}, q_{51}, q_{52}, q_{53}, y_{11}, y_{12}, y_{13}, y_{14}, y_{15}, y_{21}, y_{22}, y_{23}, y_{24}, y_{25}, y_{31}, y_{32}, y_{33}, y_{34}, y_{35}, z_{31}, z_{32}, z_{33}, z_{34}, z_{35}) = 3500.000$$