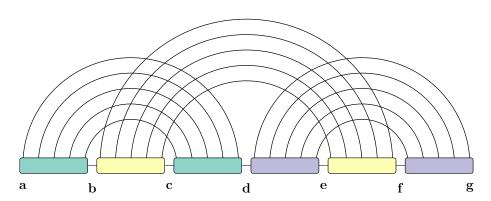


fatgraph name: K



first and last anchors, already given: a, q

$$A = \min_{d} \left(B \left[a, d | d, g \right] \right)$$

$$\boxed{ \textbf{\textit{B}}'[a,d|d',g] = \min \left\{ \begin{matrix} \textbf{\textit{B}}'[a,d-1|d',g], & \text{if } d-1, \notin \{a,d',g\} \\ \textbf{\textit{B}}[a+1,d-1|d',g] + \Delta G(a,d) & \text{if } \{a+1,d-1\} \cap \{d',g\} = \emptyset \end{matrix} \right. }$$

$$B'[a,d|d',g] = \min \begin{cases} B'[a,d-1|d',g], & \text{if } d-1,\notin \{a,d',g\} \\ B[a+1,d-1|d',g] + \Delta G(a,d) & \text{if } \{a+1,d-1\} \cap \{d',g\} = \emptyset \end{cases}$$

$$B[a,d|d',g] = \min \begin{cases} B[a+1,d|d',g], & \text{if } a+1\notin \{d,d',g\} \\ B[a,d-1|d',g], & \text{if } d-1,\notin \{a,d',g\} \\ B[a+1,d-1|d',g] + \Delta G(a,d) & \text{if } \{a+1,d-1\} \cap \{d',g\} = \emptyset, \end{cases}$$

$$C'[d,g|b,c] = \min \begin{cases} C'[d,g-1|b,c], & \text{if } g-1,\notin \{d,b,c\} \\ C[d+1,g-1|b,c] + \Delta G(d,g) & \text{if } \{d+1,g-1\} \cap \{b,c\} = \emptyset \end{cases}$$

$$C[d,g|b,c] = \min \begin{cases} C[d+1,g|b,c], & \text{if } d+1\notin \{g,b,c\} \\ C[d+1,g-1|b,c] + \Delta G(d,g) & \text{if } \{d+1,g-1\} \cap \{b,c\} = \emptyset, \end{cases}$$

$$C[d,g|b,c] = \min \begin{cases} C[d+1,g|b,c], & \text{if } g-1,\notin \{d,b,c\} \\ C[d+1,g-1|b,c] + \Delta G(d,g) & \text{if } \{d+1,g-1\} \cap \{b,c\} = \emptyset, \end{cases}$$

$$C[d+1,g-1|b,c], & \text{if } g-1,\notin \{d,b,c\} \\ C[d+1,g-1|b,c], & \text{if } g-1,\notin \{d,b,c\} \\ C[d+1,g-1|b,c], & \text{if } g-1,\notin \{d,b,c\} \end{cases}$$

$$C'[d,g|b,c] = \min \begin{cases} C'[d,g-1|b,c], & \text{if } g-1, \notin \{d,b,c\} \\ C[d+1,g-1|b,c] + \Delta G(d,g) & \text{if } \{d+1,g-1\} \cap \{b,c\} = \emptyset \end{cases}$$

$$C [d,g|b,c] = \min \begin{cases} C [d+1,g|b,c], & \text{if } d+1 \notin \{g,b,c\} \\ C'[d,g-1|b,c], & \text{if } g-1, \notin \{d,b,c\} \\ C [d+1,g-1|b,c] + \Delta G(d,g) & \text{if } \{d+1,g-1\} \cap \{b,c\} = \emptyset, \\ C_{\boxtimes}'[b,c-1,d,g+1-1] \end{cases}$$

