



What is the fast way or method to identify or create the following matrices (less than 1 minute)?

Please do not use **the traditional way or method such as** (i.e.  $A = [1 \ 2 \ 3 \ 4 \ 5; \dots]$ ):

$$G = \begin{bmatrix} 2 & 3 & 4 & 5 & 6 & 7 \\ 1,1 & 1,2 & 1,3 & 1,4 & 1,5 & 1,6 \\ 8 & 6 & 4 & 2 & 0 & -2 \end{bmatrix}; \quad (1)$$

$$H = \begin{bmatrix} 77 & 77 & 77 & 77 \\ 77 & 77 & 77 & 77 \\ 77 & 77 & 77 & 77 \\ 77 & 77 & 77 & 77 \end{bmatrix}; \quad (2)$$

$$I = \begin{bmatrix} 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \\ 8 & 6 & 4 & 2 & 0 \end{bmatrix}; \quad (3)$$

$$J = \begin{bmatrix} 0 & 0 & 0 & 0 & 8 \\ 0 & 0 & 0 & 0 & 7 \\ 0 & 0 & 0 & 0 & 6 \\ 0 & 0 & 0 & 0 & 5 \\ 0 & 0 & 0 & 0 & 4 \end{bmatrix} \quad (4)$$



$$K = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 8 & 6 & 4 & 2 & 0 & -2 \end{bmatrix}; \quad (5)$$

$$L = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}; \quad (6)$$

$$M = \begin{bmatrix} 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{bmatrix}; \quad (7)$$

$$N = \begin{bmatrix} 7 & 0 & 0 & 55 & 0 & 0 \\ 0 & 7 & 0 & 0 & 55 & 0 \\ 0 & 0 & 7 & 0 & 0 & 55 \end{bmatrix}; \quad (8)$$

$$O = \begin{bmatrix} 99 & 0 & 0 & 7 & 7 & 7 & 66 & 0 & 0 \\ 0 & 99 & 0 & 7 & 7 & 7 & 0 & 66 & 0 \\ 0 & 0 & 99 & 7 & 7 & 7 & 0 & 0 & 66 \end{bmatrix} \quad (9)$$

$$P = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 8 & 7 & 6 & 5 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (10)$$



$$Q = \begin{bmatrix} 88 & 88 & 33 & 33 \\ 88 & 88 & 33 & 33 \\ 44 & 44 & 66 & 66 \\ 44 & 44 & 66 & 66 \end{bmatrix}; \quad (11)$$

$$R = \begin{bmatrix} 88 & 88 & 88 & 88 \\ 88 & 88 & 88 & 88 \\ 66 & 66 & 66 & 66 \\ 66 & 66 & 66 & 66 \end{bmatrix}; \quad (12)$$

$$S = \begin{bmatrix} 88 & 0 & 0 & 77 & 0 & 0 & 66 & 0 & 0 \\ 0 & 88 & 0 & 0 & 77 & 0 & 0 & 66 & 0 \\ 0 & 0 & 88 & 0 & 0 & 77 & 0 & 0 & 66 \end{bmatrix}; \quad (13)$$