Mean-Deviation Form

We can compute the average, $\bar{x}$, of the x-values, and introduce a new variable $x_* = x - \bar{x}$.

x	2	5	7	8
y	1	1	4	3

We can set $y = c_0 - c_1 x_*$

$$\begin{bmatrix} 1 & -3.5 \\ 1 & -0.5 \\ 1 & 1.5 \\ 1 & 2.5 \end{bmatrix} \begin{bmatrix} c_0 \\ c_1 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 4 \\ 3 \end{bmatrix}$$

Notice that the columns are Orthogonal. Hence, $A^T A$ is diagonal.
Now we can solve this normal using the normal equation.