An example:

$$A = \begin{pmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{pmatrix} = \begin{pmatrix} b_1 \\ b_2 \\ b_3 \\ b_4 \end{pmatrix}$$

$$\boxed{AX = B}$$

Elimination:

$$M = \left(\begin{array}{cccc|c} a_{11} & a_{12} & a_{13} & a_{14} & b_1 \\ a_{21} & a_{22} & a_{23} & a_{24} & b_2 \\ a_{31} & a_{32} & a_{33} & a_{34} & b_3 \\ a_{41} & a_{42} & a_{43} & a_{44} & b_4 \end{array}\right)$$

$r_2 \to$ row 2
$r_1 \to$ row 1

To eliminate A_{21}, row 2 with $r_2 - a_{21}/a_{11} * r_1$, we replace $M_{2,i}$ with $M_{2,i} - a_{21}/a_{11} * r_1$ for $1 \le i \le 5$ (i = columns).
One division to Calculate $\dfrac{a_{21}}{a_{11}}$. 1 multiplication / element to Calculate $a_{21}/a_{11} * M_{1,i}$ and one. Subtraction / element to calculate $(M_{2,i} - \dfrac{a_{21}}{a_{11}} *$
In total : 1 division, 5 multiplications and 5 subtractions (additions).
Since $M_{2,1}$ will be 0 without knowing to Calculate it i.e. $(M_{21} - \dfrac{a_{21}}{a_{11}} * r_1)$
Thus, 1 division, 4 multiplications and 4 additions.

Eliminating A_{31} and A_{41} also require same operations. So total operations to eliminate $M_{j,1}$ are 3 divisions, 12 multiplications and 12 subtractions (additions).

$$M' = \left(\begin{array}{cccc|c} a_{11} & a_{12} & a_{13} & a_{14} & b_1 \\ 0 & a'_{22} & a'_{23} & a'_{24} & b'_2 \\ 0 & a'_{32} & a'_{33} & a'_{34} & b'_3 \\ 0 & a'_{42} & a'_{43} & a'_{44} & b'_4 \end{array}\right)$$

Now to eliminate second element, we require 2 divisions, 6 multiplications and 6 additions.

$$\left(\begin{array}{cc|c} a''_{33} & a''_{34} & b''_3 \\ a''_{43} & a''_{44} & b''_4 \end{array}\right) \to 1 \text{ division, 2 multiplications } 2 \text{ additions.}$$

Total :
$$\underbrace{(3+2+1)}_{6} + \underbrace{(12+6+2)}_{20} + \underbrace{(12+6+2)}_{20}$$
Division + multiplications + subtractions

Similarly, $a'_{22}x_2 + a'_{23}x_3 + a'_{24}x_4 = b'_2$
2 multiplication, 2 subtraction, 1 division
Last row.
3 multiplication, 3 subtraction, 1 division

Back substitution:

$a''_{44} x''_4 = b''_4 \to$ 1 division
Next row $a''_{33} x_3 + a''_{34} x_4 = b''_3$
$\to$ 1 multiplication, 1 subtraction
1 division