

⇒ Find the area of a triangle whose vertices are $A(3,2)$,
 $B(11,8)$ and $C(8,12)$

Solution: The Area of triangle is $Area = \frac{1}{2} \begin{vmatrix} 3 & 2 & 1 \\ 11 & 8 & 1 \\ 8 & 12 & 1 \end{vmatrix}$

Operating $R_1 \rightarrow R_1 - R_2$ and $R_2 \rightarrow R_2 - R_3$

$$\Rightarrow Area = \frac{1}{2} \begin{vmatrix} -8 & -6 & 0 \\ 3 & -4 & 0 \\ 8 & 12 & 1 \end{vmatrix}$$

$$= \frac{1}{2} \begin{vmatrix} -8 & -6 \\ 3 & -4 \end{vmatrix}$$

$$= 25 \text{ sq. units}$$