Step-1

To check the product of 5 reflections and 8 rotations of the *x-y* plane produce.

Reflection yields; $(x,y)\xrightarrow{\text{Re}}(y,x)$

Rotation yields; $(x,\mathrm{y})\xrightarrow{\text{Ro}}(\mathrm{y},-x)$

Step-2

Let (x,y) be vector.

Re denote reflection, Ro denotes rotations

Now the product of 5 reflections and 8 rotations is as shown below. $(x,y)\xrightarrow{\text{Re}}(y,x)\xrightarrow{\text{Re}}(x,y)\xrightarrow{\text{Re}}(y,x)\xrightarrow{\text{Re}}(x,y)$

$\xrightarrow{\text{Re}}(y,x)\xrightarrow{\text{Ro}}(-x,y)\xrightarrow{\text{Ro}}(-y,-x)\xrightarrow{\text{Ro}}(x,-y)$

$\xrightarrow{\text{Ro}}(y,x)\xrightarrow{\text{Ro}}(-x,y)\xrightarrow{\text{Ro}}(-y,-x)\xrightarrow{\text{Ro}}(x,-y)$

$\xrightarrow{\text{Ro}}(y,x)$

Hence the product of 5 reflections and 8 rotations of x-y plane produce a reflection.