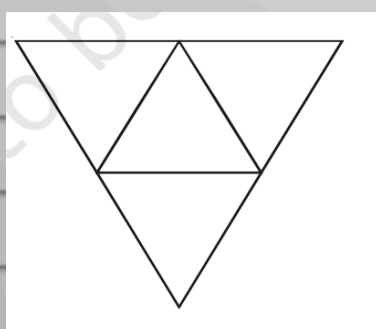


In how many ways can this diagram be coloured subject to the following two conditions?

(i) Each of the smaller triangle is to be painted with one of three colours: red, blue or green.

(ii) No two adjacent regions have the same colour..



These conditions are satisfied exactly when we do as follows: First paint the central triangle in any one of the three colours. Next paint the remaining 3 triangles, with any one of the remaining two colours.

By the fundamental principle of counting, this can be done in $3 \times 2 \times 2 \times 2$
 $= 24$ ways.