Q6. The sum of interior angles of a triangle is 180°. Show that the sum of the interior angles of polygons with 3, 4, 5, 6, ... sides form an arithmetic progression. Find the sum of the interior angles for a 21 sided polygon.

Sol: We know that, sum of interior angles of a polygon of side n is (n − 2) x 180°.

Let $t_n = (n - 2) \times 180°$

Since t_n is linear in n, it is nth term of some A.P.

$$t_3 = a = (3 - 2) \times 180° = 180°$$

Common difference, $d = 180°$

Sum of the interior angles for a 21 sided polygon is:

$$t_{21} = (21 - 2) \times 180° = 3420°$$