

## Question

If the distance between earth and the sun were half of its present value , then how many number of days will be there in at year?

## Solution

According to Kepler's law

$$T^2 \propto r^3$$

$$(T_1 / T_2)^2 = (r_1 / r_2)^3$$

$$(365 / T_2)^2 = (2r_1 / r_1)^3$$

$$(365 / T_2)^2 = 8$$

$$365 / T_2 = 2\sqrt{2}$$

$$T_2 = 365 / (2\sqrt{2})$$

$$T_2 = 129 \text{ days}$$

There will be 129 days in an year.