**THE MINIMUM COST OF A FLIGHT.**

The **cost per hour** of fuel for running a jet aircraft, $C/hr, is a function of its cruising velocity, *v* km/hr.

C(*v*) = (*v*2 + 500000)

  300

Find the most economical cruising velocity for a journey of 6000km.

(Hint: Firstly find the **Time taken** for a journey of 6000km at ***v* km/hr**)

**C is cost per HOUR**

**Time = Dist = 6000**

 ***v v***

**So cost P = C× T**

 ***= (v2 + 5×105) × 6000***

 ***300 v***

 ***= 20( v + 5×105 )***

 ***v***

***so dP = 20( 1 - 5×105 ) = 0 for min cost***

 ***dv v2***

 ***so v2 = 5×105***

 ***v = 707 km/hr***