The arithmetic mean between two numbers is 75 and their geometric mean is 21. Find the numbers

Solution:

Let the numbers be 'a' and 'b'

$\because AM = \dfrac{a+b}{2} = 75 \implies a+b = 150 \longrightarrow ①$

$GM = \sqrt{ab} = 21 \implies ab = 441 \longrightarrow ②$

$\because (a-b)^2 = (a+b)^2 - 4ab = (150)^2 - 4 \times 441 = 20736$

$\implies a - b = 144 \longrightarrow ③$

$① + ③ \implies 2a = 294 \implies \boxed{a = 147}$

$\because a + b = 150 \implies b = 3$

$\therefore$ The required no's are 147 and 3