Sum of two forces is 8 kg wt. the magnitude of resultant of two forces is 4 kg wt. and it is at right angles to the smaller force. find the forces.

Solution:

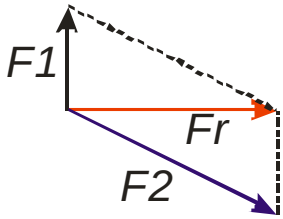
Let:

$F_r = 4\ kg$

$\alpha = 90°$

$F_1 + F_2 = 8\ kg$

$F_1 - ?,\ F_2 - ?$



From triangle:

$F_2{}^2 = F_1{}^2 + F_r{}^2$

Write a system of equations:

$$\begin{cases} F_2{}^2 = F_1{}^2 + 4^2 \\ F_1 + F_2 = 8 \end{cases}$$

Solutions of system are:

$F_2 = 5, F_1 = 3$

Answer: $F_2 = 5\ kg, F_1 = 3\ kg$