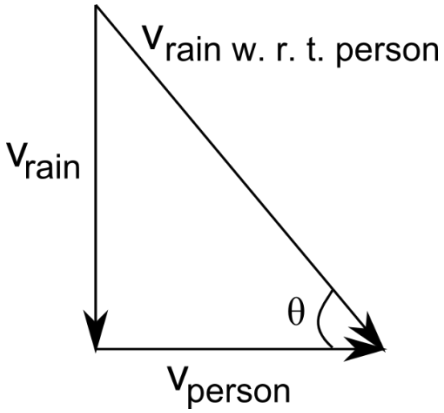
Answer on Question 78735, Physics, Other

Question:

Rain is falling vertically with a velocity of 6 km/h. A person is walking with a velocity of 4 km/h. At what angle the person will hold the umbrella to get rid of rain?

Solution:



We can find the angle at which the person will hold the umbrella to get rid of rain from the velocity triangle:

$$tan\theta = \frac{v_{rain}}{v_{person}},$$

here, v_{rain} is the velocity of the rain with respect to the ground, v_{person} is the velocity of the person, $v_{rain\,w.r.t.person}$ is the velocity of the rain with respect to the person, θ is the angle at which the person will hold the umbrella to get rid of rain.

Then, we get:

$$\theta = arctan\left(\frac{v_{rain}}{v_{person}}\right) = arctan\left(\frac{6\,\frac{km}{h}}{4\,\frac{km}{h}}\right) = 56^{\circ}.$$

Answer:

$\theta = 56^{\circ}$.