

Answer on Question #53504, Physics / Mechanics | Kinematics | Dynamics

Jed was driving his car at 40 km/h on a subdivision where the speed limit is 20 km/h. He was spotted by an officer in a motorcycle, who accelerates in pursuit. By the time Jed sees the officer's motorcycle it is travelling at 60 km/h. What is the officer's motorcycle's velocity relative to Jed's car?

Solution:

The velocity of one body relative to another is called its relative velocity.

$$V_{relative} = V_{object} - V_{observer}$$

In our case

$$V_{object} = 60 \text{ km/h}$$

$$V_{observer} = 40 \text{ km/h}$$

Thus,

$$V_{relative} = 60 - 40 = 20 \text{ km/h}$$

Answer: 20 km/h