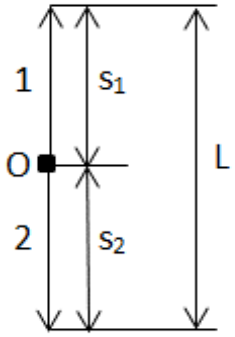
# Answer on Question #55529 – Math – Algebra

Two buses left a downtown terminal at the same time, traveling in opposite directions. One has a speed of 10 mph more than the other. Twelve minutes (1/5 hr) later, they were 12 miles apart. What were their speed?

**Solution**




Let L = 12 miles be the distance between two buses after t =1/5 hr,

$s_1$ be the distance traveled by the bus 1 during t = 1/5 hr,

$s_2$ be the distance traveled by the bus 2 during t = 1/5 hr,

$$L = s_1 + s_2$$

Let $V_1$ be the speed of bus 1 and $V_2$ be the speed of bus 2.

$V_2 = V_1 + v,\ v = 10\ mph.$

Consider

$$L = s_1 + s_2 = V_1 t + V_2 t = V_1 t + V_1 t + vt \quad \rightarrow 2V_1 t = L - vt \quad \rightarrow V_1 = \frac{L - vt}{2t},$$

therefore,

$$V_1 = \frac{12 - 10 * \frac{1}{5}}{2 * \frac{1}{5}} = \frac{10 * 5}{2} = 25\ mph;$$

$V_2 = V_1 + v = 25 + 10 = 35\ mph.$

**Answer:** the speed of one bus is 25 mph and the speed of the other bus is 35 mph.