Answer on Question #50627 - Math - Algebra.

A hurricane plane made a round trip investigation flight. The flight took a total of 5 hours. The pilot flew into the hurricane area at a rate of 144 km/h and returned over the same route at a rate of 88 km/h. How many kilometers did the plane fly before it turned back?
Round-off your answer to the nearest unit (i.e. no decimals).

V_1 = 144 km/h

V_2 = 88 km/h

T = 5 h

S - ?

Denote the time the airplane flew into a hurricane area t_1, and t_2 – the time returning on the same route. The flight took a total of 5 hours, that's ($t_1 + t_2 = T = 5$ h). Let S - distance in one direction traveled by airplane, that's $S=V_1t_1=V_2t_2$.

$$\begin{cases} V_1 t_1 = V_2 t_2 \\ t_1 + t_2 = 5 \end{cases};$$

$$\begin{cases} V_1 t_1 = V_2 (5 - t_1) \\ t_2 = 5 - t_1 \end{cases};$$

$$V_1 t_1 + V_2 t_1 = 5V_2 \ ;$$

$$t_1 (V_1 + V_2) = 5V_2 \ ;$$

$$t_1 = \frac{5V_2}{V_1 + V_2};$$

$t_1 = \frac{440}{232} \approx 2$ h; S = 288 km;

$t_2 \approx 3$ h.

Answer: S = 288 km.