Answer on Question #47542, Physics, Other

Sally travels by car from one city to another. She drives for 29.0 min at 57.0 km/h, 46.0 min at 30.0 km/h, and 18.0 min at 42.0 km/h, and she spends 11.0 min eating lunch and buying gas. determine the average speed of the trip

By the definition, average speed is:

$$v_{av} = \frac{S_{total}}{t_{total}}$$

To find time in hours:

$$t_h = \frac{t_{min}}{60}$$

Traveled distance:

$$S = vt$$

So, average speed is:

$$v_{av} = \frac{v_1 \frac{t_1}{60} + v_2 \frac{t_2}{60} + v_2 \frac{t_2}{60}}{\frac{t_1}{60} + \frac{t_2}{60} + \frac{t_3}{60} + \frac{t_4}{60}}$$

$$v_{av} = \frac{57.0 \frac{km}{h} \cdot \frac{29.0}{60} h + 30.0 \frac{km}{h} \cdot \frac{46.0}{60} h + 42.0 \frac{km}{h} \cdot \frac{18.0}{60} h}{\frac{29.0}{60} h + \frac{46.0}{60} h + \frac{18.0}{60} h + \frac{11.0}{60} h} \approx 36.4 \frac{km}{h}$$

Answer: Average speed: $v_{av} \approx 36.4 \frac{km}{h}$