Answer on Question #54240, Physics / Other

Suppose a car travels 90. meters due north in 15 seconds. Then the car turns around and travels 40. meters due south in 5.0 seconds. What is the magnitude of the average velocity of the car during this 20. second interval?

Solution:

Algebraically an average velocity is defined as,

$$v = \frac{d}{t}$$

where, d is the displacement and t is the time taken for that displacement.

When you calculate the displacement of the car, the net displacement is

$$d = 90 - 40 = 50\ meters\ towards\ north.$$

Therefore, the average velocity is

$$v = \frac{50}{20} = 2.5\ \mathrm{m/s}$$

Answer: $2.5\ \mathrm{m/s}$