EXPERT QUESTION ON EQUATIONS.

In a children's mini duathlon, the bike ride is TWICE as far as the run.
The total distance of the run and bike ride is 9000 metres.
Philip can cycle at 4 TIMES the speed he can run and the total time he took for the event was 25 min.
Find how fast he can run.

SPECIAL HELP:

Let the distance of the run = r metres
The bike ride =

So equ for distance is …

Let his running speed = v m/s
The bike speed =

NOTE: $\text{Speed} = \dfrac{\text{Dist}}{\text{Time}}$

So $\text{Time} = \dfrac{\text{Dist}}{\text{Speed}}$

Time taken for the run =

Time taken for the bike ride =

The equation for the total time taken is:

SOLUTION:

Let the distance of the run = r metres
The bike ride = 2r metres

So $2r + r = 9000$

$3r = 9000$

$r = 3000$ *m*

Let his running speed $= v$ *m/s*
The bike speed $= 4v$ *m/s*

NOTE: $\text{Speed} = \dfrac{\text{Dist}}{\text{Time}}$

So $\text{Time} = \dfrac{\text{Dist}}{\text{Speed}}$

Time taken for the run $= \dfrac{3000}{v}$

Time taken for the bike ride $= \dfrac{6000}{4v} = \dfrac{1500}{v}$

The equation for the total time taken is:

$$\frac{3000}{v} + \frac{1500}{v} = 25 \times 60 \text{ secs}$$

$$\frac{4500}{v} = 1500$$

$$v = \frac{4500}{1500} = 3 \text{ m/s}$$