October 24th

A car is travelling on a section of motorway.

The car travels three-quarters of the section at an average speed of 46mph.

What is the car's average speed over the remaining section if the car's average speed over the entire section of motorway is 50mph?

If the total distance of the journey is x miles

For the first section

Distance = $^{3}/_{4}$ x Speed = 46 Time = t_1

t_1 = d ÷ s = $^{3}/_{4}$ x ÷ 46

For the entire journey

Distance = x Speed = 50 Time = T

T = d ÷ s = x ÷ 50

For the second part of the journey

Distance = ¼ x Speed = v Time = T – t_1 = $^{x}/_{50}$ – $^{3x}/_{184}$ = $^{17x}/_{4600}$

s = d ÷ t

Hence

v = ¼ x ÷ $^{17x}/_{4600}$

v = $^{1150}/_{17}$ = 67.6mph