Answer on Question #84604 – Math – Algebra

Question

1. A man travels $70 km$ at a certain average speed on a dual carriage way. He then reduces his speed by $30 km\backslash h$ to cover a distance of $50 km$ on a bad road. If the time taken is the same for both parts of the journey, calculate

a. His average speed for each part of the journey

Solution

Let t is time of each part of journey, v is average speed on the first part of journey; then:

$$t = \frac{70}{v} = \frac{50}{v - 30}$$

$$70 \cdot (v - 30) = 50v$$

$$20v = 2100$$

$$v = 105 \ km/h$$

The average speed on the second part of journey:

$$v_1 = 105 - 30 = 75 \ km/h$$

Question

b. The average speed for the whole journey

Solution

$$t = \frac{70}{105} = \frac{2}{3} \ h$$

$$v_0 = \frac{70 + 50}{2 \cdot 2/3} = \frac{3 \cdot 120}{4} = 90 \ km/h$$

Question

2. A girl went to shop to buy pineapple and apple. A pineapple costs #2 more than an apple. The girl bought as many pineapples for #60 as she bought pineapples for #54. How much does a pineapple and an apple cost together?

Solution

Let n is the number of pineapples or apples, x is price of apple; then:

$$(x + 2)n = 60$$

$$xn = 54$$

$$\frac{x + 2}{x} = \frac{60}{54} = \frac{10}{9}$$

$$9 \cdot (x + 2) = 10x$$

$$x = 18 \text{ \#}$$

$$C = x + (x + 2) = 18 + 20 = 38 \text{ \#}$$

3. The sum of the ages of Mr Daniel and his daughter is 60 years. 5 years ago the ratio of their ages was $4 : 1$

Question

a. how old are the now

Solution

Let x be the age of Mr Daniel, y be the age of his daughter; then:

$$x + y = 60$$

$$\frac{x - 5}{y - 5} = 4$$

$$x = 60 - y$$

$$\frac{60 - y - 5}{y - 5} = 4$$

$$60 - y - 5 = 4y - 20$$

$$5y = 75$$

$$y = 15$$

$$x = 60 - 15 = 45$$

Question

b. find the difference between their ages

Solution

$$x - y = 45 - 15 = 30$$