

EGE in mathematics, basic level. Tasks percent, alloys and mixtures

Do My Homework

We propose to disassemble the three tasks below. This task number 1 from the previous years, recommended as training. Task number 1.

Raisin is obtained in the process of drying grapes. How many kilograms of grapes will be required to obtain 20 pile of raisins if grapes contains 90% water, and raisins contain 5% water?

Solution

According to the condition, it turns out that grapes contains 10% nutrient substance, and raisins 95%.

Imagine interest in fractions from "1":

$$10\% = 0.1$$

$$95\% = 0.95$$

Therefore, 20 kg of raisins contain a nutrient:

$$20 \cdot 0.95 = 19 \text{ kg}$$

Thus, for obtaining 20 kilograms of raisin required grapes:

$$= 190 \text{ kg}$$

Answer: 190.

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There are two alloy. The first contains 10% nickel, the second 30% nickel. Of these two alloys, a third alloy of a mass of 200 kg, containing 25% of nickel, was obtained. How many kilograms the mass of the first alloy was less than the mass of the second?

Solution

Let the mass of the first alloy "x" kg, and the mass of the second "k kg.

Imagine interest in fractions from "1":

$$10\% = 0.1$$

$$30\% = 0.3$$

$$25\% = 0.25$$

Then the mass content of nickel in the first and second alloys will turn out:

"0.1 x" and "0.3 y" respectively.

Of these two alloys, a third alloy of a mass of 200 kg, containing 25% of nickel, was obtained. We get a system of equations:

We get that:

$$x = 150 \quad 50 = 100$$

The first alloy is easier than the second per 100 kilograms.

Answer: 100. Task number 3

There are two alloy. The first alloy contains 10% copper, the second 40% copper. The mass of the second alloy is greater than the mass of the first 3 kg. Of these two alloys, a third alloy containing 30% of copper was obtained. Find a mass of the third alloy. Answer in kilograms.

Solution

Let the mass of the first alloy "x" kg,

The mass of the second alloy "x + 3" kg,

The mass of the third alloy "2x + 3" kg.

The first alloy contains 10% copper, the second 40% copper, the third alloy 30% copper.

Imagine interest in fractions from "1":

$$10\% = 0.1$$

$$40\% = 0.4$$

$$30\% = 0.3$$

Then we can write:

$$0.1x + 0.4(x + 3) = 0.3(2x + 3) \Leftrightarrow$$

$$\Leftrightarrow 0.5x + 1.2 = 0.6x + 0.9 \Leftrightarrow$$

$$\Leftrightarrow x = 3 \text{ and } 2x + 3 = 9$$

Thus, the mass of the third alloy is equal to 9 kg.

Answer: 9.

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