

## Answer on Question #50628 – Math – Algebra

### Question

A shopkeeper has two types of coffee beans. The first type sells for \$8.20 per kilo, the second for \$11.90 per kilo. How many kilograms of the first type must be mixed with 9 kg of the second to produce a blend selling for \$10.70 per kilo?

### Solution

Let  $x$  be the number of kilograms of the first type coffee beans, then 9 is the number of kilograms of the second type coffee beans,  $(x + 9)$  is the number of kilograms of the blend. Express the total cost of blend selling for \$10.70 per kilo as the sum of parts formed by the first type and the second type coffee beans and come to the following equation:

$$(x \cdot 8.2 + 9 \cdot 11.9) = 10.7(x + 9)$$

Solve the equation for  $x$ :

open brackets:

$$x \cdot 8.2 + 9 \cdot 11.9 = 10.7 \cdot x + 9 \cdot 10.7;$$

subtract  $x \cdot 8.2$  and  $9 \cdot 10.7$  from both sides:

$$9 \cdot 11.9 - 9 \cdot 10.7 = 10.7 \cdot x - x \cdot 8.2;$$

collect similar terms:

$$9(11.9 - 10.7) = x(10.7 - 8.2);$$

simplify:

$$9 \cdot 1.2 = x \cdot 2.5;$$

divide both sides by 2.5, change position of sides:

$$x = \frac{9 \cdot 1.2}{2.5};$$

simplify:

$$x = 4.32.$$

Thus, we need to mix 4.32 kg of the first type coffee beans with 9 kg of the second type to produce a blend selling for \$10.70 per kilo.

**Answer:** 4.32 kg