

Answer on Question #37099 – Math - Algebra

Tayla purchased a large box of comic books for \$300. She gave 15 of the comic books to her brother and then sold the rest on an Internet website for \$330, making a profit of \$1.50 on each one. How many comic books were in the box? What was the original price of each comic book?

Solution:

x - number of comic books

$x-15$ – number of sold comic books

$\frac{300}{x}$ – original price of each comic book

$15 * \frac{300}{x}$ price of books which Tayla gave her brother

$300 - 15 * \frac{300}{x}$ – original price of all books which rest on an internet website

$330 - \left(300 - 15 * \frac{300}{x}\right) = 30 + \frac{15*300}{x}$ - Tayla's profit

$\frac{30 + \frac{15*300}{x}}{1.5}$ – number of sold comic books

Compose the equation:

$$\frac{30 + \frac{15*300}{x}}{1.5} = x - 15 \Rightarrow 20 + \frac{3000}{x} = x - 15 \Rightarrow \frac{x^2 - 15x - 3000}{x} = 20 \Rightarrow x^2 - 35x - 3000 = 0$$

Vieta's formula:

$$x_1 = -40$$

$$x_2 = 75(\text{number of comic books})$$

$$\frac{300}{75} = 4\$(\text{original price of each comic book})$$

Answer:

Number of comic books is 75.

Original price of each comic book is 4\$.