

## Answer on Question #61308 – Math – Algebra

### Question

Average movie prices in the United States are, in general, lower than in other countries.

It would cost

\$81.08

to buy three tickets in Japan plus two tickets in Switzerland.

Three tickets in Switzerland plus two tickets in Japan would cost

\$76.97.

How much does an average movie ticket cost in each of these countries?

### Solution

Let  $x$  be the cost (in dollars) of a ticket in Japan and  $y$  be the cost (in dollars) of a ticket in Switzerland.

Given

$$\begin{cases} 3x + 2y = 81.08 \\ 2x + 3y = 76.97 \end{cases}$$

Multiplying the first equation by 3 and the second equation by 2

$$\begin{cases} 9x + 6y = 243.24 \\ 4x + 6y = 153.94 \end{cases}$$

Subtracting the second equation from the first one

$$9x + 6y - 4x - 6y = 243.24 - 153.94.$$

Simplifying

$$5x = 89.3.$$

Dividing both sides by 5

$$x = \frac{89.3}{5},$$

$x = 17.86$  is the cost of a ticket in Japan.

Expressing  $y$  from the first equation of the system and substituting for  $x = 17.86$

$$y = \frac{81.08 - 3x}{2},$$

$$y = \frac{81.08 - 3 \cdot 17.86}{2},$$

$y = 13.75$  is the cost of a ticket in Switzerland.

**Answer:**

Ticket in Japan costs \$17.86.

Ticket in Switzerland costs \$13.75.