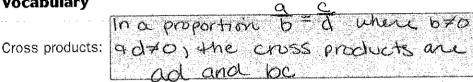




Solving Proportions Using Cross Products

Goal: Solve proportions using cross products.





Cross Products Property

Words The cross products of a proportion are Equa





Algebra If $\frac{a}{b} = \frac{c}{d}$ where b and d are nonzero numbers, then ad



EXAMPLE 1 Solving a Proportion Using Cross Products

Use the cross products property to solve $\frac{2}{5} = \frac{x}{7}$.



comes from the "X" shape formed by the diagonal numbers in

a proportion.

Write original proportion.

Cross products property

Divide each side by 5.



Simplify.

EXAMPLE 2) Writing and Solving a Proportion

Currency Exchange When Jake visited Canada, he exchanged 10 U.S. dollars and he received 14 Canadian dollars. Find how many U.S. dollars he exchanged when he received 35 Canadian dollars.

US DONARS $10^{-1} u \leftarrow U.S. \text{ dollars}$ Canada Dollars $14^{-1} u = 10^{-1} 35 \leftarrow Canadian \text{ dollars}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text{ products property}$ $14^{-1} u = 10^{-1} 35 \leftarrow Cross \text$

Answer: Jake exchanged 25 U.S. dollars when he received 35 Canadian dollars.

EXAMPLE 3 Writing and Solving a Proportion

Baseball The ratio of left-handed pitchers to right-handed pitchers on a baseball team is 2 to 5. If the team has 14 pitchers, how many are left-handed?

Solution

First, determine the ratio of left-handed pitchers to total pitchers.

For every pitchers, are left-handed.

To find the number ℓ of left-handed pitchers, set up a proportion and solve it.

left-handed pitchers
total pitchers

Cross products property

Divide each side by

Simplify.

Answer: There are left-handed pitchers on the team.

Your turn now Solve the following problems.

1. In Example 2, if Jake exchanged 45 U.S. dollars, how many Canadian dollars would he receive?

2. A baseball team has a ratio of wins to losses of 5 to 3. If they played 24 games, how many games did they lose?