

MATHCOUNTS[®] Problem of the Week Archive

Cider – September 25, 2023

Problems

Nancy and Tim have an apple cider stand at their school every morning during the fall to raise money for their club. Since September 23 is the Autumnal Equinox, the first day of fall and their first day of business will be September 23.

Several weeks ago, in preparation for their 2023 opening, Nancy and Tim went to pick their apples from a local orchard (all of their cider is homemade). Nancy picked apples at a rate of 30 apples per hour and Tim picked apples at a rate of 25 apples per hour. Tim and Nancy picked the same number of apples. Nancy picked apples for 5 hours, so how many hours must Tim have spent picking apples?

Each gallon of cider produced requires one bushel of apples (40 apples), which cost Nancy and Tim \$30 at the orchard. Anxious to calculate how much they will make, Nancy decides to calculate their profits, based on serving 6 oz cups of cider (in cups that were donated by a friend) and charging \$2.00 per cup. Assuming they sell all of the cider they can make, how much profit will they make from the apples they picked? Note: There are 128 oz in 1 gallon.

Hoping to make more than what the calculations show, Nancy ponders what will happen if they add some water to the cider. She decides to calculate how much they would profit if they added 1.5 gallons of water to the 7.5 gallons of cider. If they sell the diluted cider for the same price as they had planned to sell for (\$2.00 per 6-ounce cup), how much additional profit will be made?