

Flatline

Solution Vending Machine

Here's the solution to who purchased what item from the vending machine and at what time.

- At 11:00 Kathy purchased the Potato Chips
- At 11:10 Frank purchased the Butterfingers Bar
- At 11:15 Roy purchased the Gum.
- At 11:30 Kevin grabbed a soda on his way to the Cafeteria.
- At 11:40 Ronald purchased Reece's Pieces.
- And at 11:55 Helen was hungry for a Snickers Bar.

Here's the detailed solve by clue:

- Kevin had the soda.
 - That's a positive match.
- The Butterfingers bar was not purchased at 11:55 am.
 - That's a negative match for Butterfingers at 11:55.
- The gum was purchased after Kathy's purchase.
 - Kathy can't have had the gum, and the gum can't have been purchased first (11:00) and Kathy's purchase can't have been last (11:55).
- Roy made his purchase at 11:15 am.
 - That's a match. We also know that his purchase can't have been the soda because Kevin had that, therefore the soda could not have been purchased at 11:15.
- The potato chips were purchased directly before or after Frank's purchase.
 - Frank did not have the potato chips.
- The Snickers bar was purchased immediately after Ronald's purchase.
 - Ronald did not have the Snickers. Ronald's purchase can't be last (11:55) and the Snickers bar can't be first (11:00).

- The Reeses Pieces were purchased sometime after Frank's purchase.
 - Frank did not have Reece's Pieces. Frank can't have purchased last and the Reece's Pieces can't have been purchased first.
- The gum was purchased by Dr. Roy Patterson.
 - That's a match so we know the gum was the item purchased at 11:15.
- The potato chips were the first purchase.
 - The potato chips were purchased at 11:00, therefore Kevin can't be a match for 11:00 because he had the soda, and Frank can't be a match for 11:00 because we know he didn't have the potato chips.
- The Snickers Bar was purchased sometime after Kevin's purchase.
 - We already know that Kevin didn't have the Snickers bar. We already know Kevin is not a match for 11:00 or 11:15 (nor is the Snickers Bar), so the Snickers bar can't have been purchased any time before 11:15, which means we can eliminate 11:10 for the Snickers Bar.

Now we revisit the clues that still have something to tell us:

- The gum was purchased after Kathy's purchase.
 - We know the gum was purchased at 11:15 which means Kathy can only be 11:00 or 11:10 so we can eliminate 11:30 and 11:40 for her. This also means Kathy could not have purchased the Snickers Bar since we know that was purchased at 11:15 or later.
- The potato chips were purchased directly before or after Frank's purchase.
 - We know the potato chips were purchased first at 11:00. So since Frank's purchase can't be before that, his purchase must have been 11:10. This one's our breakthrough clue because it means Frank can't have had the Snickers Bar because it was after 11:15, therefore the only item left for Frank is the Butterfingers Bar. It also means Kathy's purchase was not at 11:10 so the only one left for her is 11:00, therefore she had the Potato Chips. This also tells us by elimination that Ronald had the Reece's Pieces and Helen had the Snickers Bar.
- The Snickers bar was purchased immediately after Ronald's purchase.

- Since Ronald only purchased at 11:30 or 11:40, the Snickers can't be 11:30, which means Helen can't be either.
- The Snickers Bar was purchased sometime after Kevin's purchase.
 - Kevin can't be last, which means Helen must have purchased the Snickers Bar last. We know the Snickers Bar was purchased immediately after Ronald, therefore Ronald purchased at Reece's at 11:40 leaving 11:30 for Kevin to purchase the soda.