Fiona and Abigail are having a bake sale. They are selling brownies for 50 cents and cookies for 35 cents. At the end of the day, they've made $27.15.

They started the day with the same number of brownies and cookies, but at the end of the day they have 5 more cookies left than brownies. How many brownies and cookies did they sell?

**METHOD 1: I NOTICE, I WONDER™**

After reading the problem, I noticed:
- Abigail and Fiona sold brownies and cookies
- they sold brownies for 50 cents
- they sold cookies for 35 cents
- they made $27.15 at the end of the day
- they started off with the same number of brownies and cookies
- at the end of the day they had 5 more cookies than brownies
- 5 more brownies were sold than cookies
- 50 cents goes into a dollar 2 times, but 35 cents does not go into a dollar evenly

Since there were 5 more brownies sold than cookies, I subtracted $2.50 cents (5 times 50 cents) from the total made. The result was:

$27.15 – $2.50 = $24.65

This value, $24.65, is what they would have had if an equal number of brownies and cookies had been sold. Therefore, this number must be divisible by 85 cents, the sum of the prices (brownie + cookie = 50 cents + 35 cents).

$24.65 ÷ $0.85 = 29
This showed me that Abigail and Fiona sold 29 brownies and 29 cookies. I added the 5 extra brownies in and got 34 brownies. To check I calculated:

\[0.35 \times 29 = 10.15\]
\[0.50 \times 34 = 17\]
\[10.15 + 17 = 27.15\].

It checks!
They sold 34 brownies and 29 cookies that day.

**METHOD 2: MAKE A TABLE**

We made a table to think about how many cookies were sold and how many brownies were sold. Since we knew that there were 5 more cookies left over at the end of the day, that meant there had to have been 5 more brownies sold since we were told that they started off with an equal number of cookies and brownies.

We tried different numbers until we got \$27.15 as the total. We made sure our number of brownies was always 5 more than our number of cookies.

Our table looked like this:

<table>
<thead>
<tr>
<th>Number of Cookies</th>
<th>Value of Cookies</th>
<th>Number of Brownies (Cookies + 5)</th>
<th>Value of Brownies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10 x (.35) = 3.50</td>
<td>15</td>
<td>15 x (.50) = 7.50</td>
<td>3.50 + 7.50 = 11.00</td>
</tr>
<tr>
<td>20</td>
<td>20 x (.35) = 7.00</td>
<td>25</td>
<td>25 x (.50) = 12.50</td>
<td>7.00 + 12.50 = 19.50</td>
</tr>
<tr>
<td>25</td>
<td>25 x (.35) = 8.75</td>
<td>30</td>
<td>30 x (.50) = 15.00</td>
<td>8.75 + 15.00 = 23.75</td>
</tr>
<tr>
<td>28</td>
<td>28 x (.35) = 9.80</td>
<td>33</td>
<td>33 x (.50) = 16.50</td>
<td>9.80 + 16.50 = 26.30</td>
</tr>
<tr>
<td>29</td>
<td>29 x (.35) = 10.15</td>
<td>34</td>
<td>34 x (.50) = 17.00</td>
<td>10.15 + 17.00 = 27.15</td>
</tr>
</tbody>
</table>

We found the total value of cookies and the total value of brownies and added them together. We decided that we could start with any number as long as we kept the number of brownies 5 numbers higher than the cookies. Our answer was that Abigail and Fiona sold 29 cookies and 34 brownies.

**METHOD 3: ALGEBRAIC REASONING**

My group started with an algebraic sentence to help us solve this problem. We knew that a cookies cost 35 cents and we wrote:

\[0.35 \times \text{the number of cookies sold} = \text{the money made off of cookies}\]

Next since we knew the cost of a brownie was 50 cents we wrote:

\[0.50 \times \text{the number of brownies sold} = \text{the money made off of brownies}\]

We then set up the equation:

\[(0.35 \times \text{the number of cookies sold}) + (0.50 \times \text{the number of brownies sold}) = 27.15\]

We knew that they started off with the same number of each, but ended with 5 more cookies than brownies, so we added 5 to the number of brownies sold:

\[0.35 \times \text{the number of cookies sold}] + [0.50 \times (\text{the number of cookies sold + 5})] = 27.15\]
We distributed the .50 in the equation to make it easier to read:

\[ 0.35 \times \text{the number of cookies sold} + 0.50 \times \text{the number of small cups sold} + 2.50 = 27.15 \]

We subtracted 2.50 from each side of the equation.

\[ 0.35 \times \text{the number of cookies sold} + 0.50 \times \text{the number of small cups sold} = 24.65 \]

We added 0.35 and 0.50 since they both were paired with the number of cookies sold:

\[ 0.85 \times \text{the number of cookies sold} = 24.65 \]

After dividing by 0.85 on each side, we are left with the number of cookies sold:

\[ \text{the number of cookies sold} = 29 \]

Since we knew that the number of brownies sold was 5 more than the number of cookies, we added 5 to find the number of brownies sold:

\[ 5 + 29 = 34 \text{ brownies sold} \]

**METHOD 3: ALGEBRA**

We thought it would be an easy approach to make a number sentence using variables.

Since there were 5 more cookies left over, this meant that 5 more brownies were sold. We decided to call the number of cookies \( x \), so the number of brownies is \( x + 5 \).

Since the brownies were sold at 50 cents each, we multiplied \( 0.50 \times (x + 5) \) to represent how much they made from the brownies. The cookies were sold for 35 cents each, so the amount they made from the cookies would be \( 0.35 \times x \). We also know that the sum of those is $27.15.

\[ 0.50(x + 5) + 0.35(x) = 27.15 \]

We then distributed the .25 to the first part of the equation leaving us with:

\[ 0.50x + 2.50 + 0.35x = 27.15 \]

We subtracted 2.50 from both sides and added .50 and .35 since they had the same variable:

\[ .85x = 24.65 \]

We then divided by .85 on both sides to leave \( x \) by itself:

\[ x = 29 \]

Since we knew that \( x \) was the number of cookies and \( x + 5 \) was the number of brownies, we added 5 to 29 and got:

\[ 29 + 5 = 34 \text{ brownies} \]

Abigail and Fiona sold 29 cookies and 34 brownies.