Homemade Butter

Materials:
- 16 oz Canning jar
- Strainer
- 2-3 Marbles (clean)
- Mixing bowl
- 2 cups Heavy whipping cream

Procedure:
1. In the refrigerator, chill the jar with the marbles placed inside. This will help the butter form faster.
2. Fill the jar to the top with heavy whipping cream and tightly screw on the lid.
3. Shake the jar vigorously for 20-30 minutes. Initially, you will hear the marbles loudly bouncing around. The longer you shake, the quieter the marbles will get. This means your butter is almost done!
4. Place the strainer in the bowl. When you can no longer hear the marbles, unscrew the lid and pour the contents into the strainer.
5. The liquid in the bowl is buttermilk. Pour it into a storage container and store it in the fridge or you can drink it.
6. The large mass in the strainer is butter. Place it into the bowl. Fill the bowl with cold water and then over a sink, pour it into the strainer again. The butter needs to be rinsed thoroughly to remove any remnants of the buttermilk. If it is not rinsed, the buttermilk will turn sour and ruin your butter. Continue rinsing and straining the butter until the water that runs off it is clear.
7. Finally, use a spoon to press the butter into the bottom of a bowl. Pour off any liquid, then cover and refrigerate for 1 hour prior to serving.

The Science:
Milk is an emulsion, which means, it’s made of two things that aren’t normally mixed together. In milk, fat occurs in microscopic packets that have a thin skin around them. As you shake the heavy whipping cream in the jar, the marbles agitate the packets and cause them to rise to the top as cream. When the cream is beaten or churned, it breaks open the packets and the fat then sticks together, forming butter. The watery liquid that you see is buttermilk - it is the remnants of the milk without the fats in it.