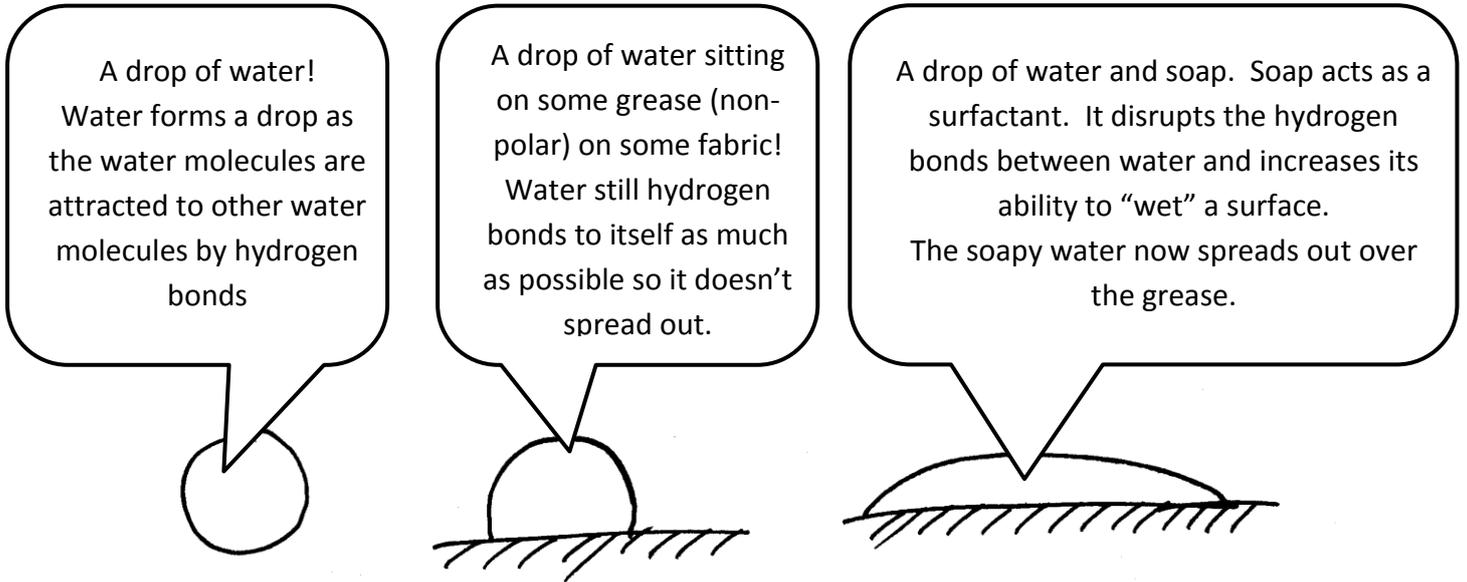
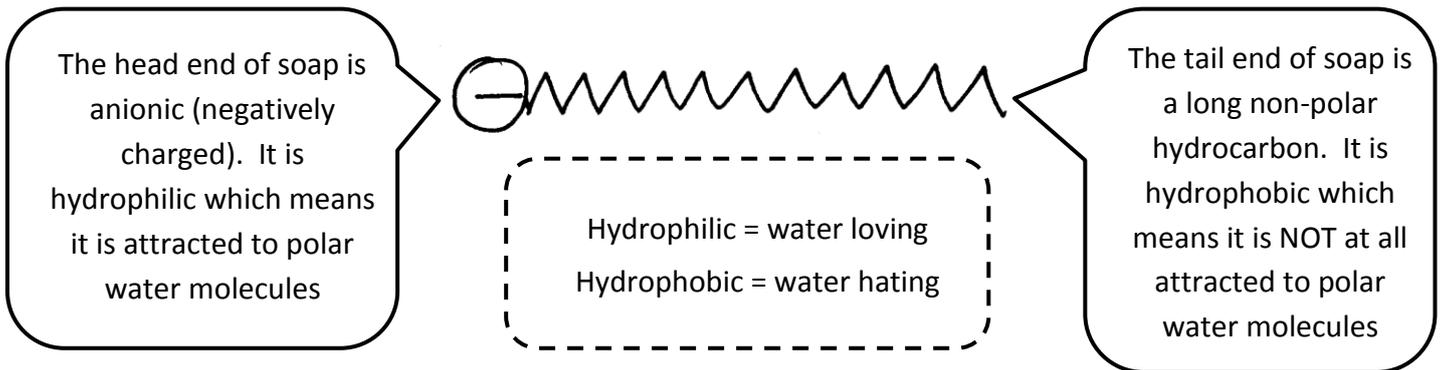


Soaps & detergents

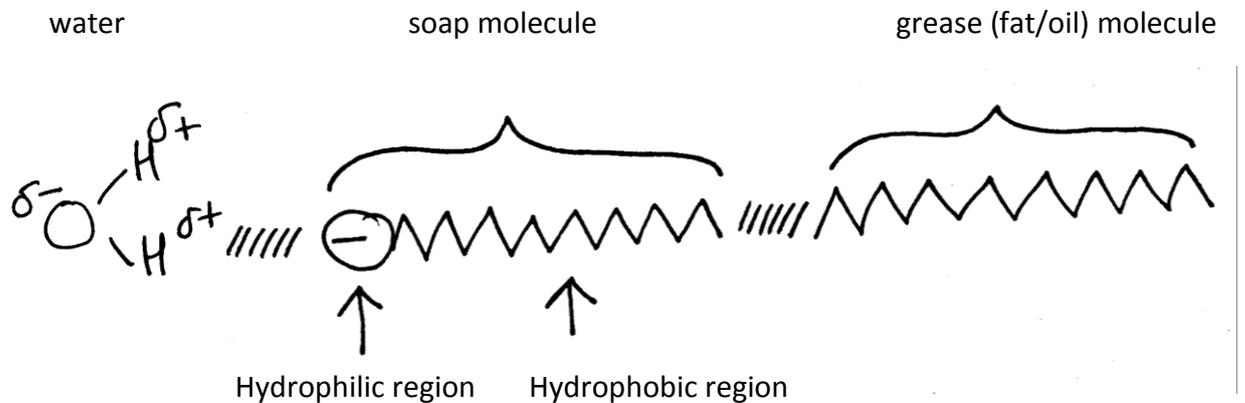
Surfactants: Water molecules are strongly attracted to each other. Surfactants like soap molecules lower the surface tension of water by disrupting the hydrogen bonds between water molecules and make the water droplet collapse so it wets more fabric.



Looking at soap. It has a "charged head" and a long "non-polar tail" consisting of a long chain hydrocarbon.



Emulsifiers: separate dirt from the fibres and suspends it in the water so it can be washed away. Hydrophilic polar end of the soap or detergent dissolves in the water, the hydrophobic hydrocarbon chain dissolves in the grease forming a 'bridge' which enables the dirt to be washed away with the water.

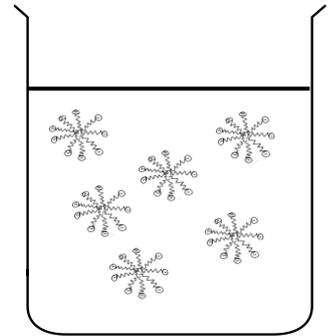
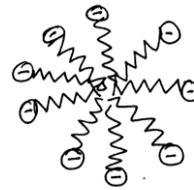


There is an attraction between polar water and the charged head of the soap molecule. There is an attraction between the non-polar region of soap and the non-polar grease molecules. "Like dissolves like".

Surfactants (soaps and detergents) in water do not spread evenly but instead clump together with the – heads pointing out and the hydrophobic tails pointing in; this is called a micelle.

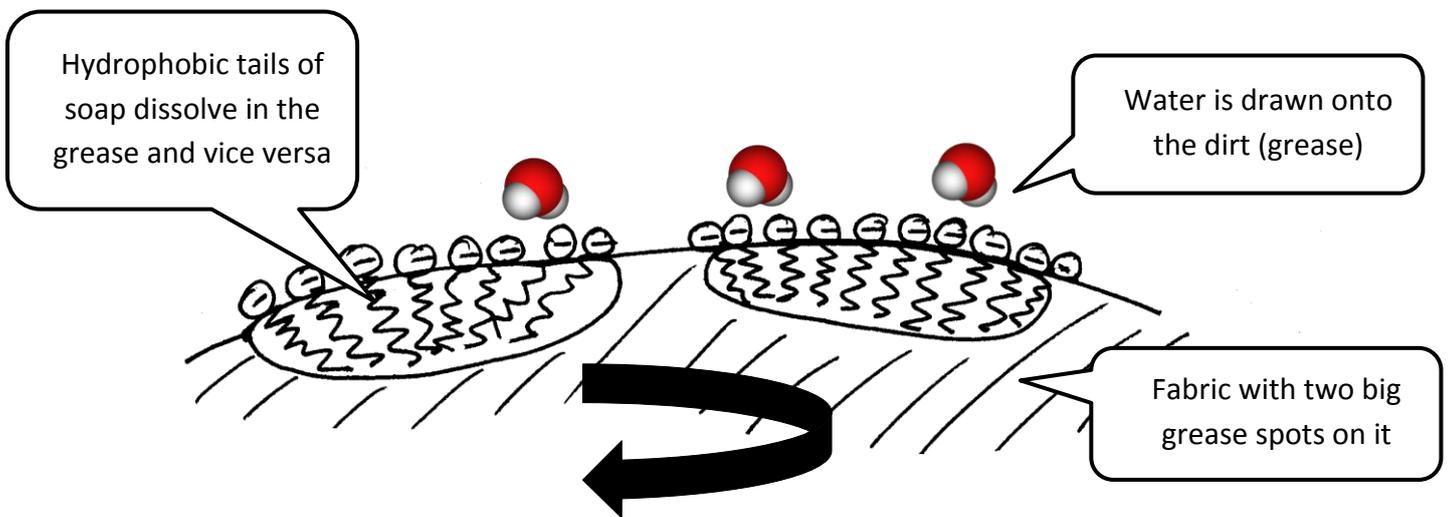
Micelle: spherical particles with a hydrophobic interior and a hydrophilic exterior

The clumps are suspended in the water.

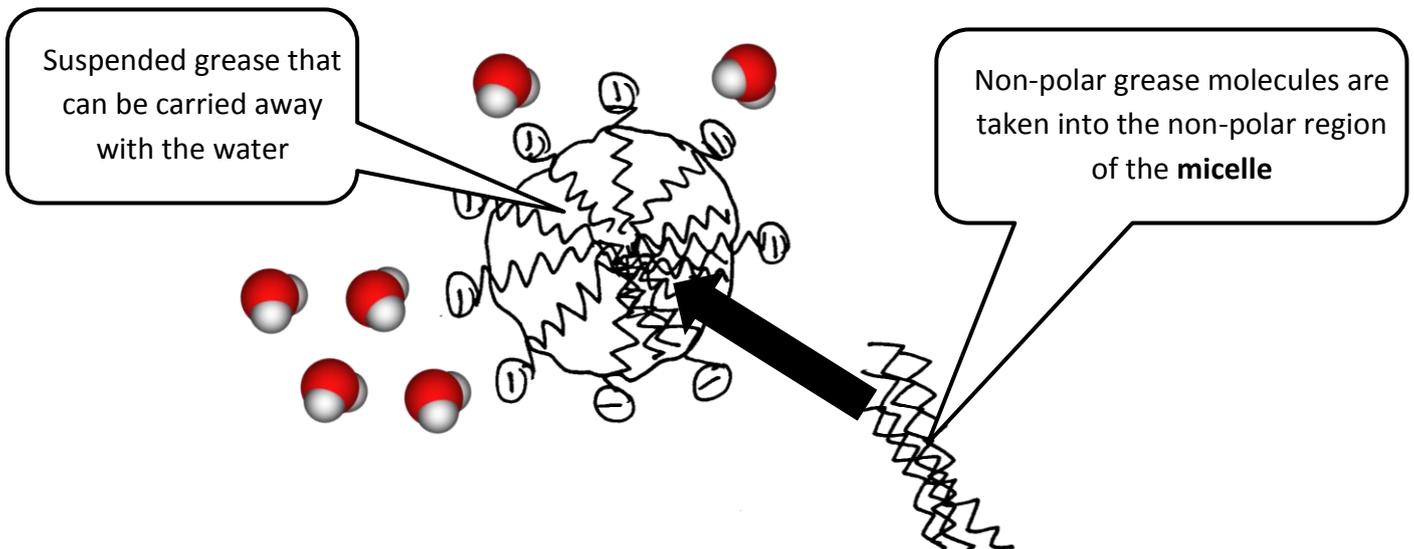


Soaps and detergents help to remove dirt (which is sometimes called “soil”). (Soiled clothes just means dirty clothes – it doesn’t mean you have been out playing in mud or in the garden).

The “tails” dissolve in the grease and the charged heads dissolve in the water.



As the water is swirled around during washing, it “pulls” the grease out of the fabric and it becomes part of the micelle. The micelles are repelled from each other due to the charges and then wash away with the water.



Soap and water and grease form an emulsion. Soap is the emulsifier – suspending the grease in the water.