

## Laboratory Report

Color, Texture and Appearance of Soap		
pH of Soap (after drying)		
pH and Appearance of Soap Solution		
Hard Water Tests	Ca <sup>2+</sup> Ions	
	Fe <sup>3+</sup> Ions	
	Mg <sup>2+</sup> Ions	
Emulsification Test		

1. Compare the color, texture and appearance of the homemade soap versus your favorite brand of hand soap.

2. Is the homemade soap solution acidic or basic? Explain.

3. How do the reactions of the soap solution with calcium, iron and magnesium ions mimic what happens when soap is used in hard water? Write the equation, including the product formula, for the reaction of soap with calcium ions. Describe common observations around the home due to the reaction of soap with hard water.

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4. Compare the results of the emulsification test of olive oil with water and with the soap solution. Explain in terms of the ability of soap to form micelles.

5. Explain why most soaps contain glycerol and describe the properties that glycerol adds to soap.

6. Draw the general structure of a triglyceride containing both saturated and unsaturated fatty acids. Circle and label the glycerol backbone, an ester functional group, and an unsaturated fatty acid residue.

7. Most homemade recipes for making soap use about 5% excess fat. Explain the benefits of using excess fat to make soap.