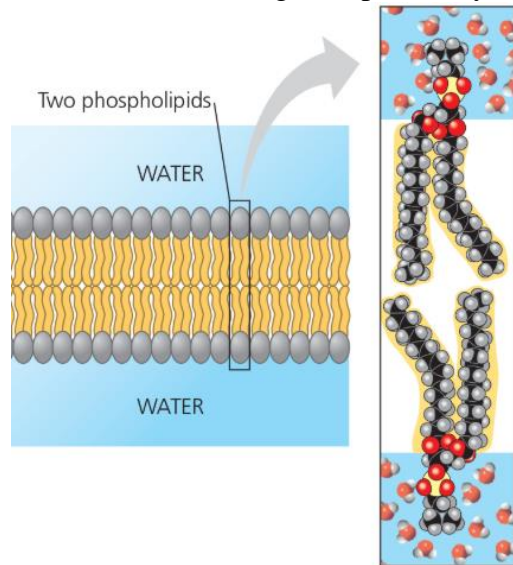


## Membrane Structure and Function Review Chapter 7

1. Provide reasoning to explain why the cell membrane is described as a fluid mosaic.



2. Draw a circle around and label the hydrophilic and hydrophobic portions of the enlarged phospholipids on the right of the diagram above. Identify what each portion contacts when the phospholipids are in the plasma membrane.

3. a) Describe how the membrane lipid composition of a native grass found in warm soil in a southern habitat would be expected to differ from that of a native grass found in cool soil in a northern environment.  
b) Winter wheat is a plant that can withstand cold temperatures late into the growing season. Describe how membrane fluidity of winter wheat is maintained as summer changes to autumn.
4. Describe some common functions of membrane proteins.
5. Explain how membrane carbohydrates function in cell-cell recognition.
6. Explain how molecules such as  $O_2$  and  $CO_2$  are able to cross a plasma membrane without the aid of membrane proteins.
7. Propose a reason aquaporins are needed in cell membranes.
8. Aquaporins exclude passage of hydronium ions ( $H_3O^+$ ), but some allow passage of glycerol, a three-carbon alcohol, as well as water.  $H_3O^+$  is closer in size to water than glycerol is yet cannot pass through. Propose an explanation for this selectivity.
9. Explain how diffusion provides a steady supply of oxygen and eliminates carbon dioxide for a cell undergoing cellular respiration.
10. Define the terms hypotonic, hypertonic and isotonic. Describe what would happen to both a plant cell and an animal cell if each were placed in each of these solutions.
11. Explain how facilitated diffusion increases the efficiency of transport.
12. Describe a scenario in which a cell would need to use active transport.