

## Homework #15-7 Answers

Read Ch. 15-4 pp. 476-479; Problems pg. 479 #42, 43, 44, 46

42. Distinguish between suspensions and colloids

Suspension particles are larger than colloid particles. Suspension particles settle out of the mixture, but colloid particles remain suspended.

43. Describe different types of colloids.

Types of Colloids			
Category	Dispersed Particle	Dispersing Medium	Example
Solid Sol	Solid	Solid	Colored Gems
Sol	Solid	Liquid	Blood, Gelatin
Solid emulsion	Liquid	Solid	Butter, Cheese
Emulsion	Liquid	Liquid	Milk, Mayonnaise
Solid Foam	Gas	Solid	Marshmallow, soaps that float
Foam	Gas	Liquid	Whipped cream, Beaten egg white
Aerosol	Solid	Gas	Smoke, Dust in air
Aerosol	Liquid	Gas	Spray deodorant, Clouds

44. Why do dispersed colloid particles stay dispersed?

The particles do not settle out because they have polar or charged layers surrounding them. These layers repel each other and prevent the particles from settling out.

46. **Comparing and Contrasting** Make a table that compares the properties of solutions, suspensions, and colloids

Properties of Mixtures				
Mixture Type	Particle Size	Settle Out?	Separation	Tyndall Effect?
Solutions	$< 1 \text{ nm } (1 \times 10^{-9} \text{ m})$	no	None	no
Colloids	$1 \times 10^{-9} \text{ m to } 1 \times 10^{-6} \text{ m}$	no	Special Membrane	yes
Suspensions	$> 1 \text{ } \mu\text{m } (1 \times 10^{-6} \text{ m})$	yes	Filtration	yes