Vision 10 - Particle filter

1. How are probability density functions represented in particle filters?
2. What are the two (particle related) factors that influence the value of the pdf in a certain area?
3. What are the steps in a particle filter?
4. What probabilistic formulation is used in the update step? What is the meaning of that equation?
5. Why do we need to re-sample?
6. What is trade-off when it comes to the number of particles?
7. What kind of problems can the Particle Filter deal with that none of the discussed Kalman filters can deal with?