

Thermodynamics - Steam Checklist For the PE Exam

Test Date: _____

Name: _____

		Confident	Knowledgeable	Need More Work
Steam Basic Terms				
1.	<u>Temperature & Pressure</u> <i>What is the relationship between temperature and pressure? How does the boiling temperature of a liquid relate to pressure?</i>			
2.	<u>Enthalpy</u> <i>What is enthalpy? What are the units of enthalpy? What is the enthalpy of liquid? Enthalpy of vapor? Enthalpy of evaporation?</i>			
3.	<u>Entropy</u> <i>What is entropy? What are the units of entropy?</i>			
4.	<u>Specific Volume</u> <i>What is specific volume? What are its units? How does it relate to density?</i>			
5.	<u>Quality</u> <i>What is quality? What is the quality at the saturated liquid curve? What is the quality at the saturated vapor curve?</i>			
6.	<u>Super-Heat</u> <i>What is super heat? How does it relate to the saturated vapor point.</i>			
7.	<u>Boiler</u> <i>What is a boiler? How do you determine the capacity of a boiler? How do you determine the efficiency of a boiler?</i>			
8.	<u>Feed Water</u> <i>What is feed water? How do you determine its enthalpy?</i>			
9.	<u>Isobaric</u> <i>What does isobaric mean? What processes typically are isobaric?</i>			
10.	<u>Isentropic</u> <i>What does isentropic mean? What processes typically are isentropic?</i>			
11.	<u>Throttling</u> <i>What does throttling mean? What processes involve throttling? What typically remains constant in a throttling process?</i>			
Navigating the Steam Diagram & Charts				
1.	<u>Saturation Curve</u> <i>Where is the saturation curve located? What does it represent? How does it distinguish between sub-cooled watered, super-heat water vapor and the mixed region?</i>			

2.	Steam Quality Can you identify the steam quality lines on a P-H diagram? Can you determine the steam quality given the mixed region enthalpy or entropy?			
3.	Locating a Point In the sub-cooled region, can you locate a point given the pressure and sub-cooled temperature? In the super-heat region, can you locate a point given the pressure and super-heat temperature? In the mixed region, can you locate a point given the pressure and enthalpy or the pressure and steam quality?			
4.	Constant Entropy Can you find lines of constant entropy? Can you indicate movement on the constant entropy line?			
5.	Constant Enthalpy Can you find lines of constant enthalpy? Can you indicate movement on the constant enthalpy line for a expansion device?			
6.	Super-Heat/Sub-Cool Can you find the point indicated by a certain degrees of super-heat or sub-cooling given a pressure?			
7.	COP What is the COP? Can you calculate the COP?			
8.	Resources Do you have quick access to the steam tables and the P-H Diagram for Steam?			
Mollier Diagram				
1.	Pressure Can you navigate the Mollier diagram to lines of constant pressure?			
2.	Mix Versus Super-Heat Can you navigate the Mollier diagram to the different regions of Mixed Region Steam and Super-Heated Steam.			
3.	Temperature Can you navigate the Mollier diagram to the constant temperature lines and the super heat temperature lines?			
4.	Resources Do you have quick access to the Mollier Diagram			
Steam Equipment				
1.	Boiler What is a boiler? How do you determine the capacity of a boiler? How do you determine the efficiency of a boiler?			
2.	Steam Coils Can you conduct an energy balance on a steam-to-water or a steam-to-air coil?			
2.	Steam Piping Can you calculate the pressure drop through steam piping? Do you have quick access to steam pipe sizing equations and steel piping tables?			
2.	Steam Traps What is a steam trap and what is its purpose? What are the different types of steam traps?			