Topic/Objectives: 16-2 Urine Formation; (1) Describe the three part process of urine formation, which is composed of glomerular filtration, tubular reabsorption, and tubular secretion; (2) Explain the factors that govern the transport of macromolecules, water, sodium, and other ions during tubular reabsorption; (3) Describe the regulatory effect of hormones that control water homeostasis.	**Name:** **Date:** **Period:**

Essential Question: What factors and physiological structures control the processes of urine formation?

Questions:	**Notes:**
	Urine formation involves glomerular filtration, tubular reabsorption, and tubular secretion. _____ _____ begins urine formation when the fluid portion of the blood is filtered by the glomerulus and enters the glomerular capsule as glomerular filtrate. ◦ The main force responsible for moving substances by filtration through the glomerular capillary wall is the _____ _____ of the blood inside. ◦ Glomerular filtration rate is relatively _____, although sympathetic impulses (-), the renin-angiotensin system (regulates Na+), and the heart (+) may effect it. ◦ On average, filtration rate is 125 milliliters per minute or _____ _____ in 24 hours, most of which is reabsorbed farther down the nephron.
	_____ _____ helps to return important molecules back to the blood, such as glucose, amino acids, sodium ions, water and proteins. ◦ Most of the reabsorption occurs in the proximal convoluted tubule, where cells possess _____ with carrier proteins. ◦ Normally the distal convoluted tubule and collecting duct are impermeable to water unless the hormone _____ is present. Urea and Uric Acid Excretion ◦ _____, an amino acid metabolism by-product, is passively reabsorbed by diffusion but about 50% is excreted in the urine. ◦ Most _____ _____, a nucleic acid metabolism by-product, is reabsorbed by active transport and a small amount is secreted into the renal tubule.

	_____ _____ moves excess hydrogen ions, potassium ions, and various organic compounds into the renal tubule. Urine composition varies from time to time and reflects the amounts of water and solutes that the kidneys eliminate to maintain _____. ◦ Urine is _____ water, and also contains urea, uric acid, a trace of amino acids, and electrolytes.

Summary: