

CHAPTER 9	Functions of the Nephron Answer Key	BLM 9.1.4A
ANSWER KEY		

1. In addition to water, the components of blood include the three types of blood cells, plasma proteins, organic nutrients (glucose, amino acids, fats and phospholipids), hormones (chemical messengers), wastes (urea), dissolved gases (nitrogen, oxygen), and inorganic ions (sodium, chloride, bicarbonates). Inorganic ions, glucose, and hormones are sometimes found in excess and are thus eliminated in the urine along with wastes. Water is also sometimes in excess.
2. Water, useful solutes, and waste solutes are filtered out of the blood from the glomerulus (first capillary bed) into the capsule.
3. Useful solutes and most of the filtered water are reabsorbed from the nephron back into the second set of capillaries surrounding the proximal and distal tubules, the loop, and the collecting duct.
4. Wastes, excess components, and some water (solvent) are left behind in the collecting duct after reabsorption is complete.
5. The capsule, proximal, and distal tubules are in the cortex; the loop and the collecting duct are in the medulla.
6. Filtration only functions in separating wastes from useful materials if the wastes are larger than the useful materials (or vice versa). In the nephron, both wastes and useful components are filtered into the capsule because they are small. The nephron prevents useful components from being excreted by reabsorbing them before they reach the collecting duct. Kidneys are organs of reabsorption, rather than organs of filtration. Filtration is a passive process; reabsorption takes large amounts of energy (ATP).