

Human Urinary System: Nephron Function Practice Questions

1. Complete this chart. Use the *nephron reading.pdf* and the *animation* shown in class to help you.

Region of Nephron	Direction of movement of substances (e.g., nutrient, waste, H ₂ O, ions)	Active or Passive Transport	Permeability to H ₂ O and ions
Proximal tubule			
Descending limb of the Loop of Henle			
Thin ascending limb of the Loop of Henle			
Thick ascending limb of the Loop of Henle			
Distal tubule			
Collecting duct			

2. Make a T-chart to identify how the blood plasma and filtrate are alike and different (e.g., contents, location, colour)
3. How does the movement of substances in the ascending limb of the loop of Henle affect the movement of substances in each of these areas:
 - a. The descending limb
 - b. The distal tubule
 - c. The collecting duct
4. What is the difference between reabsorption and secretion? Where does each occur in the nephron?
5. What areas of kidney tissue surrounding the nephron would you expect to find an area of high concentration of mitochondria? Explain.
6. Consider this: Approximately 180 L of filtrate enter the nephrons of the kidney each day. Additionally, the filtrate and blood plasma have the same osmolarity, which means that water will not move by osmosis because the concentration of solutes is equal in both fluid compartments. Using this information, explain how you only urinate approximately 2 L each day – in other words, how does the kidney help prevent massive water loss through reabsorption. **Use these terms to help focus your response:** filtrate, blood plasma, ions, water, nutrients (glucose), waste (urea), solute, diffusion, osmosis, active and passive transport, osmolarity, medulla, cortex, and nephron anatomy (e.g., Bowman's capsule, glomerulus, proximal tubule, loop of Henle, distal tubule, collecting duct).