NAME: _____
BLOCK: _____ DATE: _____

Project: Urine Formation Diagram

OBJECTIVE:
To illuminate the processes on pressure filtration, selective reabsorption, and tubular excretion by showing the movement of all components across the capillary and tubule walls, indicating whether each component moves by osmosis, diffusion or active transport.

GUIDELINES:

- 11 x 17 template on paper will be provided - you **must** use this template
- All visuals must be original and hand drawn.
- Drawn in pencil, then outlined in coloured markers or pencil crayons.

INSTRUCTIONS:
Label the 6 sections (as shown below) to reflect regions of the nephron.

Glomerulus/Bowman's space/ Bowman's Capsule	**Peritubular Capillary Network/ Interstitial fluid/ Proximal Convoluted Tubule**	**Peritubular Capillary Network/ Interstitial fluid/ Descending Loop of Henle**
Peritubular Capillary Network/ Interstitial fluid/ Ascending Loop of Henle	**Peritubular Capillary Network/ Interstitial fluid/ Distal Convoluted Tubule**	**Renal Venule/ Interstitial fluid/ Collecting Duct**

In each region (when relevant),

- Show the movement of the following substances: **water,** nitrogenous waste (**urea, uric acid**), salts (**Na^+, Cl^-, K^+**), **H^+**, nutrients (**glucose, amino acids**), **creatinine**, **penicillin** and **drugs**
- Make sure to include **blood cells, platelets and plasma proteins** where appropriate
- Use a legend to indicate whether the movement of the above substances is by **osmosis, diffusion or active transport, pressure**
- Clearly label the processes of **pressure filtration, selective reabsorption, and tubular excretion** wherever they occur.
- Identify the locations affected by **ADH** and **aldosterone** , and **explain/show their effect(s)**
- In the final section, list the main components of the urine/filtrate in the collecting duct and the main components of the blood in the renal venule

Before submitting, self-evaluate your work using the criteria sheet on the back side of this handout and then staple it to the front of your project.

Remember, this assignment is for your benefit and to help you understand the steps of urine formation.

ROUGH COPY DUE:_____ **GOOD COPY DUE:** _____

Project: Urine Formation Diagram

NAME: _____

PERFORMANCE-BASED ASSESSMENT

	Beginning	Developing	Accomplished	Exemplary
CONTENT (STRUCTURE)	Many of the components are missing or incorrectly used	The majority of structural components are correctly used, while some components are missing or incorrect	Almost all structural components are correctly used, with some minor errors.	All structural components are correctly used
Afferent arteriole, glomerulus, efferent arteriole, peritubular capillary network, renal venule, Bowman's capsule, proximal convoluted tubule, descending limb of loop of Henle, ascending limb of Loop of Henle, distal convoluted tubule, collecting duct, interstitial fluid, water, urea, uric acid, Na+, Cl-, K+, H+, glucose, amino acids, creatinine, penicillin, drugs, blood cells, platelets, plasma proteins, ADH, aldosterone				
CONTENT (PROCESS)	Many processes are incorrect or not included.	The majority of processes are correct and accurate, with some processes missing or incorrect	Almost all processes are correct and accurate, with some minor errors.	Entire process is correct and accurate
Pressure filtration, selective reabsorption, tubular excretion, osmosis, diffusion, active transport, pressure, permeability of tubule to water, effects of ADH and aldosterone on the filtration process				
CLARITY	Lack of colour/highlighting or legend Although an attempt is made, it is difficult to understand most of the diagram.	Somewhat effective use of colour/legend Most of the diagram is well organized with clear written communication, but some sections are not.	Use of colour/legend is mostly effective Entire diagram is organized and clear; a few details take effort to decipher, and so could not be used as a teaching tool.	Original and highly effective use of colour and/or legend Entire diagram is effectively organized with logical flow; diagram can be used as a teaching tool.