Name:_____Period:_____Date:_____

Circulation and Excretion

List the molecules found in normal blood and urine.

- Include: amino acids, blood cells, blood plasma proteins, glucose, salt, urea, water

Blood Components	Urine Components
Before filtration:	Waste:
After filtration and reabsorption:	

Based on what you know about the components of blood and urine, address the following problems.

1. Water is reabsorbed into the bloodstream as filtration occurs in the kidneys. If the levels of antidiuretic hormone (ADH) in the blood increases, more water is reabsorbed into bloodstream.

- What would happen to your blood pressure when ADH is being produced?

- Would urine be more or less concentrated under the effects of ADH?

2. Caffeine inhibits the effect of ADH and is therefore considered a **diuretic**. The site of reabsorption becomes less permeable to water. This results in the production of a large volume of urine.

- ➢ Would urine be more or less concentrated under the effects of caffeine?

- ➢ Why should an athlete be suspended if they used diuretics?

3. Nephritis is an inflammation of the nephrons in the kidneys, often caused by a bacterial infection. The infection may damage the filtration components of the nephron.

- ➢ What substances that are not normally found in urine could be found in a sample from someone with nephritis?

4. Your kidneys can reabsorb a maximum of 375 mg of glucose per minute to prevent loss of glucose. Insulin helps aid in the process of storing glucose as glycogen.

- ➢ A person with untreated type 2 diabetes may have reduced or low insulin production.
  - ○ What happens to his or her ability to store sugar?

  - ○ What would happen to the levels of glucose in the blood of this person?

  - ○ How could this person's urine differ from someone with normal insulin production?

5. What are some reasons a doctor may run a urinalysis test? Consider the kinds of substances that can be detected in urine.