Name: Key Quiz 14

For glycolysis in a hepatocyte:

1. Name the enzyme or enzymes that catalyze steps that use up ATP equivalents (ATP, UTP, and GTP).
   glucokinase phosphofructokinase-1
2. Name the enzyme or enzymes that catalyze steps that create ATP equivalents (ATP, UTP, and GTP).
   phosphoglycerate kinase pyruvate kinase
3. When a cell takes one glucose to two pyruvates how many ATP equivalents (ATP, UTP, and GTP) does the cell gain or lose?
   gains 2 ATP

For gluconeogenesis in a hepatocyte:

4. Name the enzyme or enzymes that catalyze steps that use up ATP equivalents (ATP, UTP, and GTP).
   pyruvate carboxylase phosphoenolpyruvate carboxykinase
   phosphoglycerate kinase
5. Name the enzyme or enzymes that catalyze steps that create ATP equivalents (ATP, UTP, and GTP).
   none
6. When a cell takes two pyruvates to one glucose how many ATP equivalents (ATP, UTP, and GTP) does the cell gain or lose?
   lose six

Regulation of gluconeogenesis in a fed hepatocyte:

7. Consider your answers for numbers 3 and 6. A hepatocyte tightly regulates the processes of glycolysis and gluconeogenesis to avoid waste. No writing is necessary.

8. Does the cell have high or low concentrations of fructose-2,6-bisphosphate?
   high
9. Is Phosphofructokinase-2/Fructose-2,6-bisphosphatase phosphorylated or dephosphorylated?