1. In the sticky-wage model of Chapter 14, it is the nominal wage that is assumed to be sticky. But sometimes in countries that have high inflation uncertainty, wage contracts are "indexed." This means that the nominal wage is adjusted upward or downward according to the amount of inflation that actually occurs. Suppose that an economy has "full indexation," meaning that the nominal wage is adjusted fully to the change in prices. How would the following equations in the textbook section on the sticky-wage model be different in the case of full indexation?

   a. $W = \omega \times P^e$

   b. $\dfrac{W}{P} = \omega \times \left(\dfrac{P^e}{P} \right)$

   c. $Y = \bar{Y} + \alpha \left(P - P^e \right).$

2. Suppose that the short-run Phillips curve for an economy is $\pi_t = \pi_{t-1} - 0.8(u_t - 8),$ with both inflation and unemployment measured in percentage points (2% = 2, not 0.02).
   a. What is the natural rate of unemployment in this economy? How do you know this?
   b. How do people form expectations in this economy? How do you know this?
   c. Suppose that the economy begins with a steady inflation of 10%. Show on a graph and explain in words what would happen if the central bank used contractionary policies to lower the inflation rate all at once to 2% and kept it there. What would be the path of the unemployment rate over time (in numbers)?
   d. Again starting at 10% inflation, show on a graph and explain in words what would happen if the central bank began using contractionary policy to lower the inflation rate by 1% each year until it reaches 2%. What would be the path of the unemployment rate over time (in numbers)?
   e. Which of these policies do you think would be better? Why?

3. Suppose that the short-run Phillips curve for an economy is $\pi_t = \pi_{t-1} - 0.8\left(u_t - u_t^n\right)$ and that $u_t^n = \tfrac{1}{2}\left(u_{t-1} + u_{t-2}\right).$
   a. What is a plausible economic explanation for the second equation above?
   b. Suppose that the economy begins in a steady state where inflation has been 10% and unemployment has been 8% for several years. Show on a graph and explain in words what would happen if the central bank used contractionary policies to lower the inflation rate all at once to 2% and kept it there. What would be the path of the unemployment rate over time (in numbers)?
   c. Again starting at 10% inflation, show on a graph and explain in words what would happen if the central bank began using contractionary policy to lower the inflation rate by 1% each year until it reaches 2%. What would be the path of the unemployment rate over time (in numbers)?
   d. Which of these policies do you think would be better? Why?

4. In the paper discussed in Chapter 14, Thomas Sargent finds four examples of countries that ended hyperinflations without an apparent rise in unemployment in the early 1920s, Austria, Hungary, Germany, and Poland.

a. According to the modern theory of the Phillips curve, what must happen to expected inflation in order for disinflation to be accomplished without an increase in unemployment? Why?

b. Sargent argues that in all four cases, credible reform of government finance (and in particular the establishment of a credible tax system) was an essential element of these disinflations. Why would credible reform of taxation matter for people's expectations about inflation? What would have happened to unemployment if the reforms were not credible? Why?