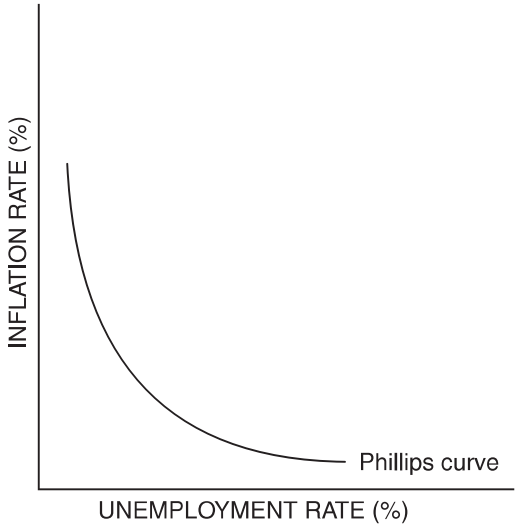
Short-Run Phillips Curve

The Phillips curve relationship was first proposed by A. W. Phillips in 1958. Following up on Phillips's research, other economists found an inverse relationship between the inflation rate and the unemployment rate. In other words, when inflation increased, the unemployment rate decreased, and when inflation decreased, the unemployment rate increased. A graphic representation of this trade-off became known as the *Phillips curve*.

Student Alert: **Pay close attention to the axes when you graph Phillips curves!**

Figure 5-8.1 shows a Phillips curve. The curve illustrates the trade-off between inflation and unemployment.

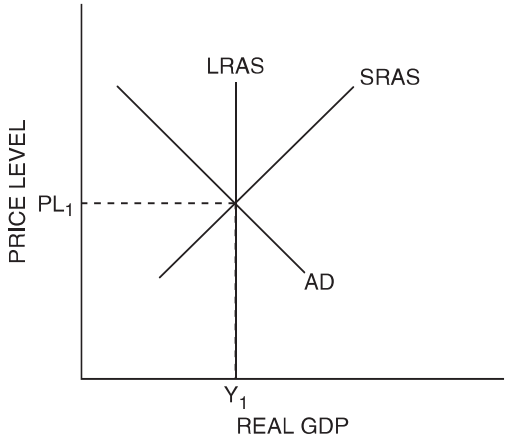
Figure 5-8.1
Phillips Curve



Data from the 1960s appeared to support the Phillips curve relationship. When inflation was low, the unemployment rate was high. The Phillips curve suggested that when the unemployment rate is higher than the natural rate of unemployment and the economy is not operating at its potential gross domestic product (GDP), decreasing unemployment would lead to higher inflation.

1. Assume that the economy begins in short-run equilibrium as shown in Figure 5-8.2. Graph the effect on the equilibrium price level (PL) and real GDP (Y) if there is a decrease in aggregate demand (AD). Label the equilibrium price level and real GDP after the decrease in aggregate demand as PL_2 and Y_2.

Figure 5-8.2
Aggregate Demand Decrease



2. What happens to each of the following in the short run?

   Real GDP _____ The unemployment rate _____

   The price level _____ Real wages _____

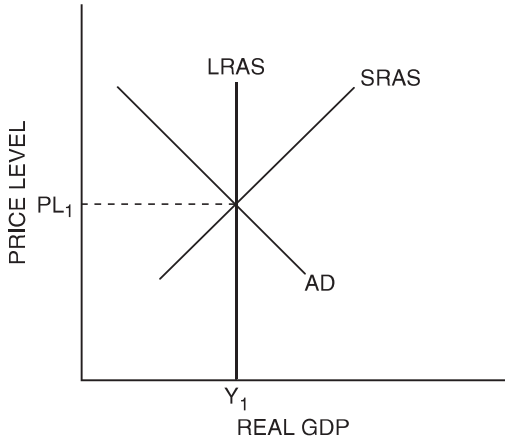
3. Draw a graph of a short-run Phillips curve on the following page. Make sure you label your axes correctly. You will plot PL_1 and PL_2 along with their corresponding unemployment rates. There are no numbers for PL_1 and PL_2, just plot PL_1 at some level and then plot PL_2 either above or below it, as shown in the graph above. Then select some unemployment rate (U_1) to go with PL_1 and then plot U_2 either above or below U_1 as shown on the graph above. Since the short-run Phillips curve shows the relationship between the inflation rate and the unemployment rate and the aggregate demand/aggregate supply (AD/AS) graph shows the relationship between the price level and real GDP, you need to determine how the change in aggregate demand affects the unemployment rate when the output level changes. Remember that when the economy is in long-run equilibrium, it is at full employment (the unemployment rate is low), and as real GDP falls, the decrease in production causes employment to decrease the unemployment rate to increase.

When the economy of the 1970s experienced high inflation and high unemployment at the same time (i.e., stagflation) the Phillips curve relationship no longer appeared to be true. Eventually, additional data showed that the negative relationship between the inflation rate and the unemployment rate still held, but that the short-run Phillips curve had shifted to the right, as shown in Figure 5-8.3. The rightward shift of the short-run Phillips curve was due to a negative supply shock—a decrease in aggregate supply caused by an increase the price of oil. A positive supply shock (e.g., an advance in technology) will shift the short-run Phillips curve to the left. A negative (positive) supply shock means that for every given unemployment rate, the corresponding inflation rate is higher (lower).

Figure 5-8.3
Short-Run Phillips Curves

4. Assume the economy begins at long-run equilibrium as shown in Figure 5-8.4. Draw a new SRAS curve illustrating the effect of an increase in oil prices. Label the new curve $SRAS_1$, the new equilibrium price level PL_3, and the new level of real GDP Y_2.

Figure 5-8.4
Effect of an Increase in Oil Prices



5. Based on your graph, what happens to each of the following in the short run?

   Real GDP _____ The unemployment rate _____

   The price level _____ Real wages _____

6. On the short-run Phillips curve you drew before, plot the inflation and unemployment rates that result when the price of oil increases. Remember that a decrease in real GDP means there has been a decrease in production, and therefore employment will fall and the unemployment rate will increase. This point lies on as SRAS curve that has shifted to the right as a result of the higher oil prices.

Supply shocks are not the only thing that will shift the short-run Phillips curve. The expected rate of inflation will also cause the short-run Phillips curve to shift. When workers expect inflation they bargain for higher wage rates, and employers are more willing to grant higher wage rates when they expect to sell their product for higher prices in the future. When the expected rate of inflation is higher, the short-run Phillips curve shifts to the right, and the actual rate of inflation increases. If the expected rate of inflation decreases, the short-run Phillips curve will shift to the left and the actual inflation rate will decrease. Expectations for inflation lead to change in actual inflation—like a self-fulfilling prophecy.