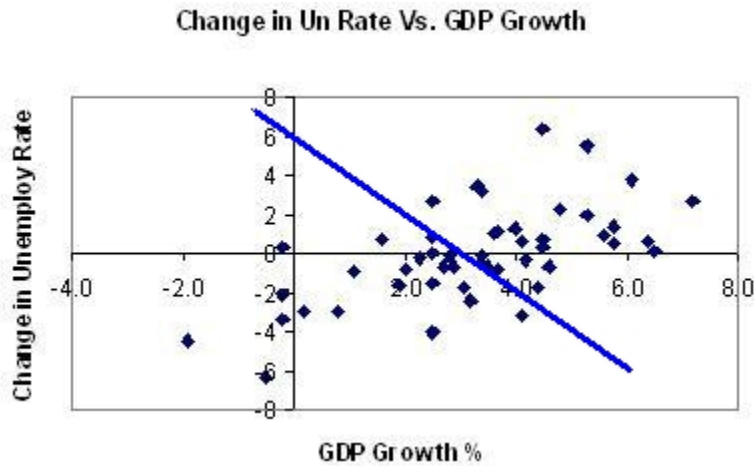


CEE Okun's Law ANSWER KEY

Name _____ Date _____

- The graph "Change in Un Rate Vs. GDP Growth" plots unemployment and GDP annual data since 1960. In the scatter graph, about 20 points cluster around the X-axis. What is the approximate data point? Examine the graph and circle your answer from the list of X, Y coordinates. Circle one. (0, 3); **(3, 0)**; (6, 4); or (0, -1)
- The equation for this worksheet is: $y = 6 - 2x$.



Students can show slope by using rise/run. Slope = $6/3$. They can use the table and show that y changes by -2% when x changes by 1%.

3. Assume that the economy is producing at its potential output of 3% annual growth. From your graph, explain what the GDP growth would be if unemployment suddenly increased by two percent. 2%

4. Okun's law can be rewritten and graphed to show the natural rate of unemployment as the following graph shows.

In the graph, Okun's Law Gap Version, the change in GDP equals zero and the unemployment rate equals 5.8%. Assume that 5.8% is the natural rate of unemployment. What is the GDP growth rate? 3% (HINT: look back at your previous graph.)

5. Assume that an equation that describes this data is: $\text{Unemployment} = 5.8 - (.5 * \text{Output Gap})$. [The output gap is the change in GDP from zero.] Using this formula, compute the unemployment rate for output gaps of -4, -2, 0, 2, and 4. Complete the table below. The first set has been computed for you.

Output Gap	Unemployment Rate
-4	7.8
-2	6.8
0	5.8
2	4.8
4	3.8

Teacher's Note: When the unemployment changes by 1%, the output gap changes by 2%. Let's rearrange the formula. You will see that a 2% change in unemployment changes GDP by 1%.

Unemployment = 5.8 - (.5 * Output Gap). [Begin with the original equation]
Unemployment - 5.8 = -.5 * Output Gap [Subtract the natural rate of 5.8%]
(Unemployment - 5.8) / .5 = Output Gap [Divide by .5]
2 (Unemployment - 5.8) = Output Gap [Eliminate the denominator]

6. Draw a line connecting your data points. Does your line intercept the Y-axis at 5.8? **Yes. The y-intercept is 5.8%. This is the natural rate. In this formula, the Y-intercept is 5.8 and the slope is -.5. The output gap is the value of x. The formula takes the form: $y = mx + b$ where m is the slope, x is the output gap, and b is the y-intercept.**

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

7. Using the slope formula, $\frac{y_1 - y_2}{x_1 - x_2}$, what is the slope of your line? **-.5**

Any points would work, but let's use the extremes. $(-4 - 4) / (7.8 - 3.8) = 4 / -8 = -.5$

8. What would you predict would happen to unemployment if the economy grew at 5% or 2% above the natural growth rate? **Unemployment would fall**. What would predict would happen to unemployment if the economy grew a 4% less than it's natural growth rate? **Unemployment would increase**.

9. Economics is the study of scarcity. When an economy is producing at a GDP growth rate greater than 3% or when the actual unemployment rate is less than its natural rate, labor resources become scarce. What do you predict will happen to prices paid to labor and goods in the economy? **Workers will ask for wage increases**.

10. Now the dog work is over. It's time to write what you know. When there's a change in the unemployment rate, GDP changes by less than the change in unemployment. Economists offer a couple of reasons why this is so. One reason is that some workers are needed to run a business even when times are slow. Another possible reason is technological improvements make staff more productive. Finally, some firms will face costs training costs when hiring new employees so they will just choose to work their remaining staff harder.

Write a 250-word essay describing the link between unemployment, GDP, and inflation. Be sure to include in your essay a statement of Okun's law and a possible reason why unemployment changes more than GDP. When writing your essay, look at a graph and describe the Natural rate of unemployment and the natural GDP growth rate.

(Essay answers should include a statement of Okun's law, a reason why GDP doesn't change as much as employment, a description of the natural rate of unemployment and natural rate of GDP growth.)