2024 AP Macroeconomics Summer Project

Name: _____

Your work this summer is divided into three parts

Part 1: Graphs in Economics
Visual presentations are used to make it much easier understand verbal descriptions and numerical information. In economics, graphs are used to facilitate understandings. To fully understand the ideas and information being discussed, you need to know how to interpret these visual aids.

In part 1 of the summer project, you will leverage existing graphing knowledge to complete a worksheet.

Part 2: Two Key Economic Models
In AP Macroeconomics, we use several models to simplify complex economic situations. Economic models are important because they allow economists to assess how a change in *one* variable affects overall economic outcomes. In AP Macroeconomics, models are typically depicted by graphs.

In part 2, you will learn about the two most-basic economic models: the production possibilities curve (PPC) and the supply and demand model and answer practice AP exam questions.

Part 3: Macroeconomic Indicators
To study a macroeconomy and how it can be improved, students must first understand how economists evaluate the state of an economy. There are three basic measures of economic performance: gross domestic product (GDP), unemployment, and inflation.

In part 3, you will demonstrate what you know about these basic measures of macroeconomic performance and answer practice AP exam questions.

List of deliverables

Part 1: Graphs in Economics

Use appendix A at the end of this document to help complete the following assignment.

Assignment #1: Graphing Worksheet (2 points)

1) Study the four accompanying diagrams. Consider the following statements and indicate with diagram matches each statement. For each statement, tell which variable would appear on the horizontal axis and which on the vertical. In each of these statements, is the slope positive, negative, zero, or undefined?

Diagram (a)   **Diagram (b)**
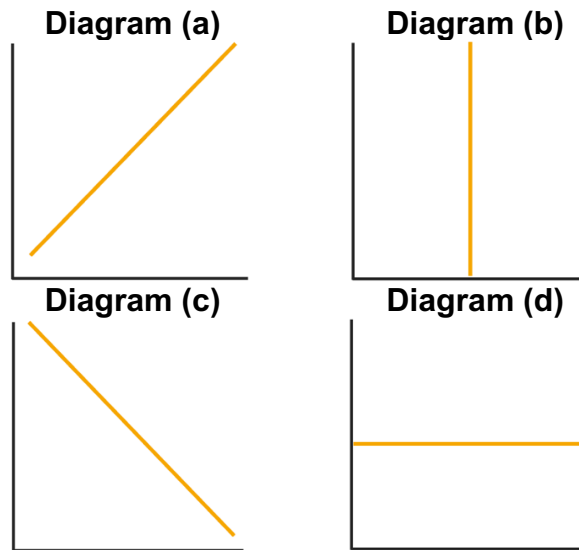
Diagram (c)   **Diagram (d)**

Statement	Diagram	Horizontal variable	Vertical variable	Slope
If the price of movies increases, fewer consumers go to see movies.				
Workers with more experience typically make more money than people with less experience.				
Regardless of the temperature outside, American consume the same number of hot dogs per day.				
Consumers buy more frozen yogurt when the price of ice crease goes up.				
Research finds no relationship between the number of diet books purchased and pounds lost.				
Regardless of its price, there is no change in the quantity of salt that Americans buy.				

2) Use this graph to answer the following questions:

a. What is the of <u>slope</u> of *ED*?
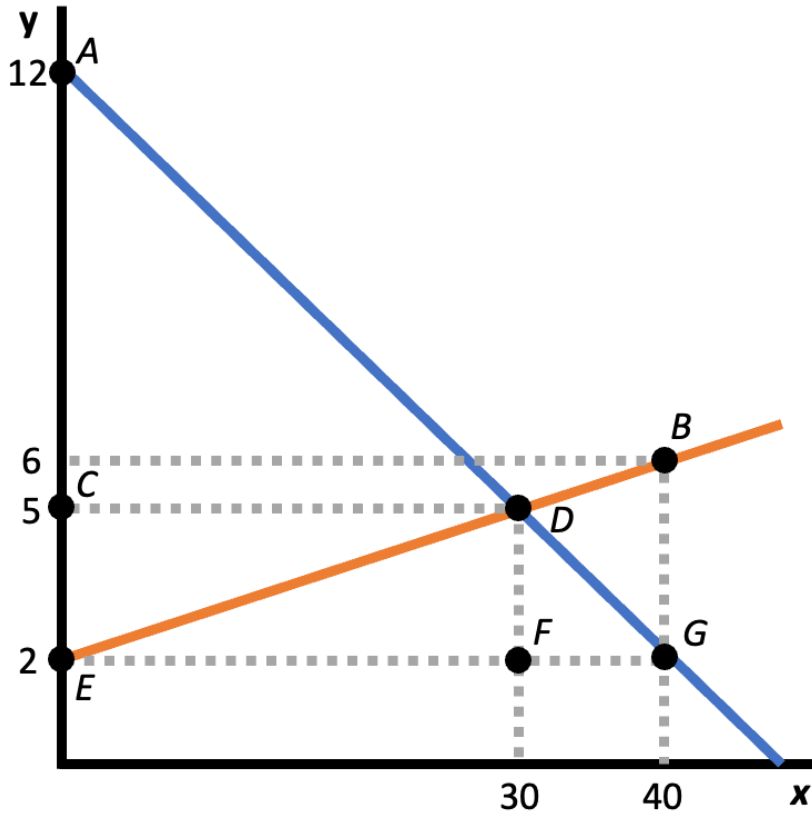
b. What is the <u>slope</u> of *DG*?

c. What is the <u>area</u> of *ACD*?

d. What is the <u>area</u> of *CDE*?

e. What is the <u>area</u> of *BDG*?

3) During the Reagan administration, economist Arthur Laffer argued in favor of lowering income taxes in order to increase tax revenue. Like most economists, he believed that at tax rates above a certain level, tax revenue would fall (because high taxes would discourage some people from working) and that some people would refuse to work at all if they received no income after paying taxes. This relationship between tax rates and tax revenue is graphically summarized in what is widely known as the Laffer Curve. Plot the Laffer Curve relationship, assuming it has the shape of a nonlinear curve. The following questions will help you construct the graph.

   a. Which is the independent variable? Which is the dependent variable? On which axis do you therefore measure the tax rate? On which axis do you measure tax revenue?

   b. What would the tax revenue be at a 0% income tax?

   c. The maximum possible income tax rate is 100% what would the tax revenue be at a 100% income tax rate?

   d. Estimates now show that the maximum point on the Laffer Curve is approximately at a tax rate of 80%. For tax rates less than 80%, how would you describe the relationship between the two variables? For tax rates above 80%, how would you describe the relationship between the two variables? Be sure these relationship are reflected in the slopes.

Part 2: Two Key Economic Models

Use unit 1 of the macroeconomics portion of the text and appendix B to complete the following assignments.

Link to purchase the textbook:

https://store.bfwpub.com/hs/us/product/Krugmans-Economics-for-the-AP-Course-4th-Edition/p/131940932

Assignment #2: The Production Possibilities Curve (2 points)

Use the text learn about the production possibilities curve (PPC), the first model in economics. The PPC is an illustration of the maximum combination of two products that can be produced using all resources in an economy. _Most information can be found in chapter 1.2 of the text_.

1) What are the four factors of production (productive resources)? List and define each.

2) Draw a PPC for an economy that produces only two goods: burritos and watches. Assume the economy uses underlined unspecialized resources (meaning as more of one good is produced, the opportunity cost of producing that good remains constant, which means the PPC is a constant slope). Label a point *A* on the graph that represents a combination of outputs that is feasible but inefficient

3) Draw a PPC for an economy that produces only consumer goods and capital goods. Assume the economy uses <u>specialized resources</u> (meaning as more of one good is produced, the opportunity cost of producing that good increasing, which means the PPC is bowed out). Label a point *B* on the graph that represents a combination of outputs that is not feasible in the economy.

4) In the graph drawn in number three, show what would happen if the economy experiences major improvements in technology, which increases the productivity of existing resources.

5) Use the data in the table to create a PPC.

Product	Combination A	Combination B	Combination C	Combination D	Combination E
Tons of butter	30	28	24	16	0
Tanks	0	1	2	3	4

a. Label the following points on the PPC:
    i. A point indicating inefficiency/unemployed resources, labeled as *M*
    ii. A point indicating efficiency, labeled as *N*
    iii. An unattainable point, labeled *P*

b. Calculate the opportunity cost of a movement between each of the following points:
    i. Point *A* to point *B*

    ii. Point *B* to point *C*

    iii. Point *E* to point *D*

    iv. Point *C* to point *A*

    v. Point *M* to point *N*

Assignment #3: Introduction to Supply and Demand (2 points)

Use the text learn about the supply and demand model. The supply and demand model illustrates how markets work and how the forces of supply and demand interact to set market price and quantity. _Most information can be found in chapters 1.4, 1.5, and 1.6 of the text_.

1) Define demand and the identify the various determinants of demand.

2) What is the law of demand?

3) Explain whether each of these events represents 1) a change in demand (a _shift_ of the demand curve or 2) a movement along the demand curve (a _change in quantity demanded_).

   a. A store owner finds that customers are willing to pay more for umbrellas on rainy days.

   b. When XYZ Mobile, a cellular plan provider, offered reduced rates on data charges, its volume data usage by users increased sharply.

   c. People buy more long-stem roses the week of Valentine's Day, even though the prices are higher that at other times of the year.

   d. A sharp rise in the price of gasoline leads many commuters to join carpools in order to reduce their gas purchases.

4) Define supply and the identify the various determinants of supply.

5) What is the law of supply?

6) Explain whether each of these events represents 1) a change in supply (a *shift* of the supply curve or 2) a movement along the supply curve (a *change in quantity supplied*).

    a. During a real estate boom that causing housing prices to rise, more homeowners put their homes up for sale.

    b. Many strawberry farmers open temporary roadside stands during harvest season, even though prices are usually low at the time.

    c. Immediately after the school year begins, fewer young people are available to work. Fast-food chains must raise wages to attract workers.

    d. Many construction workers temporarily move to areas that have suffered hurricane damage, lured by higher wages.

7) Draw a properly labeled generic supply and demand graph. On the graph,
identify the following:
    a. Equilibrium price, labeled P_E
    b. Equilibrium quantity, labeled Q_E
    c. A price above equilibrium price, labeled P_1
    d. The surplus (excess supply) found at P_1
    e. A price below equilibrium price, labeled P_2
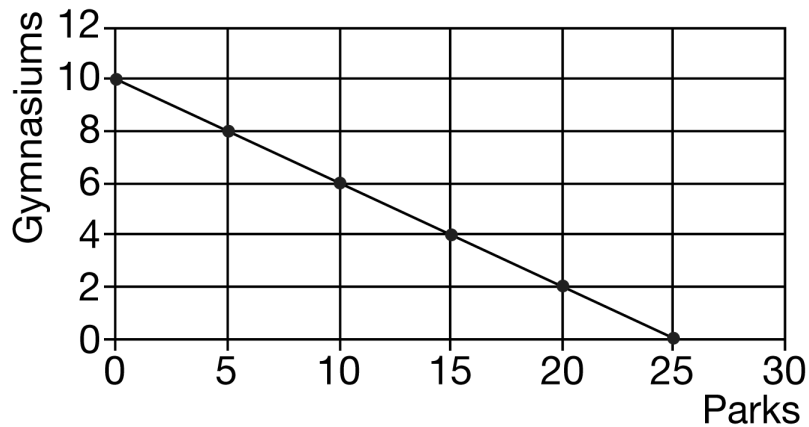   f. The shortage (excess demand) found at P_2

8) Complete this table:

Change	Rightward or leftward shift on graph	Change in equilibrium price	Change in equilibrium quantity
Increase in supply			
Decrease in supply			
Increase in demand			
Decrease in demand			

Assignment #4: Take-Home Quiz #1 (5 points)

Multiple choice questions:

Use the graph to answer questions 1 and 2.

1) The graph above shows the production possibilities curve for a small township that is deciding to build parks and gymnasiums. Which of the following combinations of parks and gymnasiums is unattainable given the township's available resources?
    a. 5 parks and 6 gyms
    b. 5 parks and 8 gyms
    c. 10 parks and 6 gyms
    d. 15 parks and 4 gyms
    e. 20 parks and 4 gyms

2) A city government received a $1 million grant to build swimming pools and skating rinks for youth. Based on the data provided in the graph, what is the opportunity cost of building one swimming pool?
    a. 0.5 skating rink
    b. 0.5 swimming pool
    c. 2 skating rinks
    d. 2 swimming pools
    e. 5 skating rinks

3) Which of the following illustrates the effect of a decrease in an economy's resources using a PPC?
    a. The economy's PPC will shift inward and to the left.
    b. The economy's PPC will shift outward and to the right.
    c. The economy's PPC will become steeper.
    d. The economy's PPC will become flatter.
    e. The economy's PPC will remain the same.

4) Which of the following describes the relationship between price and quantity demanded according to the law of demand?
    a. Positive relationship, illustrated by an upward-sloping demand curve
    b. Positive relationship, illustrated by a downward-sloping demand curve
    c. Negative relationship, illustrated by a horizontal demand curve
    d. Negative relationship, illustrated by an upward-sloping demand curve
    e. Negative relationship, illustrated by a downward-sloping demand curve

5) Which of the following changes will increase the demand for bicycles?
    a. An increase in the price of bicycle helmets, a complementary good
    b. An increase in the price of scooters, a substitute good
    c. A decrease in the price of bicycles
    d. A decrease in consumers' income
    e. A decrease in the number of buyers

6) Use the table to answer the question below.

Price of a candy bar	Quantity demanded	Quantity supplied
$1.00	1,000	0
2.00	775	100
4.00	600	250
5.00	525	525
6.00	375	700
7.00	200	975
8.00	50	1,200

When the price of a candy bar is $6, which of the following is true?
    a. The market does not clear because the price is lower than the equilibrium price and there will be a surplus in the market.
    b. The market does not clear because the price is lower than the equilibrium price and there will be a shortage in the market.
    c. The market clears because buyers and sellers are in agreement on the price.
    d. The market does not clear because the price is higher than the equilibrium price and there will be a surplus in the market.
    e. The market does not clear because the price is higher than the equilibrium price and there will be a shortage in the market.

Free-response question:

Assume gasoline is sold in a competitive market, the equilibrium price is $50 per barrel, and the equilibrium quantity is 1000 barrels.

    a. Using the numerical values above, draw a correctly labeled graph of the gasoline market and show each of the following.
       i.   The equilibrium price
      ii.   The equilibrium quantity
    b. At a price of $40 per barrel, will there be a surplus or a shortage in the market? Explain.
    c. Assume new oil wells are discovered. On your graph from part (a), show how this change will affect the equilibrium price and quantity in the market for gasoline.
    d. Assume instead there is an increase in the price of gasoline-operated automobiles. How will this change affect the market for gasoline? Explain.
    e. If both changes in part (c) and part (d) occurred simultaneously, what will happen to the equilibrium price and quantity of gasoline?

Part 3: Macroeconomic Indicators

Use unit 2 of the macroeconomics portion of the text and appendix C to complete the following assignments.

Link to purchase the textbook:

https://store.bfwpub.com/hs/us/product/Krugmans-Economics-for-the-AP-Course-4th-Edition/p/131940932

Assignment #5: Gross Domestic Product (2 points)

Use the text learn about gross domestic product (GDP), the measure economists use to compare sizes of different economies and how an economy grows over time. _Most information can be found in chapter 2.1 and 2.2 of the text_.

1) GDP is the measure of all _final_ goods and services produced in a country within a given year. What is meant by _final goods and services_?

2) The circular-flow diagram is a simple illustration of how goods and services, resources, and money flow between households and firms (businesses). Draw a simple model (without government). Include the following:
   a. Firms
   b. Households
   c. Product markets
   d. Factor markets
   e. Flow of goods and services
   f. Flow of factors of production (resources)
   g. Consumer spending
   h. Factor payments

3) Using the expenditure approach, identify and define the four components of GDP.

GDP = _____ + _____ + _____ + _____

4) Are each of the following transactions included in calculations of GDP for the U.S? Explain why or why not.

    a. Coca-Cola builds a new bottling plant in the U.S.

    b. Delta Air Lines sells one of its existing airplanes to Korean Air.

    c. Ms. Moneybags buys an existing share of Walt Disney Company stock.

    d. A California farm produces almonds and sells them to a customer in Montreal.

    e. An American buys a bottle of French perfume in their hometown.

Assignment #6: Unemployment (2 points)

Use the text learn about unemployment, the second measure economists use to assess the health of an economy. _Most information can be found in chapter 2.3 of the text_.

1) Complete and briefly explain the following measures of employment.

   **Labor force participation rate =**

   **Unemployment rate =**

2) Complete this table the three types of unemployment:

Type of unemployment	Brief definition	Example	Can this unemployment be eliminated?
Frictional unemployment			
Structural unemployment			
Cyclical unemployment			

3) For each of the following examples, is the person considered unemployed? If so, what category of unemployment are they a part of?

    a. Rosa, an older worker, has been laid off and gave up looking for work months ago.

    b. Anthony, a schoolteacher, has chosen not to work during his three-month summer break.

    c. Grace, an investment banker, has been laid off and is currently searching for another position.

    d. Sergio, a classically trained musician, can only find work playing for local parties.

    e. Natasha, a graduate student, went back to school because jobs are scarce.

Assignment #7: Inflation (2 points)

Use the text learn about inflation and price stability, the third measure economists use to assess the health of an economy. *Most information can be found in chapter 2.4 of the text*.

To calculate the inflation rate, the following steps are taken:
1) Determine the price of a **market basket**.
2) Calculate a **price index** by comparing the price of a market basket now to the price of a market basket in the **base year**.
3) Calculate the **inflation rate** by comparing the current price index to the price index one year ago and finding the percent rate of change.

1) Define the following terms:

   a. Market basket

   b. Price index

   c. Base year

   d. Inflation rate

2) When it comes to price levels in an economy, what is the macroeconomic goal?

Assignment #8: Current Events (3 points)

Over the summer, the government will release current data on GDP, unemployment, and inflation.

The data will be released the following days:

- 1st quarter 2024 GDP report: **June 27**
- July unemployment report: **August 2**
- July inflation report: **August 14**

==Real== *Gross domestic product*

Q1 2024 data	Q1 2023 data	By what percent has real GDP grown over the last year?

*For GDP data, be sure you search for *real* GDP (instead of nominal). We will learn what this means in the fall!

Unemployment

July 2024 unemployment rate	June 2024 unemployment rate	What has happened to the unemployment rate in July?

*For GDP data, be sure you search for *real* GDP (instead of nominal). We will learn what this means in the fall!

Inflation (Consumer price index)

July 2024 CPI	July 2023 CPI	By what percent has the CPI grown over the last year (inflation rate)?

Use this link to find the data! https://fred.stlouisfed.org

Assignment #9: Macro Indicators Take-Home Quiz (5 points)

Multiple choice questions:

1) Calculate Country X's GDP using the expenditure approach.

Variable	Value (billions of $)
Consumer spending	13
Wages	12
Government spending	3
Interest payments	1
Investment spending	4
Net exports	-1
Profit	5

   a. $14 billion
   b. $18 billion
   c. $19 billion
   d. $20 billion
   e. $21 billion

2) What type of unemployment describes the situation of factory workers displaced by automation?
   a. Cyclical
   b. Frictional
   c. Natural
   d. Seasonal
   e. Structural

3) Given the labor market data above, what are the labor-force participation rate (LFPR) and the unemployment rate (UR)?

	Millions of people
Civilian population over 16	250
Employed	135
Unemployed	15

   a. The LFPR is 60% and UR is 6%
   b. The LFPR is 54% and UR is 6%
   c. The LFPR is 54% and UR is 10%
   d. The LFPR is 60% and UR is 10%
   e. The LFPR is 60% and UR is 3.3%

4) Suppose the consumer price index (CPI) was 100 on January 1st, 2017 and 110 on January 1st, 2018 with no changes in nominal wages. Which of the following is definitely true about the economy between January of 2017 and January of 2018?
   a. The inflation rate was 10 percent.
   b. The inflation rate was -10 percent.
   c. Real wages increased by 10 percent.
   d. There was disinflation of 10 percent.
   e. Nominal GDP decreased by 10 percent.

5) Which of the following terms describes a slowdown in the rate of increase in the consumer price index?
   a. Deflation
   b. Disinflationx
   c. Hyperinflation
   d. Inflation
   e. Stagflation

Free-response question:

The following table shows employment data for Country Z's working-age population.

Cyclically unemployed	4,000
Frictionally unemployed	1,000
Structurally unemployed	2,000
Employed	63,000
Not in the labor force	30,000

a. Calculate the unemployment rate for Country Z. Show your work.
b. Calculate the labor force participation rate for Country Z. Show your work.
c. Is Country Z currently producing at its potential real output? Explain.
d. Assuming constant opportunity costs, draw a correctly labeled graph of country Z's PPC showing consumer goods on the horizontal axis and capital goods on the vertical axis. Label a point *W* on the graph that reflects the current level of unemployment.

Appendix A

Graphs in Economics

Appendix B

Production Possibilities Curve
Supply and Demand

Appendix C

Gross domestic product
Unemployment
Inflation