1. Briefly define the following terms and explain the relationship between *MPC* and *MPS* and the relationship between aggregate output and aggregate income.

a. *MPC*
b. *MPS*
c. Aggregate output
d. Aggregate income

2. Explain the difference between actual investment and planned investment. When are actual investment and planned investment equal? When is actual investment greater than planned investment? When is actual investment less than planned investment?

3. Explain whether you agree or disagree with the following statement: "All else equal, businesses will generally plan more investment projects when interest rates rise, because higher interest rates mean businesses will earn more on those investments."

4. The following data are estimates for the nation of GiBi.

Real GDP = 700,000 gb
Investment = 150,000 gb

Savings are 20 percent of income because GiBis like to enjoy life and consume most of their income. Annual investment is kept constant at 150,000 gb. The commodities the country primarily produces are wheat, wine, and meat. Governmental expenditure is zero because the citizens self-govern themselves for free. They also do not trade.

You are asked by the national newspaper, to predict the economic events of the next few months. By using the data given, can you make a forecast? What is likely to happen to the level of real GDP? What will happen to inventory levels? When will things stop changing?

5. Go to www.tuik.gov.tr and look through their report on the latest GDP release. What are the main components of Turkiye's GDP for the last quarter which data is available?

6. Saving and spending behavior depend in part on wealth (accumulated savings and inheritance), but our simple model does not incorporate this effect. Consider the following model of a simple economy:

C = 50 + 0.8Y + 0.1W
I = 200
W = 500
Y = C+I
S = Y-C

If you assume that wealth (*W*) and investment (*I*) remain constant (we are ignoring the fact that saving adds to the stock of wealth), what are the equilibrium levels of GDP (*Y*), consumption (*C*), and saving (*S*)?

Now suppose that wealth increases by 100 percent to 1,000. Recalculate the equilibrium levels of *Y, C,* and *S*. What impact does wealth accumulation have on GDP? Many were concerned with the large increase in stock values in 2016 and 2017. Does this present a problem for the economy? Explain.

7. You are given the following data concerning Kadwan, a country located in the mountains.

(1) Consumption function: $C = 150 + 0.7Y$
(2) Investment function: $I = 75$
(3) $AE = C+I$
(4) $AE = Y$

a. What is themarginal propensity to consume in Kadwan, and what is the marginal propensity to save?
b. Graph equations (1) to (4) and solve for equilibrium income.
c. Suppose equation (2) is changed to (2') $I = 90$. What is the new equilibrium level of income? By how much does the 15-currency unit increase in planned investment change equilibrium income? What is the value of the multiplier?
d. Calculate the saving function for Kadwan. Plot this saving function on a graph with equation (2). Explain why the equilibrium income in this graph must be the same as in part b.

8. Explain the multiplier intuitively. Why is it that an increase in planned investment of $100 raises equilibrium output by more than $100? Why is the effect on equilibrium output finite? How do we know that the multiplier is $1/MPS$?

9. If households decide to save more, saving in the aggregate may fall. Explain this in words.
   [Related to the *Economics in Practice* on p. 184]

10. Use the graph to answer the questions that follow.

    a. What is the value of the MPC?
    b. What is the value of the MPS?
    c. What is the value of the multiplier?
    d. What is the amount of unplanned investment at aggregate outputs of 300, 900, and 1,300?
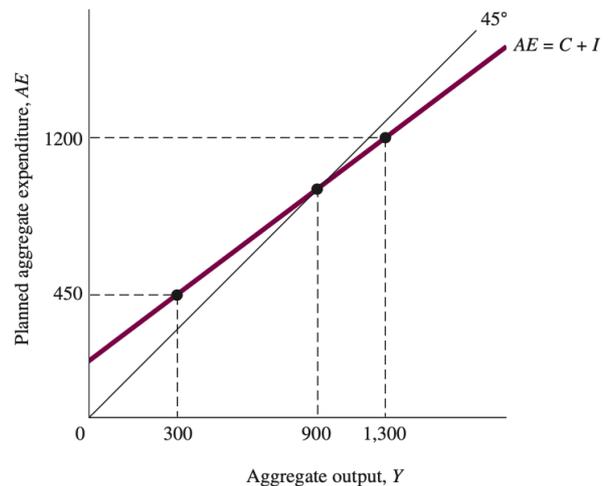
11. Assume that in 2022, the following prevails in the Republic of Nurd:

Y = 200	G = 0
C = 160	T = 0
S = 40	
I planned = 30	

Assume that households consume 80 percent of their income, they save 20 percent of their income, $MPC = 0.8$, and $MPS = 0.2$. That is ,$C = 0.8Y$ and $S = 0.2Y$.

    a. Is the economy of Nurd in equilibrium? What is Nurd's equilibrium level of income? What is likely to happen in the coming months if the government takes no action?
    b. If 200 is the "full-employment" level of Y, what fiscal policy might the government follow if its goal is full employment?
    c. If the full-employment level of Y is 250, what fiscal policy might the government follow?

d. Suppose $Y = 200$, $C = 160$, $S = 40$, and $I = 40$. Is Nurd's economy in equilibrium?
e. Starting with the situation in part d, suppose the government starts spending 30 each year with no taxation and continues to spend 30 every period. If I remains constant, what will happen to the equilibrium level of Nurd's domestic product (Y)? What will the new levels of C and S be?
f. Starting with the situation in part d, suppose the govern-ment starts taxing the population 30 each year without spending anything and continues to tax at that rate every period. If I remains constant, what will happen to the equilibrium level of Nurd's domestic product (Y)? What will be the new levels of C and S? How does your answer to part f differ from your answer to part e? Why?

12. Evaluate the following statement: for an economy to be in equilibrium, planned investment spending plus government purchases must equal saving plus net taxes.

13. Suppose that in your country the marginal propensity to save equals 15 percent of disposable income. When income is null, consumption is $C = 150$. Further assume fixed government expenditure of $G=100$, fixed taxes of $T = 80$, and investment of $I = 50$. Calculate the equilibrium level of GDP. Solve for a change in GDP following an increase in expenditure of 20 percent, financed by an increase in taxes by the same amount. What does it tell you about the impact of expenditure that is fully financed by taxation?

14. Complete the following:

   a. If the tax multiplier is -1, then the marginal propensity to save is _____ the marginal propensity to consume.
   b. If the government spending multiplier is 8, then the marginal propensity to save equals _____.
   c. If the marginal propensity to consume is two times the marginal propensity to save, then the government spending multiplier equals _____.
   d. If the marginal propensity to save is 0.5, then the tax multiplier equals _____.
   e. If the marginal propensity to save increases by 10 percent, then the government spending multiplier _____.
   f. If the marginal propensity to consume goes from 0.8 to 0.85, then the tax multiplier _____.
   g. If the tax multiplier increases (in absolute value) from -1 to -2, this means that the marginal propensity to consume has _____ relative to the marginal propensity to save.
   h. If the government spending multiplier decreases from 5 to 4, this means that the marginal propensity to save has _____.

15. What is the balanced-budget multiplier? Explain why the balanced-budget multiplier is equal to one.

16. Assume the following for the economy of a country:

   Consumption function: $C = 50 + 0.85Y_d$

   Investment: $I = 80$
   Government spending: $G = 50$
   Disposable income: $Y_d = Y - T$

   Net taxes: $T = -10 + 0.1Y$
   Equilibrium: $Y = C + I + G$

Solve for equilibrium income. (*Hint*: Be very careful in doing the calculations. They are not difficult, but it is easy to make careless mistakes that produce wrong results.) What happens to the economy when the marginal propensity to save increases to 0.2?

17. You are given the following model that describes the economy of Hypothetica.

(1) Consumption function: $C = 80 + 0.75Y_d$

(2) Planned investment: $I = 49$

(3) Government spending: $G = 60$

(4) Exports: $EX = 20$

(5) Imports: $IM = 0.05Y_d$

(6) Disposable income: $Y_d = Y - T$

(7) Taxes: $T = 20$

(8) Planned aggregate expenditure: $AE = C = I + G + EX - IM$

(9) Definition of equilibrium income: $Y = AE$

a. What is equilibrium income in Hypothetica? What is the government deficit? What is the current account balance?

b. If government spending is increased to $G = 75$, what happens to equilibrium income?   Explain using the government spending multiplier. What happens to imports?

c. Now suppose the amount of imports is limited to $IM=25$ by a quota on imports. If government spending is again increased from 60 to 75, what happens to equilibrium income? Explain why the same increase in G has a bigger effect on income in the second case. What is it about the presence of imports that changes the value of the multiplier?

d. If exports are fixed at $EX = 20$, what must income be to ensure a current account balance of zero? (*Hint:* Imports depend on income, so what must income be for imports to be equal to exports?) By how much must we cut government spending to balance the current account? (*Hint:* Use your answer to the first part of this question to determine how much of a decrease in income is needed. Then use the multiplier to calculate the decrease in G needed to reduce income by that amount.)