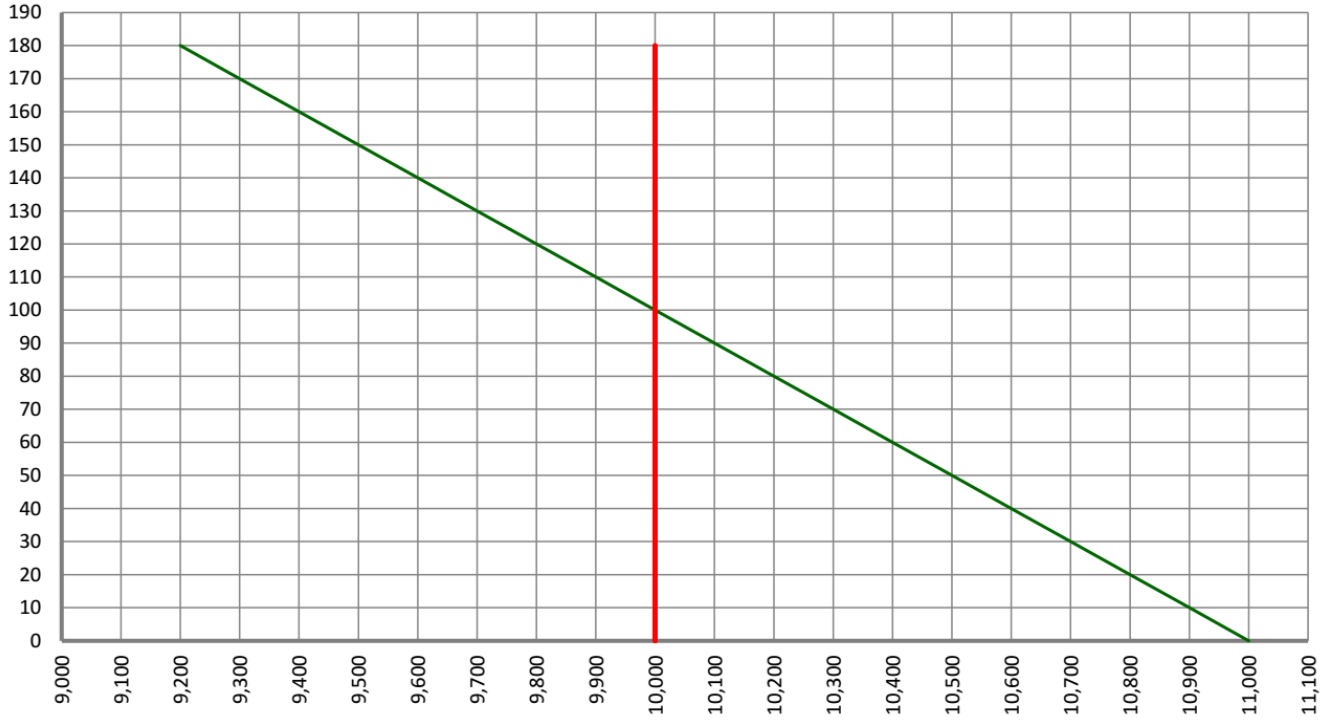
Problem 1. Wages and prices are fully flexible. $MPC = 0.75$, $EX - IM = 0$, $G = 1000$.

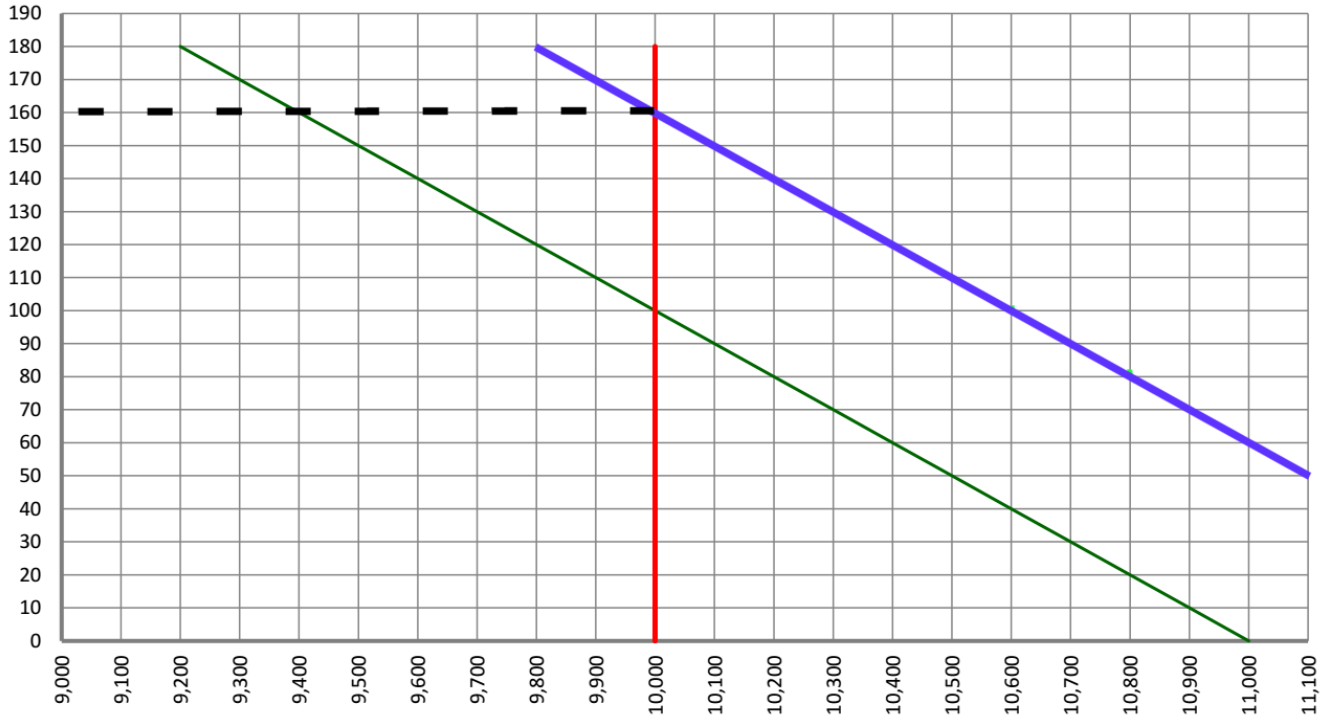


Find private spending.

Answer 1. Private spending is $C + I$. Since $Y = 10000$ and $G = 1000$, it follows that $C + I = 9000$.

Problem 2. The government increases its purchase of goods and services by 150 units and borrows from the public to pay for it. The long-run effect of this policy on the real GDP and the general price level will be...?

Answer 2. $MPC = 0.75$ so the multiplier is 4. Therefore increasing G by 150 shifts AD by $150 \times 4 = 600$. In the long run, real GDP is still 10000 but the price level jumps up to 160.

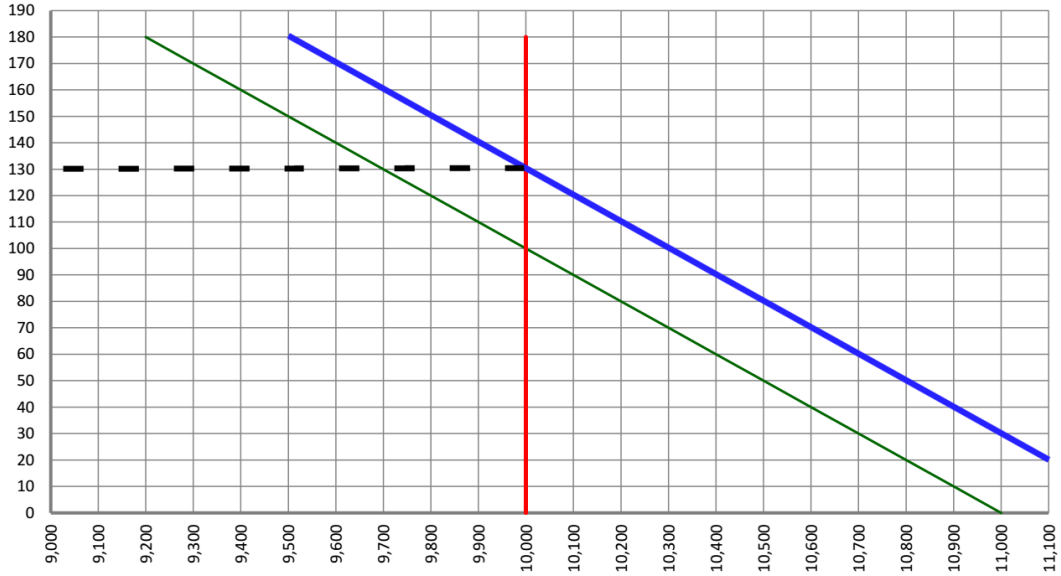


Problem 3. The government increases its purchase of goods and services by 150 units and borrows from the public to pay for it. As a long-run result of this policy, the private spending $(C + I)$ will change to _____ units.

Answer 3. Private spending used to be 9000. When the government borrows and increases their spending by 150, private spending falls by the same amount, that is, by 150 to 8850. This is called *complete* or *dollar-for-dollar* crowding out.

Problem 4. The government conducts a balanced-budget increase in its purchase of goods and services equal to 300 units. The long-run effect of this policy on the real GDP and the general price level will be...?

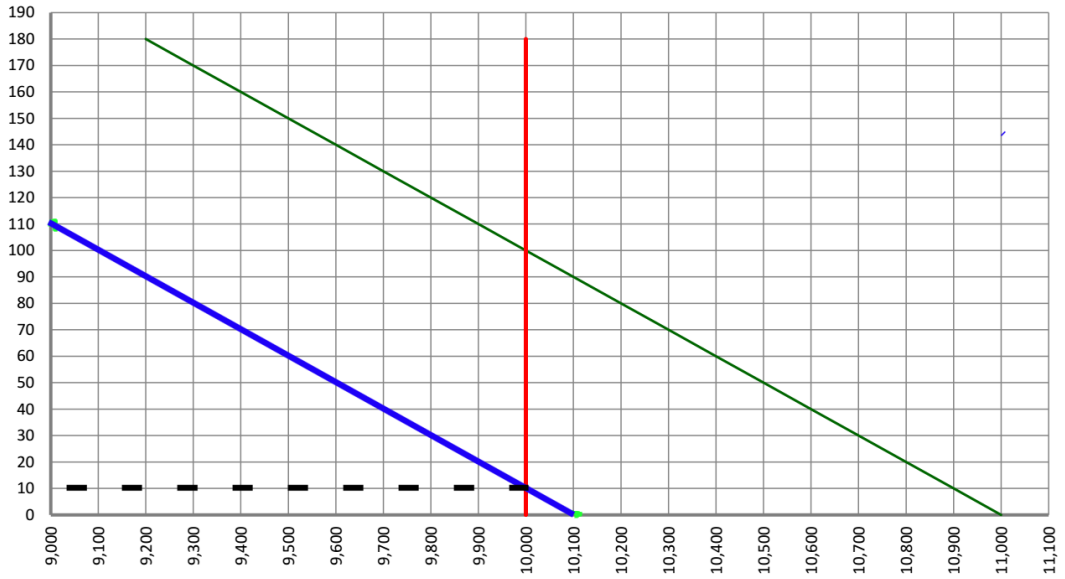
Answer 4. "A balanced-budget increase" means that the increase in government spending is funded by increasing taxes by the exact same amount. From the previous homework (and in more detail, my own practice problems), the observation is that Y would ultimately increase only by the increase in G. So in this case, we'll just shift the AD curve by 300 units.



So Y is still at 10000 but the price level jumps up to 130.

Problem 5. Business firms become pessimistic about the future state of the economy and, therefore, reduce their investment spending by 225 units. The long-run effect of this event on the real GDP and the general price level will be...?

Answer 5. AD will to the left by $-225 \times 4 = -900$. Therefore output is still 10000 but now the price level is 10.



Problem 6. To fight the ongoing inflation, the central bank reduces the supply of money by 30%. The long-run effect of this policy on the real GDP and the general price level will be...?

Answer 6. In the long-run, money is **neutral**, meaning that real variables are unaffected by changes in money. Therefore output will still be 10000.

To figure out what happens to the price level, we need to use the **equation of exchange**, $MV = PY$. In words, this equation says "the quantity of money in circulation times the velocity at which it circulates equals nominal GDP." We will assume that velocity is constant. And since we know that Y is also unchanged in the long run, we can see that P and M must move in the same direction and in exact proportion.

$$\overset{\downarrow 30\%}{M}\,\overline{V} = \overset{\downarrow 30\%}{P}\,\overline{Y}$$

So a reduction in the money supply of 30% will decrease the price level by 30% in the long run. So the price level will drop to from 100 to 70.

Problem 7. The government conducts a balanced-budget increase in its transfer payments equal to 300 units. The long-run effect of this policy on the real GDP and the general price level will be...?

Answer 7. This is similar to a problem from the last homework. Because $Y_d = Y - TX + TR$, changing TX and TR by the same amount has no effect on Y_d, and therefore no effect on C, and therefore no effect on Y. So AD doesn't shift. Nothing changes. Output is still 10000 and the price level is still 100. Woo.

Problem 8. *True or False.* If the government increases its spending (G + TR) through monetizing the debt, the national debt will increase.

Answer 8: False. The government is creating money out of thin air in order to pay for its spending, so national debt is unaffected. But keep in mind that there's still a deficit—that's why they needed to print the new money in the first place.

Problem 9. If the government increases its spending without raising an equal amount of tax, money supply will necessarily increase.

Answer 9: False. They might be starting from a surplus, in which case they'd be able to fund their new spending without having to do anything else. This wouldn't affect the money supply one way or the other. More generally, the book says

> Contrary to some popular beliefs, an expansionary fiscal policy does not in general increase money supply. Whether the government raises taxes to pay for its expenditures or borrows money, some money moves from some peoples pockets in the economy into some other peoples pockets leaving the total amount of money in the economy unchanged.

Problem 10. Consider the following data on a government's budget for three years.

	2014	2015	2016
G	100	110	125
TR	20	30	50
TX	90	150	160

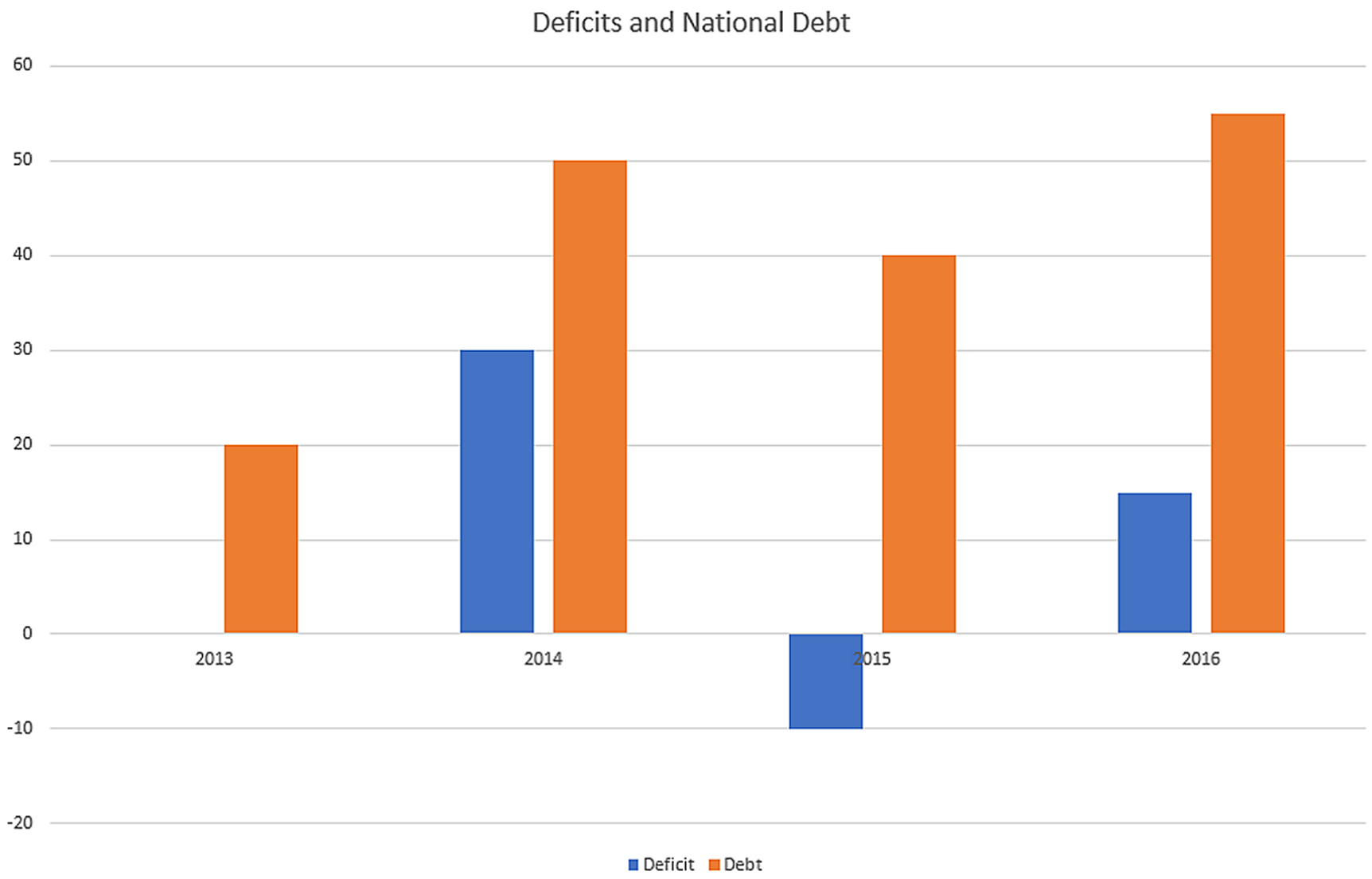
At the end of 2013 the total national debt was 20 units. The government uses its budget surpluses to pay off its debt. The national debt at the end of 2016 will equal _____.

Answer 10. Calculate the deficit for each year and then add them up.

	2014	2015	2016
G	100	110	125
TR	20	30	50
TX	90	150	160
Deficit	30	-10	15

So the national debt at the end of 2016 will be

$$20 + 30 - 10 + 15 = 55.$$


Deficits and National Debt
60
50
40
30
20
10
0
-10
-20
2013
2014
2015
2016
Deficit
Debt