

## Measuring the Nation's Income

**Answer 1: d.** In an economy, expenditure equals income. This is intuitive if you think about it a bit—Person A gets income when Person B buys something (expenditure) from Person A. This idea is also captured by the flow of money, which you can see in the circular flow model. GDP measures the output of an economy and, usually, more output means a higher standard of living via more stuff to consume.

**Answer 2: d.** Before you used to cook a pizza yourself. The cooking of the pizza constitutes household production and thus did not contribute to GDP. But now you're essentially paying a restaurant to cook a pizza for you. The ingredients are all the same, so what you're really paying for is the value they add to the pizza by having cooked it for you—that is their contribution to GDP.

**Answer 3: c.** The only case here where gasoline is being used by a consumer is option (c). The other two are intermediate goods since the gas is being used to make some other product or service.

**Answer 4: c.** Option (a) is wrong because the car was produced in a year prior to 2015. Option (b) is wrong because the money was not earned within U.S. borders. Option (c) is correct because renting the apartment counts as a service, and now \$100 more is being put to rent than was before.

**Answer 5: b.** Option (a) is investment. Option (c) is also investment. Households are the agents who consume, so it is implied that the gas is being used by consumers in (b).

**Answer 6: d.** Social security payments are an example of a transfer payment. When people are younger and working, the government takes some of their income and stashes it away. When people get old and retire, the government gives back some of that money, supposedly (but not actually) proportional to what they paid when they were younger.

**Answer 7: a.** Since the U.S. is importing the olive oil from another country, it counts as an import. Go figure. And since consumers are using the stuff, it counts as, um, consumption. Go figure. The import aspect will have a negative impact on GDP, whereas the consumption aspect will have a positive impact on GDP; overall there will be no change in GDP.

**Answer 8: b.** Real GDP is calculated by using one year's quantities and a *base year's* prices. Nominal GDP is always calculated by using one year's quantities and *that year's* prices.

**Answer 9.** We first want to find what RGDP was in 2010:

$$Deflator_{2010} = \frac{115}{RGDP_{2010}} \times 100 = 85 \implies RGDP_{2010} \approx 135.$$

Okay, since real GDP is higher in 2010, we can conclude that real output rose. What about the price level? Recall that RGDP in 2010 can be written as 2010 quantities times 2010 prices; and nominal GDP is 2010 quantities times 2010 prices. So we can write

$$Deflator_{2010} = \frac{P_{2010} \times Q_{2010}}{P_{2009} \times Q_{2010}} \times 100 = \frac{P_{2010}}{P_{2009}} \times 100 = 85 \implies \frac{P_{2010}}{P_{2009}} = 0.85.$$

This implies that  $P_{2010} < P_{2009}$ , so we can conclude that the price level fell.

## Measuring the Cost of Living

**Answer 10: a.** The purpose of CPI is that it's supposed to reflect the actual buying habits of people. Thus if people buy more books than magazines, the CPI measurement will put a greater emphasis on books.

**Answer 11: b.** The base year will *always* have a CPI of 100 because the basket of goods is the same and the base year's prices are, um, the same as the base year's prices. So when you divide the two out and divide by 100, you get 100.

**Answer 12: c.** We are essentially told that things cost  $336.96/108.00 = 3.12$  times as much today as they did in 1942. So if you needed \$10 to buy a crate of delicious Swedish Fish in 1942, you'd need \$31.20 to buy a crate of delicious Swedish Fish today.

**Answer 13: a.** To compare the two salaries, we want to convert them into a similar purchasing power dollar unit. To do so, choose either one of the cities to use as the "base" price index. I'll arbitrarily choose Phoenix, making the base CPI equal to 70. Then remember the CPI conversion formula: divide out its own CPI; and multiply by the base CPI:

$$\text{Phoenix: } \$150,000 \times \frac{70}{70} \quad \text{and} \quad \text{Cleveland: } \$90,000 \times \frac{70}{42},$$

both of which are \$150,000. So after accounting for price differences in the two cities by using the CPI, option (a) satisfies equality of purchasing power.

**Answer 14: a.** The Fisher Equation says that the real interest rate is equal to the nominal interest rate minus the inflation rate. In the maths,

$$r = i - \pi \implies 7 = 4 - \pi \implies \pi = -3.$$

**Answer 15: d.** His savings account increases to

$$\$1000 \times 1.05 = \$1050.$$

However the real interest rate is  $5 - 1.7 = 3.3$ , so his purchasing power increases to

$$\$1000 \times 1.033 = \$1033.$$