**SOLUTIONS TO TEXT PROBLEMS:**

**Quick Quizzes**

1. The consumer price index measures the overall cost of the goods and services bought by a typical consumer. It is constructed by surveying consumers to determine a basket of goods and services that the typical consumer buys. Prices of these goods and services are used to compute the cost of the basket at different times, and a base year is chosen. To compute the index, we divide the cost of the market basket in the current year by the cost of the market basket in the base year and multiply by 100.

The CPI is an imperfect measure of the cost of living because of (1) substitution bias, (2) the introduction of new goods, and (3) unmeasured quality changes.

2. Since Henry Ford paid his workers $5 a day in 1914 and the consumer price index was 10 in 1914 and 237 in 2015, then the Ford paycheck was worth $5 × 237 / 10 = $118.50 a day in 2015 dollars.

**Chapter Quick Quiz**

1. c

2. b

3. d

4. a

5. d

6. d

**Questions for Review**

1. A 10% increase in the price of chicken has a greater effect on the CPI than a 10% increase in the price of caviar because chicken is a bigger part of the average consumer's market basket.

2. The three problems in the CPI as a measure of the cost of living are: (1) substitution bias, which arises because people substitute toward goods that have become relatively less expensive; (2) the introduction of new goods, which are not reflected quickly in the CPI; and (3) unmeasured quality change.

3. If the price of imported French wine rises, there is little effect on the CPI, because alcoholic beverages account for only 1 percent of the CPI's basket. But the GDP price index is not affected at all, because imported French wine is not produced domestically so it is not included in GDP.

4. Because the overall price level doubled, but the price of the candy bar rose sixfold, the real price (the price adjusted for inflation) of the candy bar tripled.

5. The nominal interest rate is the rate of interest paid on a loan in dollar terms. The real interest rate is the rate of interest corrected for inflation. The real interest rate is the nominal interest rate minus the rate of inflation.

**Problems and Applications**

1. Answers will vary. Students should multiply $100 by the CPI for the year in which they were born and then divide by 100.

2. a. Find the price of one unit of each good in each year:

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Cauliflower** | **Broccoli** | **Carrots** |
| 2016 | $2 | $1.50 | $0.10 |
| 2017 | $3 | $1.50 | $0.20 |

b. If 2016 is the base year, the market basket used to compute the CPI is 100 heads of cauliflower, 50 bunches of broccoli, and 500 carrots. We must now calculate the cost of the market basket in each year:

2016: (100 × $2) + (50 × $1.50) + (500 × $0.10) = $325

2017: (100 × $3) + (50 × $1.50) + (500 × $0.20) = $475

Then, using 2016 as the base year, we can compute the CPI in each year:

2016: $325/$325 × 100 = 100

2017: $475/$325 × 100 = 146

c. We can use the CPI to compute the inflation rate for 2017:

(146 – 100)/100 × 100 = 46%

3. a. The percentage change in the price of tennis balls is ($2 – $2)/$2 × 100 = 0%.

The percentage change in the price of golf balls is ($6 – $4)/$4 × 100 = 50%.

The percentage change in the price of Gatorade is ($2 – $1)/$1 × 100 = 100%.

b. The cost of the market basket in 2017 is (100 x $2) + (100 x $4) + (200 x $1) = $800.

The cost of the market basket in 2018 is (100 x $2) + (100 x $6) + (200 x $2) = $1,200.

Using 2017 as the base year, we can compute the CPI in each year:

2017 = ($800/$800) x 100 = 100

2018 = ($1,200/$800) x 100 = 150

We can use the CPI values to compute the percentage change in the overall price level:

(150-100)/100 x 100 = 50%.

c. This would lower my estimation of the inflation rate because the value of a bottle of Gatorade is now greater than before. The comparison should be made on a per-ounce basis.

d. More flavors enhance consumers’ well-being. Thus, this would be considered a change in quality and would also lower my estimate of the inflation rate.

4. Answers will vary.

5. a. The cost of the market basket in 2017 is (1 × $40) + (3 × $10) = $70.

The cost of the market basket in 2018 is (1 × $60) + (3 × $12) = $96.

Using 2017 as the base year, we can compute the CPI in each year:

2017: $70/$70 × 100 = 100

2018: $96/$70 × 100 = 137.14

We can use the CPI to compute the inflation rate for 2018:

(137.14 – 100)/100 × 100 = 37.14%

b. Nominal GDP for 2017 = (10 × $40) + (30 × $10) = $400 + $300 = $700.

Nominal GDP for 2018 = (12 × $60) + (50 × $12) = $720 + $600 = $1,320.

Real GDP for 2017 = (10 × $40) + (30 × $10) = $400 + $300 = $700.

Real GDP for 2018 = (12 × $40) + (50 × $10) = $480 + $500 = $980.

The GDP deflator for 2017 = ($700/$700) × 100 = 100.

The GDP deflator for 2018 = ($1,320/$980) × 100 = 134.69.

The rate of inflation for 2018 = (134.69 – 100)/100 × 100 = 34.69%.

c. No, it is not the same. The rate of inflation calculated by the CPI holds the basket of goods and services constant, while the GDP deflator allows it to change and holds the prices constant.

6. a. introduction of new goods; b. unmeasured quality change; c. substitution bias; d. unmeasured quality change; e. substitution bias

7. a. ($2.11 – $0.88)/$0.88 × 100 = 140%.

b. ($19.64 – $7.58)/$7.58 × 100 = 159%.

c. In 1980: $0.88/($7.58/60) = 7.0 minutes. In 2015: $2.11/($19.64/60) = 4.7 minutes.

d. Workers' purchasing power in terms of eggs rose.

8. a. If the elderly consume the same market basket as other people, Social Security would provide the elderly with an improvement in their standard of living each year because the CPI overstates inflation and Social Security payments are tied to the CPI.

b. Because the elderly consume more health care than younger people do, and because health care costs have risen faster than overall inflation, it is possible that the elderly are worse off. To investigate this, you would need to put together a market basket for the elderly, which would have a higher weight on health care. You would then compare the rise in the cost of the "elderly" basket with that of the general basket for CPI.

9. a. When inflation is higher than was expected, the real interest rate is lower than expected. For example, suppose the market equilibrium has an expected real interest rate of 3% and people expect inflation to be 4%, so the nominal interest rate is 7%. If inflation turns out to be 5%, the real interest rate is 7% minus 5% equals 2%, which is less than the 3% that was expected.

b. Because the real interest rate is lower than was expected, the lender loses and the borrower gains. The borrower is repaying the loan with dollars that are worth less than was expected.

c. Homeowners in the 1970s who had fixed-rate mortgages from the 1960s benefited from the unexpected inflation, while the banks that made the mortgage loans were harmed.