

## Section 4E: Homework Solutions

Do the following make sense?

**10.** Does the following make sense?

My share of the federal government's annual interest payments on the federal debt is greater than the payments I make on my car and credit card combined.

**Solution:**

This makes sense, and it is in fact true for the majority of people.

□

**16.** Suppose your after-tax income is \$28,000. Your annual expenses are \$8000 for rent, \$4500 for food and household expenses, \$1600 for interest on credit cards, and \$10,400 for entertainment, travel and other.

a) Do you have a surplus or deficit?

**Solution:**

The total of your outlays is

$$8000 + 4500 + 1600 + 10400 = 24500$$

which is less than your income of 28000, so you have a surplus.

□

b) Next year, you expect to get a 2% raise, but plan to keep your expenses unchanged. Will you be able to pay off \$5200 in credit card debt?

**Solution:**

Your outlays for next year will be  $24500 + 5200 = 29700$  while your income is expected to be  $1.02 \cdot 28000 = 28560$ , which is not enough to pay all the debt off.

□

c) As in part b, assume you get a 2% raise for next year. If you can limit your expenses to a 1% increase, could you afford \$3500 for a wedding and honeymoon without going into debt?

**Solution:**

Your total outlays will be  $1.01 \cdot (8000 + 4500 + 1600 + 10400) + 3500 = 28245$ . This is \$315 less than your projected income of \$28560. so you can barely afford the money for you wedding and honeymoon.

□

**18.** Suppose the government decided to pay off the \$7 trillion debt with a one-time charge distributed equally among all families. Assuming there are 100 million families in the United States , how much would each family be charged?

**Solution:**

The amount would be

$$\frac{7 \cdot 10^{12}}{100 \cdot 10^6} = \frac{7 \cdot 10^{12}}{10^8} = 7 \cdot 10^5$$

So each family would receive \$70,000.

□

From the data in the text find the following

**26.** How much was spent on Social Security?

**Solution:**

Social Security accounted for  $.22 \cdot 2011$ billion = \$422 billion in total outlays.

□

**27.** How much was spent on Medicare?

**Solution:**

Medicare accounted for  $.12 \cdot 2011$ billion = \$221 billion in total outlays.

□

**34.** Suppose you begin covering the group with \$1 bills, how much total area could you cover? Compare this area to the total land area of the United States, which is about 10 million square kilometers.

**Solution:**

A single dollar bill is 15.4(cm) by 6.5(cm) and thus has a total area of about  $100 (cm)^2$ . If we paved the ground with \$7 trillion in dollar bills the total area would be  $7 \times 10^{14}(cm)^2$  which is about 0.7% of the United states or one forth of the size of Colorado.

□

**41.** Imagine that, though some political or economic miracle, the gross debt stopped rising. To retire the gross debt, the government decided to have a national lottery. Suppose that every U.S. citizen bought a \$1 lottery ticket every week, thereby generating about \$300 million in weekly lottery revenue. Because lotteries typically use half their revenue for prizes and lottey operations, half the \$300 million would go to reduction of the debt. How long would it take to retire the debt through this lottery?

**Solution:**

$$\frac{\$7 \cdot 10^{12}}{\$150 \cdot 10^6 \text{ per week}} = 46,667 \text{ weeks}$$

□