

Applications

A nation's strength lies in the well-being of its people. The Social Security program plays an important part in providing for families, children, and older persons in the time of stress.

President John F. Kennedy

1. How can the quote be interpreted in the context of what you have learned?

2. The table on the right gives a historical look at Social Security tax before there was a separate Medicare tax. Find the maximum you could pay into Social Security for each year.

Year	Social Security (%)	Maximum Taxable Income (\$)	Maximum You Could Pay Into Social Security
1978	6.05%	17,700	a.
1980	6.13%	25,900	b.
1982	6.7%	32,400	c.
1984	6.7%	37,800	d.
1986	7.15%	42,000	e.
1988	7.51%	45,000	f.
1990	7.65%	51,300	g.

3. In 1990, Jerry's gross pay was \$78,000.

- What was his monthly gross pay?
- In what month did Jerry hit the maximum taxable Social Security income?
- How much Social Security tax did Jerry pay in January?
- How much Social Security tax did Jerry pay in December?

4. In 1978, Dawn earned \$48,000.

- What was her monthly gross pay?
- In what month did Dawn reach the maximum taxable Social Security income?
- How much Social Security tax did Dawn pay in February?
- How much Social Security tax did Dawn pay in May?
- How much Social Security tax did Dawn pay in November?

5. In 1991, Social Security and Medicare taxes were itemized separately on paycheck stubs and tax forms for the first time. The table on the right gives a historical look at Social Security and Medicare taxes.

- Find the maximum a person could contribute to Social Security and Medicare in 1993.
- If $f(x)$ represents the Social Security tax, and x represents the income, express the 2002 Social Security tax as a piecewise function.

Year	Social Security (%)	Maximum Taxable Income for Social Security (\$)	Medicare (%)	Maximum Taxable Income for Medicare (\$)
1991	6.2%	53,400	1.45%	125,000
1992	6.2%	55,500	1.45%	130,200
1993	6.2%	57,600	1.45%	135,000
1994	6.2%	60,600	1.45%	All income
1995	6.2%	61,200	1.45%	All income
1996	6.2%	62,700	1.45%	All income
1997	6.2%	65,400	1.45%	All income
1998	6.2%	68,400	1.45%	All income
1999	6.2%	72,600	1.45%	All income
2000	6.2%	76,200	1.45%	All income
2001	6.2%	80,400	1.45%	All income
2002	6.2%	84,900	1.45%	All income
2003	6.2%	87,900	1.45%	All income
2004	6.2%	87,900	1.45%	All income
2005	6.2%	90,000	1.45%	All income
2006	6.2%	94,200	1.45%	All income
2007	6.2%	97,500	1.45%	All income
2008	6.2%	102,000	1.45%	All income
2009	6.2%	106,800	1.45%	All income

For Exercises 6–10, use the table on the previous page that provides a historical look at Social Security and Medicare.

6. Express the 1993 Social Security tax function as a piecewise function $t(x)$, where x is the annual income. Graph the function. What are the coordinates of the cusps on the graph?
7. Graph the Social Security tax function for 1992. What are the coordinates of the cusp? On the same axes, graph the Medicare function.
8. In 2007, Jessica earned p dollars, where $p > 100,000$. Express the amount her employer contributed to her Social Security tax in February algebraically.
9. In 1995, Eve earned d dollars, where $d < 50,000$. Express the amount she paid to Social Security and Medicare as a function of d .
10. Keesha earned x dollars per month in 2006, where $x < \$5,600$.
 - a. Did she earn more or less than the maximum taxable income for 2006?
 - b. Express her Social Security tax for the year algebraically.
 - c. Express her Medicare tax for the year algebraically.
11. Explain why the slope of the Social Security function, before it becomes horizontal, cannot equal 1.
12. A politician is considering removing the maximum taxable income and having all income subject to Social Security tax. Why might this be unfair to very affluent people?
13. Find the Social Security and Medicare tax rates for the current year. Also find the maximum taxable income for the Social Security tax. Use the information to graph this year's Social Security tax function.
14. A politician is listening to a proposal for a new Social Security tax plan. The graph is shown. The two parts of the graph are disconnected where $x = 100,000$. Explain why this would be an unfair Social Security tax function.
15. In a year when the maximum income for Social Security was \$106,800, Bart worked at two jobs. In one job he earned \$99,112. In his second job, he earned \$56,222. Both of his employers took out Social Security tax. As a result, Bart had paid excess Social Security tax, and the government must return some of it to him. How much does the government owe him for excess Social Security paid?
16. An All-Star baseball player earning \$25,000,000 per year plays 162 games per year. If you divide the salary by the number of games, does that baseball player reach this year's maximum taxable income in the first game of the year?

