

(A)

MSL SAMPLE ITEMS

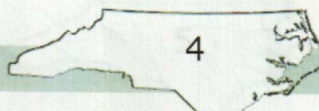
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The function below determines the amount of yearly tax a person must pay, which is based on the amount of money they earn each year.

$$t(x) = \begin{cases} 0.10x & , 0 \leq x < 12,750 \\ 0.07(x - 12,750) + 765 & , 12,750 \leq x < 60,000 \\ 0.0775(x - 60,000) + 4,072.50 & , x \geq 60,000 \end{cases}$$

- Describe the domain and range of the tax function in context.
- Identify the domain and range of $t(x)$.
- Based on the function provided, explain how the amount of tax owed changes if your earnings increase from \$10,000 to \$50,000.

4. If the tax payer has an earnings between 0 and \$12,750, he uses the function of $0.10x$ to find the amount of taxes owed. The domain of $0 \leq x < 12,750$ represents this on the graph.
- If the tax payer has an earnings between $12,750 \leq x < 60,000$, the function $0.07(x - 12,750) + 765$ represents the function. The domain $12,750 \leq x < 60,000$ is shown on the graph.
 - If the tax payer has an earnings $x \geq 60,000$, he has to use the function $0.0775(x - 60,000) + 4,072.50$ to find the taxes to pay. $x \geq 60,000$ represents the graph.
 - The Range can go on positively forever, as the income increases.



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b. Domain = $(0, \infty)$
 Range = $(0, \infty)$

c. i) $0 \leq 10000 < 12750$ ✓

$y = .10(10000)$

$y = \$1,000$ in taxes

ii) $12750 \leq 50000 < 60000$ ✓

~~$y = 0.07(10)$~~

$y = 0.07(50000 - 12750) + 765$

$y = 3372.5$