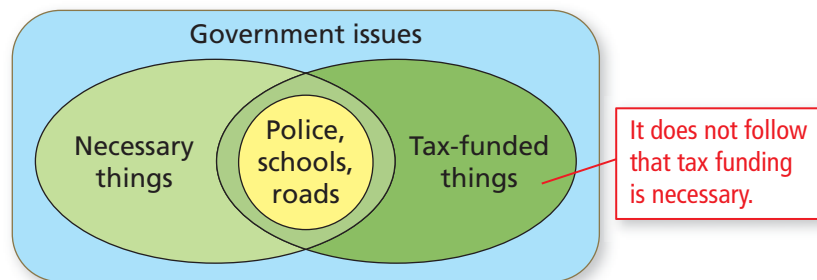## Fallacies and Set Diagrams

A set diagram can be helpful in determining whether an argument is valid or invalid. Here is an example using a written argument.

> Taxes fund necessary services such as police, schools, and roads. Therefore, taxation is necessary.

First, outline the argument.

- Premise: Police, schools, and roads are necessary.
- Premise: Taxes fund police, schools, and roads.
- Conclusion: Therefore, taxes are necessary. ☹

Then, organize the argument with a set diagram.

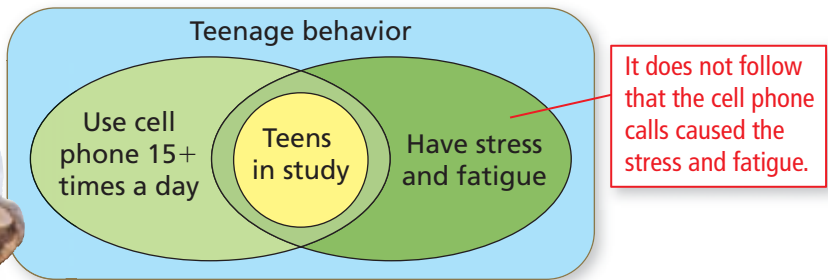It does not follow that tax funding is necessary.

EXAMPLE 3   Drawing a Set Diagram

Use a set diagram to analyze the conclusion of the study.

> Teenagers who use a cell phone (for talking and texting) more than 15 times a day are more prone to disrupted sleep, restlessness, stress, and fatigue.
>
> Summarized from "Does Excessive Mobile Phone Use Affect Sleep in Teenagers?," Gaby Badre, MD, PhD

SOLUTION

Here is one way to analyze the conclusion of the study.

It does not follow that the cell phone calls caused the stress and fatigue.

✓ **Checkpoint**   Help at *Math*.and**Y⊙U**.com

Use a set diagram to analyze the conclusion of the argument.

> Our society is filled with violence, and there is a lot of violence on TV. It follows that the violence in society is caused by people watching TV.