1A.2: Student Reading: Problem A—Media Selection

In preparation for setting up a linear programming problem, students read about a youth media group and its efforts to promote public awareness for an upcoming event.

1. Have students read the problem.
Distribute **Handout 2: Problem A—Media Selection**.

Tell students that they will learn how to develop and apply a mathematical model to a real-world problem. Explain that the problem is about which types of media a group might choose to promote an event.

Tell students that they will revisit the information in Handout 2 throughout the unit as they learn about linear programming. Explain that linear programming is a problem-solving approach guided by the question, "How can you obtain the *best* solution?"

Give students time to read the problem on Handout 2.

> **Note:** You can read the problem together as a whole class or have students read it silently on their own.

2. Conduct a class discussion about the problem.
Ask students:

- What is the goal, or objective, of the Wide Angle Youth Media promotion committee?

  Answer: *To reach as many potential audience members for the festival as possible while staying within the given budget.*

Write the objective and display it for students, along with the list below:

- Newspapers
- Television
- Magazines
- Radio
- Cell phones
- Internet and the web, including email, web browsing, PC gaming
- Posters and bulletin boards
- Postal mail

Tell students that these are *media vehicles* that could be used to promote the festival in order to reach the objective. Explain that a media vehicle is a medium that is used to disseminate information or to communicate a message to a target audience.

Ask students how they might measure *reach* for each media vehicle. Discuss ways to quantify the number of people who could potentially see an ad in each medium.

Tell students that other factors also need to be taken into consideration when actually measuring media reach. For example, factors such as the cost of an ad in a newspaper or the range of a radio signal place limits on a newspaper's or radio station's reach. Explain that these factors can be thought of as *constraints*.

Tell students that in this unit they will learn a problem-solving approach known as *linear programming*. Explain that in a linear programming problem you use linear functions to represent an objective (such as reaching a potential audience) and constraints (such as working with a limited number of media vehicles and a budget).

Point to the objective and ask students:

- Can you think of a way to write the objective using mathematical terms? What are the unknown quantities? What are you *trying to determine*?

Handout 2:
Problem A—Media Selection

Introduction to Wide Angle Youth Media

Wide Angle Youth Media is a non-profit organization in Baltimore, Maryland. It provides media tools and education in video and audio production so that students can communicate messages to their community. Students produce and showcase their own work.

Wide Angle Youth Media reaches audiences in communities around the United States through online channels such as *Facebook* and *YouTube* and through partnerships with other cultural organizations. However, the audience in the local community is small, mostly composed of people directly connected to the organization, such as family members, board members, and community advocates.

Wide Angle Youth Media has taken on the challenge of widening its audience to reach more members of the Baltimore community. The group created a new mission and developed a festival to address the mission.

The *"Who Are You?"* Youth Media Festival is an event framed around the theme of *identity*. The festival is a collaboration among Wide Angle Youth Media and other nonprofit groups that serve youth in Baltimore. It includes not only video and audio, but also photography, fine art, poetry, live performances, and a gallery exhibit.

Promoting the Festival

Wide Angle Youth Media wants to reach beyond its usual audience and involve community members in the festival. So Wide Angle Youth Media has set up a promotion committee and a budget. The committee's task is to reach as many people as possible during the three weeks prior to the festival. Wide Angle's executive director wants to use only two types of media to promote the event.

As part of the promotion committee, you will help Wide Angle Media create a plan that *optimizes reach*—that is, reaches as many potential audience members as possible while staying within the given budget.