

Classroom activity

Trash in the River

Group Members: _____

Date: _____

People in the community are concerned about the amount of trash in the river. Some of the trash can be recycled, and some of it can't. The community would like to reduce the amount of trash as much as possible. They have asked your school to help them figure out how much recyclable and non-recyclable trash is collected in a 5-day school week. They already know the average amount of trash that is collected from the river in a day.

In this project, you will use your data to decide if it's possible to reduce the amount of trash in the river each day. You will also suggest ways to reduce the amount of trash.



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What is the project about?

In this project, you will calculate the amount of trash that could be collected from a river that runs through a town in a 5-day period and decide if and how the amount of trash in the river could be reduced by:

- Using math and the given data to calculate how much of different kinds of trash could be collected in a 5-day period
- Analyzing the data to decide if the amount of trash in the river could be reduced
- Thinking about options for reducing the amount of trash in the river
- Recommending ways that trash in the river could be reduced
- Justifying your suggestions with reasons

What are the steps of the project?

Check (✓) each step as you complete it.

- ☐ Review the rubric. Set a goal for how you want to rate your work.
- ☐ Answer these background questions with your group or to yourself:
 - Where in your community do you find trash that has not been picked up?
 - Do you have a river in or close to your town, or have you ever been to a river?
 - How does leaving trash on the ground and in rivers hurt a community?
 - Do you have places where you can recycle trash in your community?

□ Now look at the details:

- The town has a river that runs through it.
- Every day, trash ends up in the river.
- There are data that show the average amount of trash collected in a day.
- The data show five different categories of trash.
- Plastic, paper, glass, and metal can be recycled.
- Some trash cannot be recycled.

You may find these materials useful as you complete the project:



project rubric

The Situation

The town has a river that runs through it. Each day, trash that is left on the ground ends up in the river. The table below shows the average amount of different kinds of trash that are collected from the river in a day.

Average Amount of Trash Collected from the River in One Day

Type of Trash	Amount (lb.)
Paper	119
Plastic	107
Metal	68
Glass	37
Non-Recyclable Trash	89

Analyze the Situation

Use your own paper to answer the questions. If you are working as a group, discuss the questions and agree upon an answer.

Use the information in the table to analyze the situation and determine the average amount of trash that could be collected in 5 days. These questions will also help you analyze the situation.

About how much of each kind of trash can be collected in 5 days? Could the amount of trash in the river be reduced? How?

1. What are the five different kinds of trash found in the river?

2. Write an equation you could use to find the expected amount of paper that could be collected in five days.

3. Write an equation you could use to find the expected amount of plastic that could be collected in five days.

4. Write an equation you could use to find the expected amount of metal that could be collected in five days.

5. Write an equation you could use to find the expected amount of glass that could be collected in five days.

6. Write an equation you could use to find the expected amount of non-recyclable trash that could be collected in five days.

The Questions

If you are working as a group, discuss the questions and agree upon an answer.

A. Make Conjecture: Can the amount of trash in the river be reduced? How?

B. About how many pounds of paper can be collected in 5 days? Make an area model to solve the equation you wrote for #2 above. Show your work.

C. About how many pounds of plastic can be collected in 5 days? Make an area model to solve the equation you wrote for #3 above. Show your work.

D. About how many pounds of metal can be collected in 5 days? Make an area model to solve the equation you wrote for #4 above. Show your work.

E. About how many pounds of glass can be collected in 5 days? Make an area model to solve the equation you wrote for #5 above. Show your work.

F. About how many pounds of non-recyclable trash can be collected in 5 days? Make an area model to solve the equation you wrote for #6 above. Show your work.

G. Choose one of the types of trash and explain how you used the area model and the Distributive Property to find the amount that could be collected in 5 days.

H. **Justify Your Reasoning:** Why do you think it is reasonable to try to reduce the amount of trash in the river? What methods do you think will work and why?

- I. What are the pros and cons for the town of reducing the amount of trash in the river?

- J. How would reducing the amount of trash in the river impact the health of the ecosystem?
