Student Activity

Name _____

Date _____

Reforestation

🎯 **Focus: Multiply fractions and decimals to find the cost of planting seedlings.**

The Problem: How much will it cost to reforest 10 square miles of forest?

Mr. Miller is looking for a company to reforest his lands. Your company is preparing a bid for him. He currently owns 10 square miles of forest land that have about 240 trees per acre. Requirements for reforestation state that there will be 435 trees per acre 5 years after reforestation has occurred. He wants to know how many seedlings you will plant, how many seedlings should be alive at the end of 1 year, 3 years, and 5 years, and how much the planting will cost.

The Facts

- In most reforestation projects, $\frac{3}{4}$ of the seedlings planted are still growing at the end on 1 year, $\frac{2}{3}$ of the seedlings are still growing at the end of three years, and $\frac{3}{5}$ of the seedlings are still growing at the end of 5 years.

- After planting, seedling density is usually 3 to 4 trees per square rod.

- 1 square mile = 160 square rods

- 1 seedling = 25¢

- Cost to plant 1 seedling = 13¢

Modified from Reforestation, from A World of Mathematics: Activities for Grades 4, 5, 6 using the TI-15

Reforestation: Multiplying Fractions and Decimals

The Task

1. Your team will create a visual display showing the following information:

   • The number of trees currently on Mr. Miller's ten acres

   • The number of seedlings to be planted

   • The estimated number of seedlings alive after 1 year, 3 years, and 5 years

   • The cost of the seedlings to be planted

   • The cost of planting the seedlings

   • The total cost of reforestation

2. Each person on the team will write an explanation of the team's solution. This explanation will answer these questions:

   • *What steps did your group follow to compute the numbers? Did the steps give a reasonable answer? How do you know?*

   • *How did your group decide on your solution? How do you know your solution makes sense?*

   • *How did your group use the calculator? How did using the calculator help your group solve the problem?*

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Things to Consider

Understanding the Problem

Read the Reforestation problem page, and then answer these questions.

- *How many acres are in one square mile? If Mr. Miller has 240 trees per acre, how many trees does he have in one square mile? How do you know?*

- *If 100 seedlings are planted, how many will be alive after one year? Three years? Five years? How do you know?*

- *To make sure there are 435 trees on one acre after five years, how many seedlings need to be planted on that acre?*

Making a Plan

- *How many seedlings need to be planted per acre to have 435 trees per acre after five years?*

- *How many acres does Mr. Miller have?*

- *How many seedlings need to be planted in all?*

- *How much will these seedlings cost?*

3

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- *How much will it cost to plant those seedlings?*

- *What will be the total cost of reforestation?*

- *About how many seedlings will be alive after one year? Three years?*

Carrying Out the Plan

Before you begin planning your presentation, answer these questions.

- *What does your visual display need to show? Do you have all of the necessary information? What other calculation do you need to make?*

- *How will you display your information? If you are trying to convince Mr. Miller to select your group for the reforestation project, how can your display help convince him? What other information might be helpful?*

Evaluating the Solution

- *Did you answer the question on the Reforestation problem page? How do you know?*

- *Does your answer make sense? Did your group plant enough seedlings to meet the required number of trees at the end of five years? How do you know?*

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- *Does the calculated cost for reforestation make sense? Is the number of dollars less than the number of seedlings planted? (Remember: it costs less than $1.00 to plant a seedling.)*

- *Did everyone in the group wite an explanation?*

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Reforestation: Multiplying Fractions and Decimals

Using the Calculator
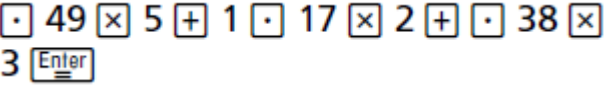
Multiplying Decimals

Use the TI-15 Explorer™ calculator to solve this problem:

1 Hildegarde's mother bought 3 cans of peaches at 89¢ a can. How much did the peaches cost?

Press	The display shows:
� · 89 ⊠ 3 ⌸Enter⌸	

Does the answer make sense? How do you know?

2 Stefan's mother bought 5 cans of green beans at 49¢ a can, 2 boxes of facial tissues at $1.17 each, and 3 candy bars at 38¢ each. How much did she spend?

Press	The display shows:
· 49 ⊠ 5 ⊞ 1 · 17 ⊠ 2 ⊞ · 38 ⊠ 3 ⌸Enter⌸	

Does the answer make sense? Does the calculator multiply or add first? How do you know? How could you use the parentheses to make the problem easier to read? Do the parentheses change the answer? How do you know?

3 Anna Maria is having a garage sale. She sold 27 paperback books at 5¢ each. How much did she make on the paperback books?

Press	The display shows:
⌐·⌐ 05 ⌐×⌐ 27 Enter	

Why do you need to enter a zero before the five? What would happen if you entered ⌐·⌐ 5 ⌐×⌐ 27 Enter ? How are the two answers alike? Which answer is more reasonable? How do you know?