Amplifying Instructional Task – Grade 6 Example

Original Task

Write one-variable, one-step equations and inequalities to represent constraints or conditions within problems. 6(9)(A)

Write an equation that can be used to solve the situation below:

Four friends ate at Mark's Café and paid a total of $32. If they divided the bill evenly among them, what is the value of *x*, the amount each person paid?

Amplified Tasks

Task A (Amplified Task):
Consider the following scenario:

> A group of friends ate at Mark's Café and paid a total of $75. When they divided the bill evenly among their group, each person paid $12.50. What is *x*, the number of people in the group of friends?

- Write another scenario that can be solved using the same equation that represents the given scenario.
- Trade papers with a partner.
- Write an equation that can be used to solve your partner's scenario. Solve the equation.
- Give your partner written feedback by completing the following statements:
    - Your scenario applies to a problem arising in everyday life, society, or the workplace because _____ .
    - In your context, the 75 matches _____ .
    - In your context, the 12.5 matches _____ .
    - In your context, the *x* matches _____ .
    - In the problem, you _____ 12.5 and *x* because _____ .
    - The solution for x is _____ and this is reasonable because _____ .
- Repeat this process with one other partner.

Task B (Scaffolded Task):
Consider the following scenario:

> A group of friends ate at Mark's Café and paid a total of $75. When they divided the bill evenly among their group, each person paid $12.50. What is *x*, the number of people in the group of friends?

- Write an equation that can be used to solve this scenario.
- Check the equation with your teacher.
- Choose a partner.
- Work with your partner to write another scenario that can be solved using the same equation as the given scenario.
- Trade papers with another group.
- Write an equation that can be used to solve this group's scenario. Solve the equation.
- Give the other group written feedback by completing the following statements:

- Your scenario applies to a problem arising in everyday life, society, or the workplace because _____ .
- In your context, the 75 matches _____ .
- In your context, the 12.5 matches _____ .
- In your context, the *x* matches _____ .
- In the problem, you _____ 12.5 and *x* because _____ .
- The solution for x is _____ and this is reasonable because _____ .

Task C (Scaffolded Task):

Consider the following scenario:

> A group of friends ate at Mark's Café and paid a total of $75. When they divided the bill evenly among their group, each person paid $12.50. What is *x*, the number of people in the group of friends?

- Choose a partner.
- Work with your partner to write another scenario that can be solved using the same equation as the given scenario.
- Check your work with your teacher.
- Trade papers with another group.
- Write an equation that can be used to solve this group's scenario. Solve the equation.
- Give the other group written feedback by completing the following statements:
  - Your scenario applies to a problem arising in everyday life, society, or the workplace because _____ .
  - In your context, the 75 matches _____ .
  - In your context, the 12.5 matches _____ .
  - In your context, the *x* matches _____ .
  - In the problem, you _____ 12.5 and *x* because _____ .
  - The solution for x is _____ and this is reasonable because _____ .

Task D (Enriched Task):

Write a story that meets the following criteria:

- Include at least three scenarios that can be solved using a one-step equation
- Two of the three scenarios can be solved using the same equation
- At least one of the equations should involve multiplication (either in writing or solving the equation).
- At least one of the equations should involve addition (either in writing or solving the equation).
- An answer key should be included that contains the equations and their solutions.

Amplifying Instructional Task – Grade 7 Example

Original Task

Represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form y = mx + b. 7(7)(A)

Mr. Mott recorded the number of plants in each row of the Children's Park garden as shown below.

Garden

Row	Number of Plants
1	8
2	12
3	16
4	20
r	*p*

Write an equation that could be used to determine *p*, the number of plants in the *r*th row of this garden.

Amplifying Instructional Task – Grade 7 Example

Amplified Task

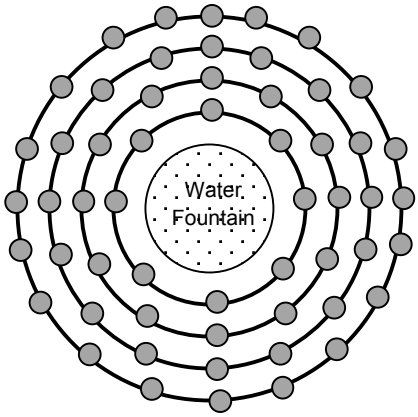
Materials to make available:

- Circular dot paper
- Garden Store Sales Ad
- Word bank
- Set of 3 circles – 2", 3", 4" radius (1 of each made of card stock/cardboard)
- Standard measurement tools
- Chart paper

Image Search:
Key words - images of circular gardens

Video:
Start Organic-How to Build a Circular, Raised Bed Garden Network – San Jose, Ca.
https://www.youtube.com/watch?v=00hl4aJVk8o

Task A (Amplified Task):
You are to construct a circular garden for the Children's Park. The center of the garden will feature a water fountain that has a diameter of 2 feet. The first row of plants will form a circle 6 inches from the base of the water fountain. Each row of plants must be 6 inches apart. The first four rows of the garden are illustrated below.



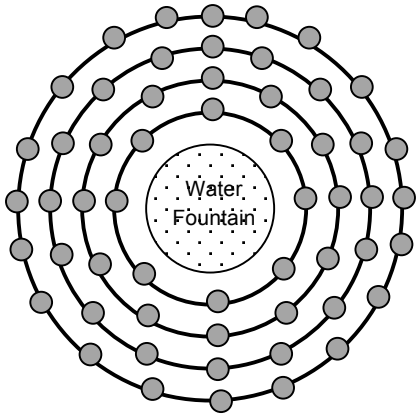
Represents 1 Potted Plant:

The installation of the water fountain will cost $156.90. Each plant is $13.69, and each bag of stones costs $35. These prices include labor and tax.

- What is the cost to create a garden that has 5 rows?
- What algebraic generalization can be made to determine the cost of the plants needed for the *n*th row of this garden?
- You will need to cover the area between each row of the garden with colored stones. If one bag of colored stones will cover an area of 16 square feet, about how many bags of colored stone will be needed for a garden that has 5 rows?
- Write a letter to the board of the Children's Park explaining the design of the garden and cost.

Amplifying Instructional Task – Grade 7 Example

Task B (Scaffolded Task):
You are to construct a circular garden for the Children's Park. The center of the garden will feature a water fountain.



Represents 1 Potted Plant: ●

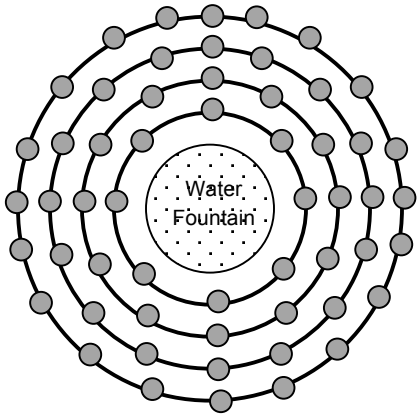
- How many plants will be needed for the 10^{th} row?
- What algebraic generalization can be made to determine the number of plants in the *n*th row of this garden?

Row Number	Number of Plants

- Write a letter to the grounds keeper of the Children's Park explaining how he could determine the number of plants needed for any row of the garden.

Amplifying Instructional Task – Grade 7 Example

Task C (Scaffolded Task):
You are to construct a circular garden for the Children's Park. The center of the garden will feature a water fountain.



Represents 1 Potted Plant: ●

- How many plants will be needed for the 10^{th} row?
- What algebraic generalization can be made to determine the number of plants in the *n*th row of this garden?
- Write a letter to the grounds keeper of the Children's Park explaining how he could determine the number of plants needed for any row of the garden.

Children's Park Grounds Keeper
1026 Avenue E
Houston, Texas 77070

Dear Mr. Johnson,
To find the number of plants in any row of the circular garden, you would

_____

_____

_____

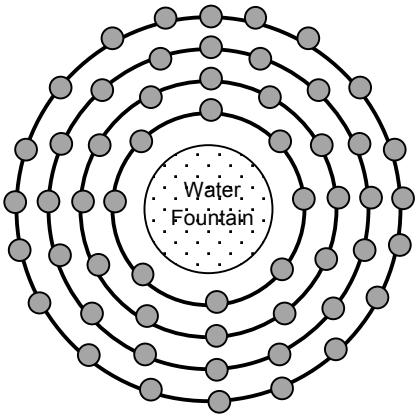
_____

Sincerely,

_____

Amplifying Instructional Task – Grade 7 Example

Task D (Enriched Task):
Mr. Mott created the following circular garden.



Represents 1 Potted Plant: ●

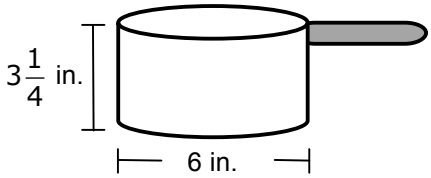
- Determine the relationship between the row number and the number of potted plants in Mr. Mott's garden.
- Create a garden using a different geometric design. The relationship between the rows and the number of potted plants should be linear when graphed.
- Use a garden center sales ad to determine a detailed estimate of the cost to create 5 rows of your design.

Amplifying Instructional Task – Grade 8 Example

Original Task

Solve problems involving volume of cylinders, cones, and spheres 8(7)(A)

A cylindrical pan and its dimensions are shown below.

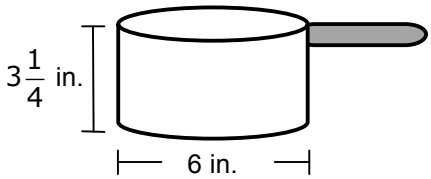


Write an equation that best represents the area of the base of this pan in square inches.

Amplified Tasks

Task A (Amplified Task):

Michele is cooking dinner using the pan shown below.

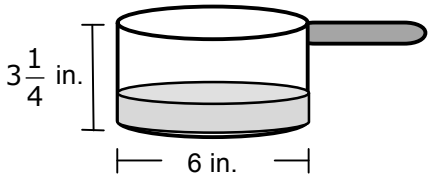


The water level is currently $1\frac{1}{4}$ inches from the bottom of the pan. If she needs to fill the pan to be $\frac{1}{2}$ full of water, how much additional water is needed?

- Outline 2 different plans for solving this problem.
- Use one of your plans to solve the problem.
- Write a paragraph to explain your process, including your reason for using the plan you chose.

Amplifying Instructional Task – Grade 8 Example

Task B (Scaffolded Task):
Michele is cooking dinner using the pan shown below.



The water level is currently $1\frac{1}{4}$ inches from the bottom of the pan. Michele wants to add water until the water level is $1\frac{5}{8}$ inches from the bottom of the pan. What volume of water must Michele add to the pan for this to be true?

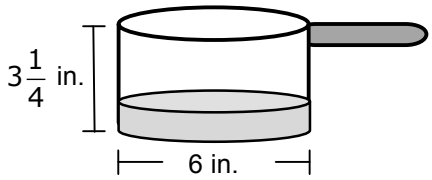
- Make a plan for solving this problem. Use the problem solving board below to help you organize your thoughts.
- Use your plan to solve the problem.
- Write a paragraph explaining the process you used to solve the problem to a friend in 7^{th} grade.

Problem Solving Board

1. What is known about the problem?	2. What is unknown about the problem?
3. Sketch a model that could be used to solve this problem.	
4. Use your model to solve the problem.	
5. How do you know the answer and process is reasonable?	

Amplifying Instructional Task – Grade 8 Example

Task C (Scaffolded Task):
Michele is cooking dinner using the pan shown below.



The water level is currently $1\frac{1}{4}$ inches from the bottom of the pan. If she needs to fill the pan to be $\frac{1}{2}$ full of water, how much additional water is needed?

- Make a plan for solving this problem.
- Use your plan to solve the problem.
- Talk to a partner about the process you used. Then write a paragraph explaining the process to a friend in 7^{th} grade. Use the word bank below to help you.

Word Bank		
first	height	multiply
then	radius	difference
last	diameter	square
volume	half	cylinder
	double	

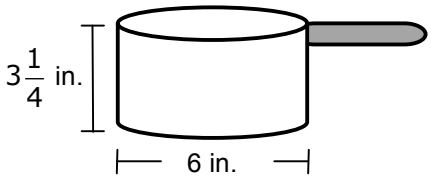
Amplifying Instructional Task – Grade 8 Example

Task D (Enriched Task):

Materials:

- Recipe books
- Computer with internet access

You are going to find (or create) a recipe that can be prepared using the cylindrical pan shown below.



- Select or create your recipe; turn in your recipe with your work.
- Explain how you know your recipe can be prepared in the pan shown.
- Double your recipe. Can you still use the pan? Explain.
- Give the dimensions of two different-sized pans (other than the one shown) that can be used when your recipe is doubled.
- Triple your recipe. Can you still use the pan? Explain.
- Give the dimensions of two different-sized pans (other than the one shown) that can be used when your recipe is tripled.