6-8 MATH
PERFORMANCE TASK
STUDENT INSTRUCTIONS

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TASK TITLE
Sorting Scenarios

INTRODUCTION
You will be asked to read scenarios that can be modeled by linear equations in one variable. You will sort these by identifying the type of solution set they each have. You will choose three and explain your thinking. You will then be asked to apply your understanding by creating a scenario and equation of you own.
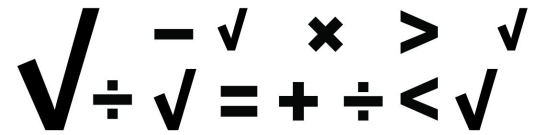
SCORING CRITERIA[1]

PERFORMANCE INDICATOR	BEGINNING	DEVELOPING	PROFICIENT	EXPANDING
#4 Functions & Algebraic Reasoning: B Create and solve equations and inequalities in mathematical and real world problems. (6.EE.5, 7, 8, 9; 7.EE.4)	Model a situation using a flawed equation/inequality and flawed process to solve the equation/inequality.	Create appropriate equations/inequalities to model situations and solve using a flawed process OR Create flawed equations/ inequalities to model situations and solve using an appropriate process.	Create appropriate equations/inequalities to model situations and use the equations /inequalities to find solution(s).	Justify and defend the equation/ inequality and its solution.
#2 Modeling: A Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation.	Identify elements in a real-world situation.	Identify elements in a situation, describe a relationship between them, and select a representation.	Create a mathematical model that accurately represents a relationship in a real world situation.	Justify and defend the model as an effective representation of a real world situation.

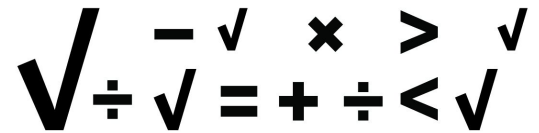| (MP4)				
Problem Solving and Critical Thinking: 5 Show flexibility and persist through frustrations; continue to revise a plan or process of approach in order to arrive at a viable solution.	**Identify** a strategy that could be used to overcome an obstacle in problem solving.	**Make an attempt** to reach a viable solution by applying a strategy.	**Make multiple attempts**, persisting as needed, to reach a viable solution by **applying and adjusting** varied strategies and approaches.	Make multiple **attempts**, if needed, until an effective solution is reached by **applying, evaluating** and **adjusting** strategies and approaches.

[1] Modifications were made to the Scoring Criteria after the task was administered. These modifications were based on those made to the Performance Indicator for Functions & Algebra and further discussion on the modeling process. For purposes of scoring, the team felt it was better to first consider the modeling component, thus the change in position of the indicators below.

PERFORMANCE INDICATOR	BEGINNING	DEVELOPING	PROFICIENT	EXPANDING
#2 Modeling: A Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation. (MP4)	Identify elements in a real world situation.	Identify elements in a real world situation, describe a relationship between them, and select a representation.	Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation.	Explain why the model is an effective representation of a real world situation.
#4 Functions & Algebraic Reasoning: B	Write expressions to represent mathematical and	Create equations and inequalities in mathematical and	Create and solve equations and inequalities in	Justify solutions for equations and inequalities in

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Create and solve equations and inequalities in mathematical and real world problems. **(6.EE.5-9; 7.EE.4)**	real world problems.	real world problems. OR Solve equations and inequalities in mathematical and real world problems.	mathematical and real world problems.	mathematical and real world problems.

STUDENT DIRECTIONS AND MATERIALS[2]

TASK DIRECTIONS

1. With a partner or group, use the Sorting Scenarios Card Sort Set to classify each of the scenarios as having One Solution, No Solution, or All Real Numbers. Individually record your responses on the Sorting Scenarios Classification Sheet. You may use the Sorting Scenarios Work Space to help you accomplish this part of the task.
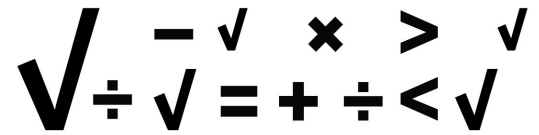
You will use the Sorting Scenarios Student Recording Sheet for the remainder of the task.

2. Reflect on the work you did in your group.
   a. What strategies did you use? How well did the strategies you used work? What adjustments did you have to make in your strategies?
   b. What role did you play in your group?
   c. What challenges did you encounter as an individual and/or a group? How did you overcome or work on those challenges?

3. On your own, choose one scenario from **each** of the three solution types. Explain how you know why each one belongs where you decided it goes. Each of your explanations must include setting up and solving an equation.

4. On your own, create your own scenario for **one** of the three solution types (One Solution, No Solution, or All Real Numbers).
   a. What is the situation/scenario? It must be different than the ones presented in the card sort.
   b. Create and solve the equation that represents the scenario.
   c. Identify the solution type for the equation/scenario you created and explain how you know.

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5. Reflect on the work you did as an individual.
    a. How did the work you completed with your group help you in creating and solving a scenario?
    b. What challenges did you encounter? How did you overcome or work on those challenges?

6. **(Extension)** Read the following scenario. Decide what type of solution set it has. Why? What makes this scenario unique from the others?

    For what value of x will the following two rectangles have the same area?
    The first rectangle has a length of x inches and a width of 2 inches. The other rectangle has a width of 5 inches and a length of (x+3) inches.

2 **Revised Task Directions**

1. With a partner or group, use the Sorting Scenarios Card Sort Set to classify each of the scenarios as having One Solution, No Solution, or All Real Numbers. Individually record your responses on the Sorting Scenarios Classification Sheet. You may use the Sorting Scenarios Work Space to help you accomplish this part of the task.
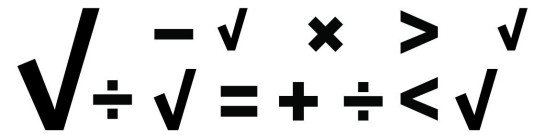
You will use the Sorting Scenarios Student Recording Sheet for the remainder of the task.

1. Independently read the three given scenarios on the recording sheet. For each scenario write and solve an equation to model the situation. Identify the solution type and explain what it means in terms of the real world situation.

1. Reflect on the work you did in your group and on your own.
    a. What challenges did you encounter as an individual and/or a group? How did you overcome or work on those challenges?
    b. How did **you** contribute to helping your group to understand and complete the task?
    c. What strategies did you use? How well did the strategies you used work? What adjustments did you have to make in your strategies?

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1. **(Extension)** Read the following scenario. Decide what type of solution set it has. Why? What makes this scenario unique from the others?

MATERIALS

- One Sorting Scenarios Classification Sheet
- One per group/partnership Sorting Scenarios Card Sort Set
- One Sorting Scenarios Work Space
- One Sorting Scenarios Original Student Recording Sheet (Original version)[3]

[3]Sorting Scenarios Student Recording Sheet (Newly designed to reflect task modifications)

NOTE

CHECKLIST

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