QUALITY PERFORMANCE ASSESSMENT PLAN

Task Title: Every Dollar Count$

Subject Area/Course: Math

Grade Level: 7th Grade

Abstract/Summary: Students will use inequalities and equations to choose the best bus company for a field trip.

Time Needed to Complete Task: 2 class periods

Adapted from: Math in Focus

Original Authors: Randi Margey, Brandon Knox, Annah Kelley, Butch Emerson, Wyman Eckhardt, Carol Marino, Danell Lunz

ALIGN: Instructional Goals
New Hampshire Competencies
Standard (7.EE.4) – Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
New Hampshire Work Study Practices
Creativity – I can use original and flexible thinking to communicate my ideas or construct a unique product or solution.
Other Goals
• **Standards, 21st century skills, and school-specific goals**
• Common Core #1– makes sense of problems and preserve in solving them. • Common Core #6 – attend to precision
Depth of Knowledge Alignment
• Question 1 (DOK Level 1 - Understand) requires students to represent math

Reviewed and Revised for the NH Task Bank

relationships in symbols.
- Question 2 (DOK Level 2 - Apply/ 3 - Evaluate) requires students to cite evidence and develop a logical argument. Compare and contrast solution methods and verify reasonableness. (DOK 3Level – Analyze) Analyze and draw conclusions from data, citing evidence.
- Question 3 (DOK Level 3-Apply, Analyze, Create) requires students to cite evidence and develop a logical argument, compare/contrast solution methods, verify reasonableness.

Essential Question(s) or Key Concept(s) to Guide Learning and Inquiry

Solve real-life and mathematical problems using numerical and algebraic expressions, equations, and inequalities.

Requires students to use variables in equations and inequalities to solve a simple real world problem.

Students will know (content) . . .	Students will be able to (skills). . .
• Bullet points • Specify discreet content and key concepts that align to the competencies and standards (e.g., types of angles)	• Bullet points • Specify process and skills that align to the competencies and standards • Start with a verb (e.g., justify why an angle is classified the way it is)
• Assign and identify variables • Construct simple equations • Construct inequalities. • Solve multi-step and real-world mathematical problems.	• Read and interpret information from a table. • Organize information. • Attend to precision. • Solve problems by reasoning about quantities.

DESIGN: Performance Task and Evidence

Common performance task summary

This is a high level summary about what the students will be doing. It should be no more than 3-5 sentences or bullet points.

- Students will use inequalities and equations to choose the best bus company for a field trip.
- Students will create their own bus company that meets a set criterion.
- Students will mathematically justify their conclusions.

Key criteria for performance assessment

- Variables are correctly assigned to represent quantities.
- An equation and an inequality must be constructed.
- Student makes a decision and cites evidence to defend their choice.
- Student calculates cost of each bus company.
- Student proposes an effective cost structure that meets set requirements.

Possible Accommodations	Resources/Texts/Scaffolding Materials
What will teachers do in terms of instruction, curriculum and assessment to support the learning of SPED/ELL/other students in class?	What's included here depends on the task assignment. It is recommended that a variety of resources are provided that allow students to make choices to access the information needed to complete the assignment.
- All necessary scaffolding will be used for each and every student in accordance with student IEP/504 Plans. - Word Bank for words will be given - Extra time - Where applicable certain students will be given one on one direct instruction. - Less information on a page/one question at a time. - Reduce the number of bus companies to analyze. - Provide students with less information at a given time. - Performance assessment could be read aloud. - Provide template/graphic organizer to organize work.	- Word Bank - Calculator/Multiplication chart - Access to Previous Formative Tasks, Notes and other resources. - Provide template/graphic organizer to organize work.

Teacher Guide

Pre-requisites and Placement in the Curriculum When in the year will this take place? What skills and concepts should be covered before the students perform this task?

Spring • Introduction to algebraic expressions, equations, and inequalities. • Solve multi-step and real life mathematical problems. • Apply properties of operations to calculate with numbers in any form. • Use variables to represent quantities in a real-world or mathematical problem. • Construct simple equations and inequalities to solve problems by reasoning about the quantities.

Possible Formative Assessments How do I assess my students' understanding about the performance requirements of the task (e.g., milestones, benchmarks, observations, dialogues, student reflection, quizzes)? How do I adjust my instruction accordingly?

• Students can successfully create a simple algebraic equation using variables. • Students can successfully create a simple inequality using variables. • Provide practice for performance assessments in general. • Provide practice for reading and using rubrics.

Teacher Instructions To ensure the fidelity in implementation, this section includes: • Step-by-step procedures to implement task as designed • Information on the time allotted for each step of the task • Materials needed

• Teacher will provide students with Performance Assessment and Rubric (*calculator optional*) • Teacher will explain task: For this project, you will use equations and inequalities to help a principal choose the best company to use for a field trip. • Students will work independently for 2 class periods (*approximately 90 minutes*) to complete all three questions.

Teaching/Learning Plan

To be completed by individual teacher, as learning plan may vary by teacher

The lesson plan is written as an outline that other teachers could understand and/or apply in their respective classroom (s). This generally outlines the scope and sequence of the lesson plans within the unit.

It is recommended that the following are included:

- The lesson plan includes how the goals will be addressed (what students know and can do
- The different steps and the specific instructions that correspond with each step of the process
- A timeline for each task
- Time or space for student reflection and feedback

- Lesson 1: Algebraic Expressions
- Lesson 2: Create a simple equation or inequality from a one-step word problem.
- Lesson 3: Create a simple equation or inequality from a multi-step word problem.
- Lesson 4: Properties of Operations
- Lesson 5: The Distributive Property
- Lesson 6: Simplify Algebraic Expressions
- Lesson 7: Solve One-Step Equations
- Lesson 8: Solve Two-Step Equations
- Lesson 9: Solve One-Step Inequalities
- Lesson 10: Solve Two-Step Inequalities

*Lessons will be taught in accordance with the program pacing guide.

*All lessons will be completed prior to performance assessment.

Every Dollar Count$

Rubric

Category	4	3	2	1
Create an Equation. (Question 1)	Variables are correctly assigned to represent quantities. An equation AND inequality are precisely constructed.	**Variables are correctly assigned to represent quantities. An equation AND an inequality are constructed with minor errors.**	Variables are correctly assigned AND an equation OR an inequality is written correctly.	Variables are not assigned AND the equation/inequality is written incorrectly or missing.
Analyze and draw conclusion from data, citing evidence. (Question 2)	Student calculates cost of each company with no errors. Student makes a decision by considering all options, analyzing evidence, and developing a logical argument.	**Student calculates cost of each company with few or minor errors. Student makes a decision and cites evidence to defend their choice.**	Student makes a decision but the decision is not well supported, has several computation errors, or is based on faulty argument.	Calculations are incorrect or missing. Decision is not made or support is missing or limited.
Design a model to inform and solve a practical or abstract situation. (Question 3)	Student designs an effective cost structure that meets the requirements. Student analyzes advantages and disadvantages of their structure.	**Student designs an effective cost structure that meets the requirements.**	Student designs a cost structure that doesn't meet the requirements.	Does not use an effective strategy to solve the problem.

Every Dollar Count$

For this project, you will use inequalities and equations to help (*insert principal's name)*, the principal, choose the best company to use for a field trip.

1) Each bus company charges separately for transportation and food. **Each company also charges a fixed service fee of $35.**

    a. Define variables for food, transportation, and total cost.
   Create an equation to represent the total cost of the field trip.

    b. The principal has a budget of $400 to pay for a field trip for the class. Use your variables for food and transportation from part A to create an inequality knowing that the principal's budget is limited.

2) The table shows the cost structure for transportation and food from some companies that (*insert principal's name*) can use for the field trip.

Cost Structure Table

Company	Cost of transportation	Cost of food	Service Fee
Affordable Bus	$7 per student	$10 per student (includes drinks)	$35
Mellow Yellow	$9 each for the first 20 students and $5 for each additional student	$5 per student (drinks optional for $2 per drink)	$35
Busy Bus	$12 each for the first 10 students and $7 for each additional student	$5 per student (includes drinks)	$35
Cozy Seats	$8 per student	$7 per student (includes drink)	$35

Using the information above, which company do you think the principal should choose for the class field trip so that it's within the budget? Your choice must be supported with mathematical reasoning and expressed in complete sentences. Organize your work in the space provided below and on the next page. Lines are provided for your written response.
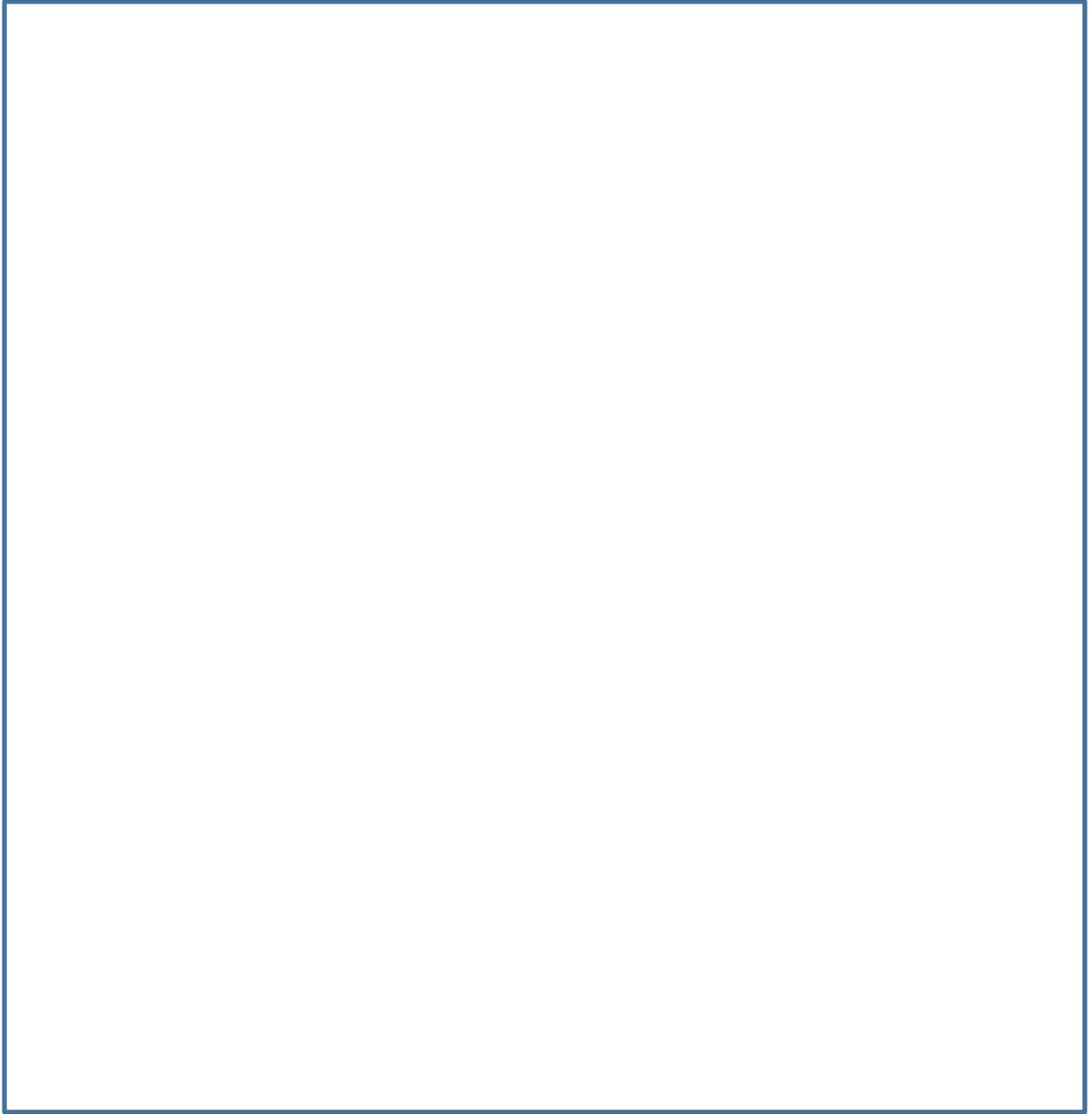
3) There is a new company in town, **Last But Not Lowest**, that wants to compete for business. The company does not want to be the least expensive, but they still want to be within the principal's field trip budget. If the company agrees to not charge the fixed service fee, what could their cost structure look like? Create at least one example of what this cost structure could look like. What are the advantages or disadvantages of this cost structure? Convince the principle which would be the best cost structure.

_____

_____

_____

_____

_____

_____

_____