I Can Show What I Know!

Culturally Responsive Performance Tasks for Equitable Assessment

2023 NCTM Virtual Conference

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Culturally Responsive Pedagogy (Howard, 2020)

- Recognizes the rich and varied cultural wealth, knowledge, and skills of diverse students
- Seeks to develop dynamic teaching practices and multicultural content, with multiple means of assessment
- Nurtures students' academic, social, emotional, cultural, psychological, and physiological well-being
- Involves support and input from parents, caregivers, grandparents, and community members
- Puts learning in context for students who can connect a topic to their current lives or community

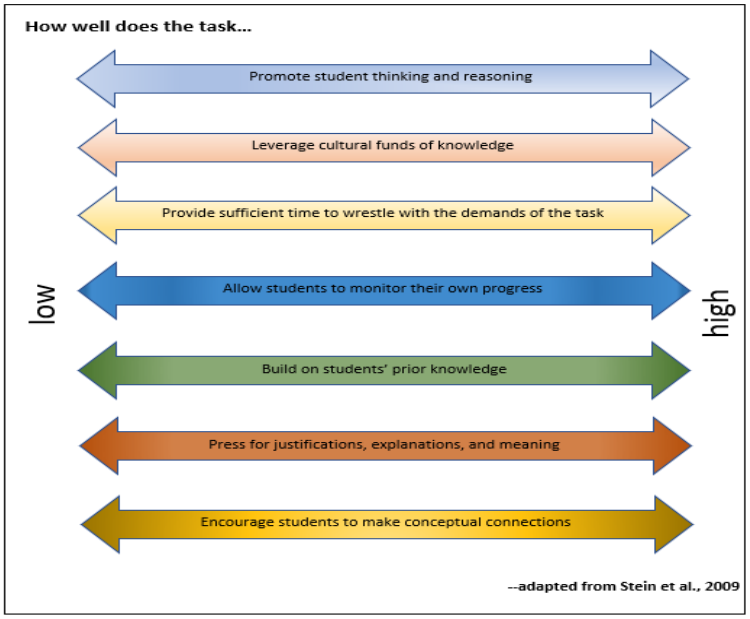
Three Act Tasks

- Inquiry based, culturally relevant problem solving
- Student centered and context rich
- Reasoning and modeling dependent
- Powerful for building number sense and math-positive mindsets

Performance tasks focus on "big ideas" rather than discreet skills. Usually, a task will cover many objectives or areas of mathematics.

- The task should have a *Group Portion* and an *Individual Portion.*
- You may take anecdotal records during the Group Portion to observe for social skills, math mindsets, communication, or other behaviors.

Tool for Evaluating Culturally Responsive Performance Tasks



Question Bank

- What does this make you think of?
- What other math can you connect with this?
- When do you use this math at home? At school? In other places?
- How is this like something you have done before?
- How have you shown your thinking (e.g., picture, model, number, sentence)?
- Which way (e.g., picture, model, number, sentence) best shows what you know?
- How have you used math words to describe your experience?
- How did you show it?
- How would you explain this to a student in Grade ___?
- What were you thinking when you made decisions or selected strategies to solve the problem?
- What changes did you have to make to solve the problem?
- What was the most challenging part of the task? And why?
- How does knowing _____ help you to answer the questions?

47 ENGAGING PERFORMANCE TASK IDEAS TO GET YOU STARTED

1. Use store advertisements and internet searches to determine which store in your town has the best prices. How do small neighborhood markets in your area compare to big box stores on milk, eggs, bread, rice, and fresh fruits and vegetables?
2. Bring a small collection of objects from home that you think would work well as mathematical manipulatives. Make up some word problems your classmates could use your math manipulative to solve.
3. Use grid paper to draw a floor plan of your bedroom or classroom. How can you figure out what scale/proportion to use? How do fractions and/or multiplication come into play?
4. Use a local bus or subway timetable to determine a schedule for a regular commuter. Are some public transportation options more available in your area than others? What do you think causes this? How much would the commuter spend each year on travel costs?
5. Plan a family party with food for your crew. What kinds of food items are best for your large group? What could you do to keep costs down? Compare prices at neighborhood stores then make a chart to show two different meals and budgets. You can choose to include food items because they are special to your culture or just because you like them.
6. Develop an itinerary for a one-week trip to visit a relative far away. Consider budget and time constraints but have fun! Choose at least one tourist-type thing to do each day while visiting your relative. Make a daily schedule for travel, food, and event costs.
7. Find an example of a misleading graph. How does adjusting the scale affect the way data appears? Make your own graph showing the results of a class survey (favorite foods, animals, colors, etc.) Draw the same graph to different scales, one of which is a misleading graph.
8. Some people think that [insert a common math misconception]. What do you think? Explain your answer. For example, some people think that a rectangle is a square *and* a square is a rectangle. What do you think? Explain your answer with words and pictures.
9. Everyone in your group brings five items from home. Considering this set of seemingly random objects, into what groups could you organize them? Make representations (graphs, tables, or concept maps) to describe your data.
10. Analyze geometric designs or symmetry in a work of art that you find special. It can be special because it's part of your culture or just because you like it. Make a presentation with the artwork and explain the geometry you found.
11. Identify a pattern in a piece of music that's special to you (for instance, the repeating pattern of verse/chorus).The music can be special because it's part of your culture or just because you like it.
12. Write a newspaper article that describes and explains a mathematical idea you are studying. How is this math idea big news? Who needs to know about it?
13. Make a timeline that includes works of art or music according to the period in which they were created. You can choose art or music examples in your timeline that special because they're part of your culture or just because you like them.
14. Use measurement to build sets or create costumes for an imaginary play. The play can be about something going on in your life right now, something from the past, or something you think is unique to your culture. You don't have to write the whole play, just a rough outline. The math experience comes when designing the set or costumes. Use grid paper or recycled materials to show your designs.
15. Use patterns to compose a musical piece. The piece can be special because it's part of your culture or just because you like it. The pattern might go verse, chorus, verse, chorus or some other pattern.
16. Use patterns to choreograph a dance. The dance and music can be special because they're part of your culture or just because you like them. How do repeating patterns in dance make it easier to learn the dance?
17. Use patterns to create a work of art with potato prints (Slice the end a potato and make it a stamp). What if you first created the work of art using a repeating pattern then recreated it with a growing pattern? How do the two pieces look similar or different? Which do you like better?
18. Use the internet to find out from which culture a mathematical term or idea originated. Can you find a mathematical idea that came from your family culture? Make a poster or Google slide to report on it.

19. Adapt a short story to show how mathematics affects the plot. For instance, what if there were four bears instead of three? You can pick a story that is special because it's part of your culture or just because you like it.
20. Place a historical event 100 years later than it occurred. How would this affect the event? For instance, what if the Texas revolution happened in 1936 instead of 1836? You can pick an event that is special because it's part of your culture or just because you like it.
21. Write a math-related public service announcement. Inform the public about math and all its positive applications in your everyday life. How is math a tool for you to be healthy, organized, safe, and/or happy? How can you help math be less intimidating to people?
22. Devise and carry out a personal fitness plan that involves at least thirty minutes of activity per day. Take measurements related to your personal fitness and try to improve your health.
23. Research and devise a healthful diet that meets suggested caloric intake. Include foods that you regularly eat at home so that the diet makes sense for YOU. Present the plan using tables, graphs, and other data representations. What small changes can people make to diets to be healthier?
24. Perform fitness tests that measure heartbeats per minute during exercise (walking, jogging, and jumping rope) and periods of rest.
25. Design a double elimination games tournament for six teams. Choose a game that is special because it's part of your culture or just because you like it.
26. Rewrite a fairy tale to make the main character a math whiz. For example, how would the story Cinderella/*Adelita* (Tomie De Paula, 2004) be different? How about Little Red Riding Hood/*Lon Po Po* (Young, 1996)? Choose a story that is special because it's part of your culture or just because you like it.
27. Choose a favorite family recipe. How would you adapt it to feed a group of 30 people for a party? Write down the new, bigger batch recipe and tell how you used fractions, addition, multiplication, and/or measurement to plan the recipe.
28. Evaluate the claims made in an advertisement in a local newspaper. Use mathematical reasoning to judge the truthfulness of the claims. How can understanding math make you a smarter consumer?
29. Write a newscast to inform the public about adding fractions. Give at least 3 occasions that call for adding fractions in the real world or in your life.
30. Write an advertisement for a calculator. What features will buyers love? Why do they need this tool? How can having a calculator affect the types of problems a person can solve?
31. Critique a word problem—how could the problem be improved to make it easier/harder? How could the problem be changed to make it more interesting for your classmates? What do you think makes a good word problem?
32. Write a letter to the editor describing and defending your opinion of testing in mathematics. Use at least two real world examples and two academic sources.
33. Write a letter to a famous mathematician. The mathematician can be someone you admire because he/she is connected to your culture or just because you like the mathematician. If the person is still living, send the letter. You might use these resources in your research:
    - https://academicinfluence.com/rankings/people/black-scholars/mathematicians
    - https://www.smithsonianmag.com/science-nature/five-historic-female-mathematicians-you-should-know-100731927/
    - https://www.lathisms.org/
    - https://mathematicallygiftedandblack.com/
34. Read the newspaper. Find all the articles that deal directly or indirectly with math. How can you rewrite the articles to make math more obviously important to the event? How does your new article make math a star?
35. Make a timeline of your life. Include events that took place in your life on top of the timeline and an accompanying event in society on the bottom of the timeline. What was going on in the world when you were born? Moved to a new city? Got a pet? Lost your first tooth?
36. Read a math-related picture book. Review the book for your classmates by making a poster or PowerPoint, doing a short oral report, or writing a book review. Tell about the problem solving, reasoning, and mathematical vocabulary as well as the big math ideas that appear in the book. If possible, read the book to the younger class.

37. Keep a regular math mindset journal sharing your attitude toward mathematics. Review your journal occasionally. Are you becoming more math-positive over time?
38. Some adults, especially those from cultures different from our own, learned math using unique strategies. Interview grown-ups in your home or community about their favorite ways to learn or use math when they were kids. Make a comparison chart showing how their ways are different or the same as how you learn math today. If you want to, everyone in your group can interview a different grown-up but ask the same question "How did you learn to make change when buying things at a store?" Make a chart or graphic organizer that shows the differences and similarities in the responses you get. What do you notice about the data?
39. Describe the error in thinking that a student made when making a recipe. For example, Lina stated that 1/3 plus 1/3 was 1/6. How would you help Lina to understand this error? Use words and pictures in your explanation.
40. Draw a political campaign poster for a mathematical concept. Why should we vote for [fractions, decimals, percentages etc.]? What does this concept promise to do to improve our town? Are there any bad consequences for *not* voting for this math concept?
41. Write a travel or tourist brochure highlighting a town where people love math. What makes the town so math-friendly? How can you tell the people love math? What would be a good tagline for the town?
42. Design a children's museum exhibit that illustrates a mathematical principle like equivalence, explicit trading/regrouping, how multiplying doesn't always give an answer that's larger, etc. What tools or hands-on activities can kids use to explore this idea? Make it fun!
43. Use data to determine options for purchasing a new or used car, giving advantages and disadvantages of each. What car would be best for your family or your teacher's family?
44. Identify opinions about your school's dress and grooming policy. Design and carry out a survey for students, parents, and/or teachers and present your findings to the class, giving suggestions to improve or update the policy.
45. Make a concept map that shows the relationship between related mathematical concepts like fractions/decimals or positive/negative numbers.
46. Create then answer mathematical questions beginning, "What will happen if [we are told we cannot use circles anymore?]" or "What would you do if [you had to use a calculator to solve 100-17 but the 1 on your calculator didn't work?]" or "How would things be different if [our counting system were base 12 instead of base 10?]"
47. Create a didactic cinquain (a five-line poem) about a math topic. Use the poem to communicate what you know about the meaning of the math topic.
    - Line 1: 1 word which is the title of the poem
    - Line 2: 2 words that are adjectives for the title
    - Line 3: 3 words that show action and end with *-ing*
    - Line 4: 4 words that show emotions about the subject, may be individual words or a phrase
    - Line 5: 1 word that is a synonym of the title

Fraction
Piece, proportion
Breaking, segmenting, divvying
Helps me share Hershey's
Division

The Family Recipe Performance Task

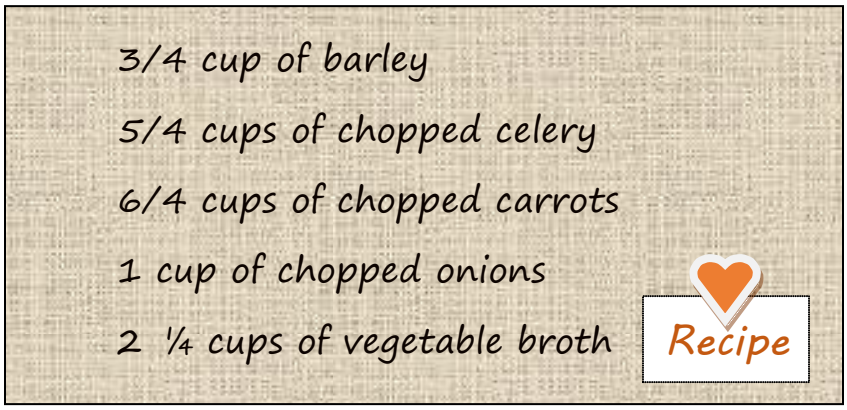
A Performance Task for Grades 4-5

(Adapted from Illustrative Math)

Objective: Combine fractions with like denominators.

Materials: ¼ and ¾ cup measuring cups, uncooked barley

The Problem: Thuy wants to make her family's special barley soup recipe. Someone in Thuy's family wrote the amounts in the recipe in fourths.



GROUP PORTION

1. Work with your group to measure the ingredients in the recipe. Use the ¼ measuring cup. Show how Thuy could use the ¼ cup to measure the right amount of each ingredient. You can use pictures or numbers to show your group's ideas.

Barley *Onions* *Celery*

Carrots *Broth*

2. Now work with your group to use the ¾ measuring cup and ¼ measuring cup to measure each ingredient. Use pictures or numbers to show how Thuy could use the cups to measure the right amount of each ingredient.

Barley *Onions* *Celery*

Carrots *Broth*

INDIVIDUAL PORTION

3. What was your group asked to do?

4. What did you notice about measuring with ¼ and ¾ cup measuring cups?

5. If you were asked to add 1 ¼ cups of mushrooms to the recipe, would you use the ¼ cup or the ¾ cup or a combination of both? Tell why.

Racetrack Ramp Car Race

A Performance Task for Grades 2-4

--developed by Carrie S. Cutler

Objectives: Measurement. Apply principles of engineering design to build a racetrack from recyclables then use standard units to measure how far a car travels

Materials: recyclables, tape, toy cards, yard sticks

GROUP PORTION

1. Work with your group to build a race track style ramp. You will be measuring how far a car can go *beyond* the end of the track.

2. Experiment with the car and improve your ramp as needed.

3. Race your car 5 times and record the results by measuring the distance from the end of the ramp to where the car stops.

Race 1 _____ inches	Race 2 _____ inches
Race 3 _____ inches	Race 4 _____ inches
Race 5 _____ inches	

INDIVIDUAL PORTION

4. What changes did you make to your ramp?

5. What was the longest distance your car got?

6. What was the shortest distance your car got?

7. If you were teaching 2nd graders how to use a yard stick to measure, what 3 tips would you give them?

Show and Tell Measuring

A Performance Task for PreK-Kinder

--developed by Carrie S. Cutler

Objectives: Measurement. The student makes comparisons (without numbers) of length and weight using appropriate tools.

Materials: pan balance, students' show and tell items brought from home, poster labeled LONGER, SHORTER, THE SAME LENGTH, poster labeled WEIGHS MORE, WEIGHS LESS, WEIGHS THE SAME

Group Portion:

1. Walk around the classroom comparing your show and tell with your friends.
2. When you find someone whose show and tell is THE SAME LENGTH than yours, tell your teacher to write your names on the poster.
3. When you find someone whose show and tell is LONGER than yours, tell your teacher to write your names on the poster.
4. When you find someone whose show and tell WEIGHS MORE than yours, tell your teacher to write your names on the poster.

Individual Portion:

5. Find someone in the class whose show and tell WEIGHS THE SAME as yours. How can you tell they are the same weight? Explain to your teacher how you figured it out. Draw a picture that shows your thinking.

CAPACITY COMPARISONS

A Performance Task for Grades 1-2

--adapted from Van de Walle (2006),

Objectives: Measurement. The student uses nonstandard units to describe length, weight, and capacity. The student is expected to estimate and measure length, capacity, and weight of objects using nonstandard units and measure length, capacity, and weight using concrete models that approximate standard units.

Materials: have students bring in empty containers from home (e.g. mac 'n cheese, cereal, soup cans, shoe boxes), each group needs six containers of different sizes and shapes labeled A-F, color tiles, Styrofoam packing peanuts, color cubes

Group Portion:

1. Look at the six containers. Talk with your group about which container you think holds the least and which holds the most. Put the containers in order from holds least to holds most. Write down your guess.

   Capacity Guess:

   _____ _____ _____ _____ _____ _____

   holds least holds most

Group Portion:

2. Choose *one*: tiles, peanuts, or color cubes. Fill each container and record how much each container holds. This is called capacity.

Container A holds _____ _____

Container B holds _____ _____

Container C holds _____ _____

Container D holds _____ _____

Container E holds _____ _____ _____

Container F holds _____ _____

3. Put the containers in order from holds least to holds most. Record your results.

Capacity Check:

_____ _____ _____ _____ _____ _____

holds least holds most

Individual Portion:

4. Explain how your guess compared to the actual order of the containers.

_____

_____

_____

_____

5. Think of another container. What kind of container would hold **less** than the one with the smallest capacity? _____

Tell how you know.

6. Think of another container. What kind of container would hold **more** than the one with the largest capacity? _____

Tell how you know.

Grocery Coupon Comparisons

A Performance Task for Grades 3-5

--developed by Carrie S. Cutler

Objectives: Money and decimal comparisons. The student makes comparisons of number magnitude using decimals and coin values.

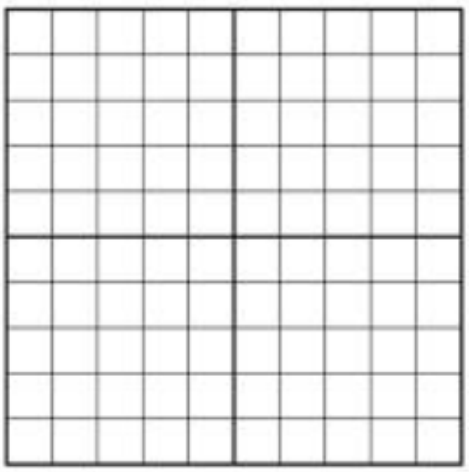
Materials: newspaper advertising inserts or coupons printed out from couponing websites, glue, and a long strip of paper labeled "least" on one end and "greatest" on the other

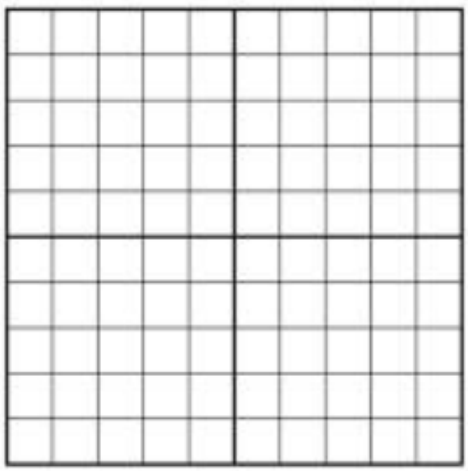
Group Portion:

1. Work with your group to cut out coupons for items you like.
2. Sort the coupons by their type (canned goods, health and beauty, junk food, etc.).
3. Choose 5 coupons and order them by their value from least to greatest and glue them on the strip of paper.

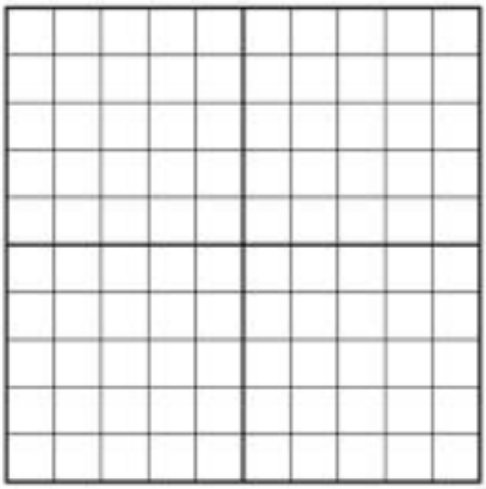
Individual Portion:

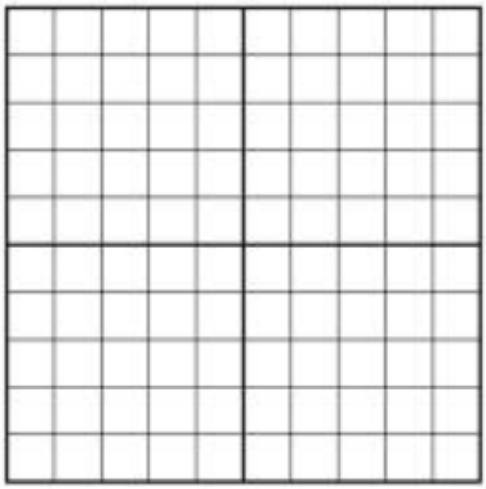
4. Choose one more coupon to add to the strip on the LEAST end. How can you be sure that coupon is worth less than the smallest coupon? Draw a picture or use a decimal grid to show your thinking.





5. Choose one more coupon to add to the strip on the GREATEST end. How can you be sure that coupon is worth more than the greatest coupon? Draw a picture or use a decimal grid to show your thinking.





Giant Step Estimation

A Performance Task for Grades 3-5

--developed by Carrie S. Cutler

Objectives: Estimate and measure using non-number comparisons and standard units.

Materials: string, scissors, small sticky notes, rulers

Group Portion:

1. Two kids are “officials.” The rest are “athletes.”
2. Officials: Place a strip of masking tape on the floor to mark the starting line.
3. Athletes: Write your name on a sticky note.
4. Athletes: Estimate how far from the line you can step using one giant step. Set your sticky note on the floor to mark the spot.
5. Athletes: Take turns taking one giant step.
6. Officials: Mark the spot where the athlete actually stepped with a piece of tape. Lay a piece of string on the floor from their guess to their actual step. Cut the string. Give the athlete their string and their sticky note with their name.

Individual Portion:

7. Were you over or under your estimate for the length of your giant step? How could you tell by how much?

8. Use a ruler to measure the length of your string. Record the length in inches and in centimeters.

   My estimate was different from my actual giant step by _____ inches.

   My estimate was different from my actual giant step by _____ centimeters.

9. Write about a time when you might want to estimate instead of doing an actual measurement.

Measuring with My Playground

A Performance Task for PreK to Grade 2

--developed by Carrie S. Cutler

Objectives: Measurement. The student uses nonstandard units to describe length, weight, and capacity. The student is expected to estimate and measure length, capacity, and weight of objects using nonstandard units and measure length, capacity, and weight using concrete models that approximate standard units.

Materials: plastic tablecloth or butcher paper, photographs of school or neighborhood park playground structures, small paper clips, large paper clips, 1-in. square tiles, craft sticks, other nonstandard units as desired

Preparation: Affix 5-6 photographs of playground structures students are familiar with to a plastic tablecloth or butcher paper, spacing the photographs evenly across the space. Draw lines with heavy black marker between the photographs. Keep 2-3 extra photos in reserve for the individual portion of the task.

Group Portion:

1. Use paper clips to measure from the swing set to the drinking fountain.

2. Choose a unit to measure from the monkey bars to the climbing wall.

3. Use square tiles to measure from the slide to the basketball hoop. Before you lay them out, do you think it will take MORE or FEWER craft sticks to measure from the slide to the basketball hoop? Check to see if you are right.

Individual Portion:

4. Choose a new photo to add to the mat. Show and tell your teacher how you can use paper clips to measure from the new picture to the swing set. Tell your teacher if it will take more or fewer craft sticks to do the same measurement. How do you know? Draw a picture to show your thinking.