

Annotated 6 - 8 Mathematics Student Work Samples

Scoring Criteria

PERFORMANCE INDICATOR	BEGINNING	DEVELOPING	PROFICIENT	EXPANDING
<p>#4 Functions & Algebraic Reasoning: B</p> <p>Create and solve equations and inequalities in mathematical and real world problems. (6.EE.5, 7, 8, 9; 7.EE.4)</p>	<p>Model a situation using a flawed equation/inequality and flawed process to solve the equation/inequality.</p>	<p>Create appropriate equations/inequalities to model situations and solve using a flawed process</p> <p>OR</p> <p>Create flawed equations/inequalities to model situations and solve using an appropriate process.</p>	<p>Create appropriate equations/inequalities to model situations and use the equations/inequalities to find solution(s).</p>	<p>Justify and defend the equation/inequality and its solution.</p>
<p>#2 Modeling: A</p> <p>Create an appropriate model using numbers, quantities, and other representations to describe a relationship in a real world situation. (MP4)</p>	<p>Identify elements in a real-world situation.</p>	<p>Identify elements in a situation, describe a relationship between them, and select a representation.</p>	<p>Create a mathematical model that accurately represents a relationship in a real world situation.</p>	<p>Justify and defend the model as an effective representation of a real world situation.</p>
<p>Problem Solving and Critical Thinking: 5</p> <p>Show flexibility and persist through frustrations; continue to revise a plan or process of approach in order to arrive at a viable solution.</p>	<p>Identify a strategy that could be used to overcome an obstacle in problem solving.</p>	<p>Make an attempt to reach a viable solution by applying a strategy.</p>	<p>Make multiple attempts, persisting as needed, to reach a viable solution by applying and adjusting varied strategies and approaches.</p>	<p>Make multiple attempts, if needed, until an effective solution is reached by applying, evaluating and adjusting strategies and approaches.</p>

Student Work Sample #1 (page 1 of 4)

Name: _____ Date: _____ Class: _____

Sorting Scenarios Student Recording Sheet

Reflection on Group Sorting Activity:

1. What strategies did you use? How well did the strategies you used work? What adjustments did you have to make in your strategies?

We didn't really have a strategy we just read the question and as we read it we wrote down what we knew and analyzed that to come up with an equation.

2. What role did you play in your group?

I led the conversation and people talked based off of what I said.

3. What challenges did you encounter as an individual and/or a group? How did you overcome or work on those challenges?

Communication was a problem because once we started to talk we managed to finish the problems.

Student Work Sample #1 (page 2 of 4)

Sorting Scenarios:

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.

One Solution Scenario # <u>1</u>	No Solutions Scenario # <u>3</u>	All Real Numbers Scenario # <u>10</u>
Equation with solution/explanation: $\begin{array}{r} 129x = 0.89x + 10 \\ -0.59x \quad -0.89x \\ \hline .4x = 10 \\ \cdot 4 \quad \cdot 4 \\ \hline x = .25 \end{array}$	Equation with solution/explanation: $\begin{array}{r} 50 + 7x = 7x \\ -7x \quad -7x \\ \hline 50 = 0 \end{array}$	Equation with solution/explanation: $\begin{array}{r} 40 + 7x = 40 + 7x \\ -7x \quad -7x \\ \hline 40 = 40 \\ -40 \quad -40 \\ \hline 0 = 0 \end{array}$

Student Work Sample #1 (page 3 of 4)

Create a Scenario:

On your own, create your own scenario for one solution type:

1. What is the situation/scenario? It must be different than the ones presented in the card sort.

The math club wants to buy new calculators so they ask 2 companies how much it would cost to get them. Company A charges 20 set up and then each costs \$5. Company B will cost \$10 per shirt with a \$5 discount for each calculator because it's for the school their set up fee is \$30 with a \$10 discount. How many calculators will the 2 companies charge the same price?

$$\begin{array}{r} 20 + 5x = 20 + 5x \\ -20 \quad -20 \\ \hline 5x = 5x \\ \hline \end{array}$$

$$\begin{array}{l} x = x \\ 0 = 0 \end{array}$$

3. Identify the solution type for the equation/scenario you created and explain how you know.

This is infinite solutions because they equal each other.

Student Work Sample #1 (page 4 of 4)

Reflection on Individual Work

Reflect on the work you did as an individual.

1. How did the work you completed with your group help you in creating and solving a scenario?

It made other people start working on it so we worked together

2. What challenges did you encounter? How did you overcome or work on those challenges?

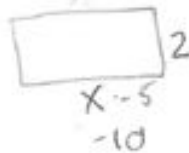
I had a challenge with the problems were really thinking about the word problem.

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.

$$\begin{array}{r} 2x = 5x + 15 \\ -5x \quad -5x \\ \hline -3x = 15 \\ \cdot \frac{-3}{-3} \quad \frac{-3}{-3} \\ \hline x = -5 \end{array}$$



#2 Modeling: A - Proficient - Model adequately represents the relationship created by student.
#4 Functions & Algebraic Reasoning: B - Proficient - Equations represent selected scenarios and are solved using correct processes. The presence of a calculation error in one solution does not impede general understanding.*
Problem Solving and Critical Thinking: 5 - No score given - There is insufficient opportunity or evidence to rate this criteria as the task is currently written.

*The team determined that there is no opportunity for the student to demonstrate a score of *Expanding* as the task is currently written.

Student Work Sample #2 (page 1 of 4)

Name: _____

Date: October 10 2013 Class: 1

Sorting Scenarios Student Recording Sheet

Reflection on Group Sorting Activity:

1. What strategies did you use? How well did the strategies you used work? What adjustments did you have to make in your strategies?
We solved some problems and then someone else would check it over.

2. What role did you play in your group?
I did some problems
and we split up the problems

3. What challenges did you encounter as an individual and/or a group? How did you overcome or work on those challenges?
I got confused with #13 because I forgot to divide by 2

Student Work Sample #2 (page 2 of 4)

Name: _____ Date: October 10 2018 Class: 1

Sorting Scenarios:

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.

One Solution Scenario # <u>12</u>	No Solutions Scenario # <u>8</u>	All Real Numbers Scenario # <u>16</u>
<p>Equation with solution/explanation:</p> $12x = 10x + 8$ $\begin{array}{r} +10x \\ \hline 2x = 8 \\ \hline \frac{2x}{2} = \frac{8}{2} \\ x = 4 \end{array}$	<p>Equation with solution/explanation:</p> $3x + 10 = 3x + 12$ $\begin{array}{r} -10 \\ \hline 3x = 3x + 2 \\ \hline -3x \\ \hline 0 = 2 \end{array}$	<p>Equation with solution/explanation:</p> $4(2x+3) = 8(2x+3)$ $8x + 12 = \frac{16x + 24}{2} \cdot 2$ $\begin{array}{r} 16x + 24 \\ -24 \\ \hline 16x \\ \hline \frac{16x}{16} \end{array} \quad \begin{array}{r} 16x + 24 \\ -24 \\ \hline 16x \\ \hline \frac{16x}{16} \end{array}$

Student Work Sample #1 (page 3 of 4)

Create a Scenario:

On your own, create your own scenario for one solution type:

1. What is the situation/scenario? It must be different than the ones presented in the card sort.

Jack raked leaves for 20\$ an hour he had a travel fee of 5\$, Chbe raked leaves for 10\$ had a travel fee of 15\$

2. Create and solve the equation that represents the scenario.

$$\begin{array}{r} 20x + 5 = 10x + 15 \\ -5 \quad -5 \\ \hline 20x = 10x + 10 \\ -10x \quad -10x \\ \hline 10x = 10 \\ \frac{10x}{10} = \frac{10}{10} \\ x = 1 \end{array}$$

3. Identify the solution type for the equation/scenario you created and explain how you know.

one solution type!
I know because it ended with $1 = x$!!

Student Work Sample #1 (page 4 of 4)

Reflection on Individual Work

Reflect on the work you did as an individual.

1. How did the work you completed with your group help you in creating and solving a scenario?

I learned how to solve ~~to~~ some kinds of problems

2. What challenges did you encounter? How did you overcome or work on those challenges?

The problems were challenging.
The wording on these problems confused me

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.



$$\begin{aligned} 2(x+2) &= 2(x+3+5) \\ 2x+4 &= 2x+6+10 \\ 2x+4 &= 2x+16 \\ -4 & \quad -16 \\ \hline -3x &= 2x+12 \end{aligned}$$

$x = -12/5$

#2 Modeling: A - Developing - Student does not establish a relationship in their scenario leading to the model used and solved.

#4 Functions & Algebraic Reasoning: B - Proficient - Equations represent selected scenarios and are solved using correct processes.*

Problem Solving and Critical Thinking: 5 - No score given - There is insufficient opportunity or evidence to rate this criteria as the task is currently written.

*The team determined that there is no opportunity for the student to demonstrate a score of *Expanding* as the task is currently written.

Student Work Sample #3 (page 1 of 4)

Name: _____ Date: 10-9-18 Class: C

Sorting Scenarios Student Recording Sheet

Reflection on Group Sorting Activity:

1. What strategies did you use? How well did the strategies you used work? What adjustments did you have to make in your strategies?
We used an all hands on strategy where everyone would do an equal amount of problems to make sure everyone was working an equal amount.
- We had to remind our group members to keep working because we would sometimes get a little distracted.
2. What role did you play in your group?
I was one of the people that solves the problem and once solved I give it to another person to check.
3. What challenges did you encounter as an individual and/or a group? How did you overcome or work on those challenges?
We had to try our best to focus on what we were doing and we did well once we tried that.

Student Work Sample #3 (page 2 of 4)

Name: _____ Date: 10-5-18 Class: C

Sorting Scenarios:

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.

One Solution Scenario # <u>4</u>	No Solutions Scenario # <u>6</u>	All-Real Numbers Scenario # <u>12</u>
<p>Equation with solution/explanation:</p> $\begin{array}{r} 2x + 18 = 4x + 12 \\ -2x \quad -2x \\ \hline 18 = 2x + 12 \\ -12 \quad -12 \\ \hline 6 = 2x \\ \frac{6}{2} = \frac{2x}{2} \\ 3 = x \end{array}$ <p>One solution because there is one variable and one whole number on each side so the equation is balanced.</p>	<p>Equation with solution/explanation:</p> $\frac{D}{S} = \frac{ST}{S}$ $\frac{D}{S} = T$ <p>Jeff's Time = Jeff's Time</p> $\frac{x}{5} = \frac{2x}{10}$ $10x = 10x$ <p>Infinite solutions because when you cross multiply you get the same thing on both sides which makes it infinite.</p>	<p>Equation with solution/explanation:</p> <p>No problem was a no solution</p>

Student Work Sample #3 (page 3 of 4)

$$\begin{array}{r} 4 \\ \times 7.5 \\ \hline + 18000 \\ 12000 \\ \hline 120000 \end{array}$$

Create a Scenario:

On your own, create your own scenario for one solution type:

1. What is the situation/scenario? It must be different than the ones presented in the card sort.

Charlie is a runner and covered 12,000 meters in an hour. What was his speed per minute.

2. Create and solve the equation that represents the scenario.

$$\frac{\text{Distance}}{\text{Time}} = \frac{12000.00 \text{ m}}{60 \text{ mins}} = 200 \text{ m/m}$$

3. Identify the solution type for the equation/scenario you created and explain how you know.

It is a one solution problem.

$$\text{Distance/minute} = 200$$

Student Work Sample #3 (page 4 of 6)

Reflection on Individual Work

Reflect on the work you did as an individual.

1. How did the work you completed with your group help you in creating and solving a scenario?
It gave me a little more practice on solving scenarios, which helped me to learn more about it.
2. What challenges did you encounter? How did you overcome or work on those challenges?
At some points I wasn't sure about which category to classify the equation as so I asked my group members for help.

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 Modeling: A - Proficient - Although the given scenario does not technically represent the intent of the question, the student followed the literal directions. This led to the team's score of proficient and the realization that the task would need future modifications to avoid this type of response.

#4 Functions & Algebraic Reasoning: B - No score given - The scoring team was unable to come to consensus on this indicator within the given time frame.*

Problem Solving and Critical Thinking: 5 - No score given - There is insufficient opportunity or evidence to rate this criteria as the task is currently written.

*The team determined that there is no opportunity for the student to demonstrate a score of *Expanding* as the task is currently written.