Student Response Example: Needs Practice

This is an example of a "Needs Practice" student response using the Mastery Check Rubric.

Use this example to help you understand the types of student responses that could indicate that your student needs to do more practice in the subject area in order to achieve mastery.

It is not an actual problem from the curriculum.

Show What You Know

Donna purchased two types of drinks for a family gathering. Each flavored tea cost $3 and each flavored water cost $2. Donna bought a total of 18 drinks and spent $42 for the gathering.

A) Define your variables and write a system of equations to represent the scenario.

$$\begin{aligned} 3x + 2y &= 18 \\ x + y &= 42 \end{aligned}$$

This student did not define their variables and the equations do not match the given information. (18 and 42 should be switched.)

B) Use your equations in part A to find the number of each type of drink that Donna purchased.

$$\begin{aligned} 3x + 2y &= 18 \\ -2x - 2y &= -84 \\ \hline x &= -64 \end{aligned}$$

$$\begin{aligned} -64 + y &= 42 \\ y &= 108 \end{aligned}$$

64 teas and 108 waters

This student correctly solved their system of equations from part A, but did not go back to read the original problem to see if their answer made sense. (The number of drinks is much greater than 18 drinks in total.)

C) Suppose Donna could spend no more than $42 and needed to buy at least 18 drinks. Write and use a system of inequalities to determine if (14, 4) is a possible solution.

$$\begin{aligned} 3x + 2y &> 18 \\ x + y &< 42 \end{aligned}$$

$$\begin{aligned} 14 + 4 &< 42 \\ \text{Yes, } &(14, 4) \text{ is a solution} \end{aligned}$$

This student did not revise their original problem after mistakes from part B.
At least 18 drinks includes 18, so the inequality should be ≥.
No more than 42 includes 42, so the inequality should be ≤.
Only one inequality was checked to determine if the coordinate was a solution to the system.

Student Response Example: Progressing

This is an example of a "Progressing" student response using the Mastery Check Rubric.

Use this example to help you understand the types of student responses that could indicate that your student has adequately mastered the subject area.

It is not an actual problem from the curriculum.

Show What You Know

Donna purchased two types of drinks for a family gathering. Each flavored tea cost $3 and each flavored water cost $2. Donna bought a total of 18 drinks and spent $42 for the gathering.

A) Define your variables and write a system of equations to represent the scenario.

$$\begin{aligned} 3t + 2w &= 42 \\ t + w &= 18 \end{aligned}$$

This student did not define their variables but wrote the correct equations. When asked to explain what t and w represent, the student said "The variable t is flavored teas and w is flavored water."

B) Use your equations in part A to find the number of each type of drink that Donna purchased.

$$\begin{aligned} 3t + 2w &= 42 \\ + -2t - 2w &= -36 \\ \hline t &= 6 \end{aligned} \qquad \begin{aligned} 6 + w &= 18 \\ w &= 12 \end{aligned}$$

This student correctly solved the problem from part A, but did not tell how many of each type of drink Donna purchased.

C) Suppose Donna could spend no more than $42 and needed to buy at least 18 drinks. Write and use a system of inequalities to determine if $(14, 4)$ is a possible solution.

$$\begin{aligned} \cancel{3t + 2w \geq 42} \\ \cancel{t + w \leq 18} \end{aligned} \qquad \begin{aligned} 3t + 2w &\leq 42 \\ t + w &\geq 18 \end{aligned}$$

$$\begin{aligned} 14 + 4 &\geq 18 \\ 18 &\geq 18 \end{aligned} \qquad \begin{aligned} 3(14) + 2(4) &\leq 42 \\ 50 &\leq 42 \end{aligned}$$

Yes — No

$(14, 4)$ is NOT a solution

This student used the incorrect inequality symbols but when asked what "no more than" and "at least" mean to them, they rewrote the symbols in the correct direction and used substitution correctly.

Student Response Example: Exceeding

This is an example of an "Exceeding" student response using the Mastery Check Rubric.

Use this example to help you understand the types of student responses that could indicate that your student has exceptional understanding and mastery of the subject area.

It is not an actual problem from the curriculum.

Show What You Know

Donna purchased two types of drinks for a family gathering. Each flavored tea cost $3 and each flavored water cost $2. Donna bought a total of 18 drinks and spent $42 for the gathering.

A) Define your variables and write a system of equations to represent the scenario.

$x = \text{tea}, y = \text{water}$

$$\begin{aligned} 3x + 2y &= 42 \\ x + y &= 18 \end{aligned}$$

This student defined their variables and wrote the correct equations.

B) Use your equations in part A to find the number of each type of drink that Donna purchased.

$$\begin{array}{rrrrr} & 3x & + & 2y & = & 42 \\ + & -2x & - & 2y & = & -36 \\ \hline & x & & & = & 6 \end{array}$$

$$\begin{aligned} 6 + y &= 18 \\ y &= 12 \end{aligned}$$

Donna should purchase 6 teas and 12 waters.

This student correctly solved the problem from part A, and told how many of each type of drink Donna purchased.

C) Suppose Donna could spend no more than $42 and needed to buy at least 18 drinks. Write and use a system of inequalities to determine if $(14, 4)$ is a possible solution.

$$\begin{aligned} 3x + 2y &\leq 42 \\ x + y &\geq 18 \end{aligned}$$

This student wrote the correct system of inequalities and checked both inequalities to determine if the coordinate was a solution to the system. They also explained their answer in a sentence.

$$14 + 4 \geq 18 \qquad 18 \geq 18 \ \checkmark$$

$$3(14) + 2(4) \leq 42 \qquad 50 \leq 42 \ \times$$

No, $(14, 4)$ is not a solution because both inequalities in the system must be true and only $x + y \geq 18$ is true.