Stocking the Shelves   *TR004 scoring rubric*

Math Domain

☐ Number/Quantity	☐ Shape/Space	☐ Function/Pattern
☐ Chance/Data	☒ Arrangement	

Math Actions (possible weights: 0 through 4)

2 Modeling/Formulating	3 Manipulating/Transforming
2 Inferring/Drawing Conclusions	3 Communicating

Math Big Ideas

☐ Scale	☑ Reference Frame	☐ Representation
☐ Continuity	☐ Boundedness	☐ Invariance/Symmetry
☐ Equivalence	☐ General/Particular	☐ Contradiction
☐ Use of Limits	☐ Approximation	☐ Other

Solution:

1. There are 24 different ways to arrange the vehicles by color . Students may do this by making a tree diagram, a pictorial arrangement of the signs, or a listing of the different combinations using initials which represent the colors and the types. If they use the counting rule, they should explain how it works.

2. There are 6 different ways to arrange the vehicles by type.

Extension:

3. There are 720 ways to arrange the toys if there are six different colors. This problem will be accessible only if students know the counting principle, and they should be able to explain how it works.

	partial level (1 or 2)	**full level (3)**
Modeling/ Formulating (weight: 2)	Student is unable to develop a counting strategy.	Student develops an efficient, consistent counting strategy.
Transforming/ Manipulating (weight: 3)	Student does not determine the correct number of arrangements in all questions.	Student is able to determine the correct number of arrangements in all questions.
Inferring/ Drawing Conclusions (weight: 2)	Student does not understand that categories (colors and type of vehicle) cannot repeat in the same arrangement. .	Student does not duplicate any categories in the arrangements, and efficiently comes up with the answers.
Communicating (weight: 3)	Student does not organize information and express results clearly. Chosen illustration for question 1 is either inappropriate, incomplete, or unclear.	All numerical results are clearly articulated, and the chosen illustration for question 1 is appropriate, complete, and clear.