Misconception/Error	Suggested Intervention
1. Understanding and using data to create accurate graphical representations.	• Practice using accurate vocabulary to explain graphical representations created from data sets. Have students look at data sets and graphical representations for that data and explain connections using appropriate mathematical vocabulary (word wall, define and illustrate, journal/explain). • Given the data set, provide students with a graphical representation with missing information. Have students fill in the missing information and explain how the completed representation compares to the incomplete representation in communicating the data. • Have students gather and sort data in a real-world context. Have students analyze the data prior to making a graphical representation and then ask students to analyze the data again after creating an accurate graphical representation. This strategy is meant to help students understand that graphical representations can provide a different perspective on the data and may help identify relationships or trends in the data. • Provide students with a graphical representation without a context and ask students to interpret the representation. Have students create a context for the graphical representation (presented as a written explanation or presented orally) and justify the context with specific data from the representation. • Provide opportunities for students to use relevant data in high interest contexts for students to make sense of the data and its representations. • Provide multiple opportunities for students to analyze

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	scatterplots and interpret the curves of best fit. Explore how the curve of best fit generalizes the data.
2. Interpreting mathematics in the context of the problem, (i.e. identifying independent and dependent variables)	• Provide examples from science and humanities for all activities and problems. • Given relationships in context, have students identify the independent and dependent variables and justify their thinking. • Providing examples in context have students represent the functions using multiple representations: table, mapping, graphing, ordered pairs. Have students compare and contrast each of these representations. • Have students describe the data in context, using accurate and appropriate mathematical vocabulary (function, domain/range, input/output, independent/dependent variables, correlation, etc.). • Have students use counterexamples as a strategy to evaluate the reasonableness of the identified independent and dependent variables in a context (i.e. Will the distance between NY and VA change if you have less time?). • Provide students with opportunities to work with examples in context using different variables instead of *x* and *y*. Have students interpret contexts to identify the independent variable and dependent variable. • Provide opportunities for students to engage in technology activities (i.e. CBL/CBR activities, or simulation activities) so that students can make connections between the graphical representations, the data collected and the context. • Provide students with a graphical representation without a

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	context and ask students to interpret the representation. Have students create a context for the graphical representation (presented as a written explanation or presented orally) and justify the context with specific data from the representation. • Have students gather and sort data in a real-world context. Have students analyze the data prior to making a graphical representation and then ask students to analyze the data again after creating an accurate graphical representation. This strategy is meant to help students understand how the graphical representation communicates the data collected.
3. Difficulty using the symbolic representation (equation) to make predictions and solve problems	• Given real life scenarios, have students practice creating symbolic representations that model the given situation. • Given real life scenarios, have students make predictions using different methods (i.e. table of values, reasoning, graphical representation, etc.). Make connections between their predictions made through different methods and predictions made through the use of symbolic representations. • Given real life situations, have students create models (concrete or symbolic). Use these models to make predictions of the output for a given input value. Provide opportunities for students to identify the input value that would yield a given output value. • Model different strategies for students to create symbolic representations. These strategies may include creating verbal or concrete models and translating these models into symbolic representations.

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4. Misunderstanding of the context of the problem	• Given real life problems, ask students to explain through words, pictures, or numbers: o What is the problem asking you to do? o What does the data represent? o Highlight key words • Given a real life problem and the solution, have students explain using words, pictures, and/or numbers: o What problem solving strategies could you use to get the solution? What does the solution mean in the context of the problem? o How would specific changes to the problem affect the solution? How do you know? • Provide multiple experiences for students to model and explore changes to the data and its effect on representations of the data (i.e. graphical, symbolic, tabular representations). Technology can be used to support these activities. • Have students generate problems from real-life situations and solve the problems using multiple representations. Have students use pictures, numbers, and words to explain how their solution solves the problem. • Engage students in error analysis. Provide students with a problem in a real life context with a solution. Have students review the process and the solution, conduct an error analysis, and provide a justification for their analysis.

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5. Misunderstanding or misuse of the multiple representations (graph, table, equation)	• Given problems in real life contexts, have students complete three representations (graphical, symbolic, and tabular) and explain the relationship between the three. Have students complete the other representations given one or two representation(s). • Given real world problems, have students identify which representation they would use to solve the problem and justify their strategy. Have students share why their chosen representation is an efficient strategy for them. Discuss how other representations can lead to the solution.
6. Interpreting the changes to the context/data and how it affects the mathematics (i.e. adding 25 minute delay, completing the route in 3.5 hours)	• Given a problem in a real life context, have students create a symbolic representation for the problem and interpret the coefficients, variables, and constants in the context of the problem. • Provide multiple experiences for students to model and explore changes to the data and its effect on representations of the data (i.e. graphical, symbolic, tabular representations). Technology can be used to support these activities. • Have students explore transformations and interpret these transformations in the context of the problem.

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7. Understanding and working with different units in the context of the problem.	• Provide students with multiple experiences with problems in real life contexts. Have students create a problem solving approach and explain how that strategy could be used to solve the problem. Explanations need to be in the context of the problem, which should include the appropriate units for the context. • Provide problems in real life contexts that involve units that require students to use proportional reasoning to solve the problem in the correct units for the context.