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| ***Student Conclusions***  ***Sample of Beginning Levels of Mastery***  ***Science Learning Target 105.1:*** ***I can gather and draw conclusions from evidence.*** This means that I can create charts, graphs and/or images that accurately represent what I observe in an experiment, that I can communicate numerical observations effectively using the metric system, and that I can spot interesting patterns in sets of data that I have collected. | |
| **Primary Indicator:** Students are writing conclusions for both their spaghetti labs and their paper towel labs.  These conclusions will be evaluated for mastery. | |
| ***Exemplar*** | ***Teacher Comments*** |
| My conclusion is that my group needs to try again because our tower wasn’t very high or very good. | 1. A strength of this hypothesis is that it is connected to our experiment. The student scientist refers to tower building and concludes that her design wasn’t effective. 2. There is very little detailing here at all, however. The student scientist mentions that her group’s tower wasn’t “very good,” but isn’t clear about what “good” means. 3. The student scientist hasn’t explained what she would like to try next or why that next step is an interesting extension of the work that her group has already done. 4. Good conclusions give readers enough information to (1). Make new discoveries and (2). Be excited to experiment with the same ideas. This conclusion wouldn’t help readers to learn anything new from this student scientist’s experiment. |

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| ***Student Conclusions***  ***Sample of Developing Levels of Mastery***  ***Science Learning Target 105.1:*** ***I can gather and draw conclusions from evidence.*** This means that I can create charts, graphs and/or images that accurately represent what I observe in an experiment, that I can communicate numerical observations effectively using the metric system, and that I can spot interesting patterns in sets of data that I have collected. | |
| **Primary Indicator:** Students are writing conclusions for both their spaghetti labs and their paper towel labs.  These conclusions will be evaluated for mastery. | |
| ***Exemplar*** | ***Teacher Comments*** |
| When my group used a stronger base, we were able to make our tower higher. Our base that worked was larger and solid. When we used the less stronger base, our tower was leaning and breaking. When we used the stronger base, our tower was partly leaning but we built something to keep it from leaning. After time was up, we were in second or third place. | 1. A strength of these conclusions is that they are focused on the impact that one independent variable—a stronger base—had on the student scientist’s results. 2. The conclusion is also logical and easy to follow. 3. The student scientist, however, hasn’t been precise in her descriptions. General words like “our base was larger and stronger” and “we built something” leave the reader guessing at exactly what the final tower design looked like. 4. The student scientist hasn’t included any specific data to prove whether or not her tower design worked. It would have been nice to see before and after measurements as a piece of evidence. |

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| ***Student Conclusions***  ***Sample of Mastering Levels of Mastery***  ***Science Learning Target 105.1:*** ***I can gather and draw conclusions from evidence.*** This means that I can create charts, graphs and/or images that accurately represent what I observe in an experiment, that I can communicate numerical observations effectively using the metric system, and that I can spot interesting patterns in sets of data that I have collected. | |
| **Primary Indicator:** Students are writing conclusions for both their spaghetti labs and their paper towel labs.  These conclusions will be evaluated for mastery. | |
| ***Exemplar*** | ***Teacher Comments*** |
| I conclude that my hypothesis was correct because the spaghetti tower didn’t fall even after we put the marshmallow on top. I believe that if we did not add extra support bars, then our tower would have fallen. The next thing I would like to test is whether a wider base or a taller base is better. I find that interesting because having a strong base is a big part of having a good tower. | 1. This conclusion is solid. The student scientist has explained her results in direct and easy to understand sentences. 2. This conclusion also includes an answer to the “what’s next” question—an important characteristic of scientists who are constantly learning from and acting on their experiments. 3. There are no measurements or data reported in this conclusion. The student scientist could have told us how high his original and redesigned towers were. 4. This student scientist could also do a better job detailing the “extra support bars” statement. It sounds like this was a revision from her original hypothesis. While it is always okay to revise your hypothesis, it would be important to explain the reasons for—and results of—those revisions in your conclusion. |

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| ***Student Conclusions***  ***Sample of Excelling Levels of Mastery***  ***Science Learning Target 105.1:*** ***I can gather and draw conclusions from evidence.*** This means that I can create charts, graphs and/or images that accurately represent what I observe in an experiment, that I can communicate numerical observations effectively using the metric system, and that I can spot interesting patterns in sets of data that I have collected. | |
| **Primary Indicator:** Students are writing conclusions for both their spaghetti labs and their paper towel labs.  These conclusions will be evaluated for mastery. | |
| ***Exemplar*** | ***Teacher Comments*** |
| My hypothesis was right and wrong. It was right because using triangles and shorter strands did create a sturdy base allowing my group to build higher without the tower falling.  The reinforced sides, though, proved to be too heavy for the tower’s base to support. Therefore, the top of the tower tipped over.  I  learned that instead of working all on the foundation and support, I might want to try harder on building upwards, too—not just on the base.  I wonder if you used a pyramid or a tower design, if it would be better. The pyramids of Giza stayed the highest building for hundreds of years, so a pyramid could be possible.  Also, many tall buildings in present day have a tower design like Taipei 101. I think these designs will work because the triangles in them allow the buildings to be both high and have a sturdy foundation. | 1. This conclusion has an outstanding response to the “what did I learn” (working on foundations alone may not be enough) and “what am I wondering” (will pyramids be the best design) questions. 2. This conclusion also does a solid job explaining what happen in the student scientist’s experiment. 3. There are no measurements or data reported in this conclusion. The student scientist could have told us how high his original and redesigned towers were. 4. Because the student scientist is talking about multiple independent variables—triangles, shorter strands, reinforced sides—we aren’t sure which variable had the most impact on his results. |