**Straw Tower Mini-Activities 1 & 2 Worksheet (GrK-5)**

**Answer Key**

**Mini-Activity 1: *One-Straw Tall Tower***

**Your design challenge:** Following the steps of the engineering design process, figure out the best way to keep one straw held up tall using the fewest number of straws and no more than 5 cm of tape.

1. **Ask: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*Example answer*: How do we design and build a one-straw tower within the constraints of 5 cm of tape and the fewest number of plastic drinking straws?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Research the problem:** Compare and contrast feature you see in tall and short towers.
2. **Imagine:** Draw your design solution for how you would keep one straw up by using the fewest amount of additional straws and no more than 5 cm of tape. Label the materials used.

2

For this design, how many additional straws do you need? \_\_\_\_\_\_\_

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| --- |
| Example answers**tape** |

1. **Plan:** Are you selecting your design solution or your partner’s design solution (or a combination)?

*Example answer*: We are selecting my plan to build.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Create:** Build your tower.
2. **Test and evaluate:** How did your group’s design compare to your classmates’ designs?

*Example answer*: Some group designs were the same as our design, while other groups only used one extra straw to keep up the straw tower. A few groups only used the tape as support.\_\_\_\_\_\_\_\_\_

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1. **Improve:** After seeing what your classmates have created, draw a new and improved design.
Label the materials used in your design.

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| Example answers**tape** |

1. **Now construct your revised design.** ☺

**Mini-Activity 2: *No “Fishing Pole”***

**Your design challenge:** Make the longest straw pole possible without it becoming like a “fishing pole,” where the straw bends at about 45 degrees.

12

1. Number of straws to make a straw pole before it creates a “fishing pole”: \_\_\_\_\_\_\_\_\_\_\_
2. Why does the straw pole become a “fishing pole” when you add more straws?

*Example answer*: The straw pole becomes a “fishing pole” when more straws are added because the center of mass is farther away from the base so it has less support and topples over more easily.\_\_\_

1. How can you make a taller straw pole without it bending like a “fishing pole”?

*Example answer*: You can make a taller straw pole without it becoming a “fishing pole” by adding a wider base and having more support.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_