



Leaning Tower of Noodles: Introducing Collaboration & Creativity

INTRODUCTION:

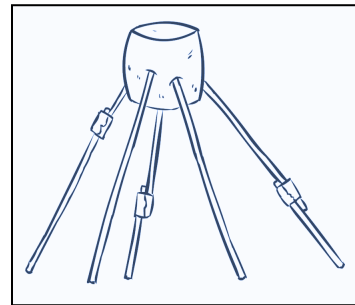
Collaboration is a key component of science. Scientists will knowingly, and sometimes unknowingly, find information that sets the stage for other scientific discoveries around the world. This happened with DNA. Rosalind Franklin captures images of the molecule, and James Watson and Francis Crick used those images to discover DNA's double-helix structure.

Creativity is also a key component of science. Scientists are artists in their own way. They must find a problem and devise unique ways to solve that problem. Take Sir Isaac Newton for example. He watched an apple fall from a tree, and devised an entire theory of gravity from it.

In this basic engineering lab, you will collaborate with peers to construct the tallest marshmallow tower out of noodles and tape. Unfortunately, you only have a set amount of noodles and tape, and thus must think creatively on how to use them most efficiently. This process will require a significant amount of trial-and-error. Do not forget to include everyone's ideas as you build! You never know whose idea will be most successful!

MATERIALS RECEIPT:

Marshmallows (1/group)	\$1.00 (10oz)
Masking Tape (3ft/group)	\$1.00 (55yd)
Raw Spaghetti (25/group)	\$1.00 (16oz)
Meter Stick	---
Timer (Phone)	---
TOTAL	\$3.00



INSTRUCTIONS:

1. You will have 20 minutes to work together in groups of 3-4 to construct a spaghetti tower that has a marshmallow on the top. Tallest upright, unsupported tower WINS. The following rules apply:
 - Only use materials given - 25 noodles, 3-ft of tape, & 1 marshmallow.
 - Marshmallow must be held up on the TOP of the tower - not in the middle or bottom.
 - Tower must be UNASSISTED - no support from anything other than tape.
 - Tower CAN be taped on top of the table.
 - Spaghetti CAN be broken, but broken pieces will NOT be replaced.
 - Marshmallow CANNOT be broken into pieces. Keep it whole.
2. BEFORE beginning, discuss with your group what you think your tower may look like. Sketch this prediction below under "BEFORE SKETCH".
3. Build your tower with your group for 20 minutes. Be sure to follow ALL rules.
4. Once time's up, draw the "AFTER SKETCH" of your tower.
5. Record the height of each group's tower in the "Tablet: Tower Heights".



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DATA/OBSERVATIONS:

BEFORE SKETCH

(What you think tower will look like.)

AFTER SKETCH

(What tower actually looks like)

Table: Tower Heights

Group #	1	2	3	4	5	6	7	8
Height								

DISCUSSION QUESTIONS:

1. How accurate was your “before” sketch compared to your “after” sketch? **Explain.**
2. Which group had the tallest tower? **Justify** your answer using evidence from the data table above.
3. What strategies worked well for your group? Why?
4. What challenges did your group face? **Explain.**