

# TOWER BUILDING COMPETITION

Note! These rules are an approximation of the tower event for the physics Olympics. The actual event or the scoring may be slightly different than what is given here.

TOWER HEIGHT = \_\_\_\_\_ (cm) (minimum of 30 cm)

# OF STICKS USED \_\_\_\_\_ (50 – number of whole unused sticks)

AREA OF BASE \_\_\_\_\_ (cm<sup>2</sup>)

RAW SCORE = 
$$\frac{\text{Height}^2}{[(\text{Area}) + (\# \text{ Sticks})]}$$

Your raw score will double if your tower holds an action figure (think King Kong, approximately 60 grams) at the peak for at least 10 seconds.

**Scoring:** The highest raw score will receive 100 points, and the remaining towers will earn a proportional score.

**Objective:** To construct a tower with craft sticks and hot glue that maximizes profits. The tower can earn more if it is taller, but building materials and land for the base of the tower cost money. So, you want your tower to be as tall, be built with as few craft sticks as you can, and have a small base. Your raw score will be based on the profit/cost ratio. Your tower must be at least 30 cm high to qualify for a score.

**Equipment:** 50 popsicle sticks, glue gun (**CAUTION: AVOID SKIN CONTACT!!**), 4 glue sticks, several possible square tower bases, meterstick.

## Rules:

1. You may use only the materials supplied. You may break the popsicle sticks if so desired, but no replacements will be provided and no cutting devices will be allowed.
2. The tower must be built on one of the bases provided. You are not allowed to alter (cut or fold) the base. The tower can be glued to the base, but the base cannot be glued to the table or any other surface or object. Your score will be higher if you use a smaller base, but it will be harder to build a taller tower.
3. Your tower may not touch anything except the base that you build it on.
4. You are allowed to use as many of the glue sticks you are given, but no more.
5. You can use up to 50 craft sticks, but you do not need to use them all. Your score will be higher if you use fewer sticks.
6. You are limited to the vertical space available in this room, so the maximum height of a tower is approximately 300 cm.
7. You will have exactly **30 minutes** to build your tower. (Hint: get started right away; don't waste too much time planning.)
8. No coaching will be allowed.
9. Height will be measured once at the end of the building time. Your tower must stand for at least 10 seconds.
10. **If your tower does not stand for the requisite 10 seconds you will NOT have an opportunity to modify your tower. You will be given a score of zero.**