**Tallest Tower**

**Materials needed:**

* LEGO elements (at least 10 quarts per team)
* 48x48 baseplates (1 for each team)
* Tape measure

**Setup:** Assign no more than 4 kids per baseplate. Give each team access to elements, either by their own bin or a shared pile.

**Verbal instructions**: Tell them to build the tallest tower. It’s that simple. It has to be able to support itself without anyone touching it. After a set duration, it will be measured.

**Time:** Approximately 30 minutes. It will vary based on age, team size, and ability. Give more time if they’re doing well; add more time after a height check, if needed. The point is to keep the kids engaged in the competition.

**Additional Challenge** – Have them build the towers on a table surface. After the first build time is finished, make the teams transport the baseplate to another table. This will give further test to the structural integrity. Optionally, you can add more time to build after the transfer.

**Instructor tips:**

* Find SNOT (studs not on top) pieces. This may require a level of familiarity with LEGO elements, but essentially, find parts that change the building plane 90 degrees, so studs are pointing left or right, as opposed to just stacking bricks to reach vertical height.
* Built an “antenna”. In our experience, building in sections seems to help, but does require a level of coordination. The biggest advantage being to build a super thin and light antenna that gets attached to the top at the end.
* If you’re having difficulty, remember, the more studs connected, the better it will stay together.
* Start wide and get smaller at the top. Reduce the center of gravity by keeping the weight of the tower at the bottom.

**Build a Bridge**

**Materials needed:**

* LEGO elements (at least 10 quarts per team)
* 48x48 baseplates (1 for each team). Younger teams (~kindergarten) use a 32x32 baseplate
* Incremental weights – We’ve found books, like encyclopedias or Harry Potter series to work well

**Setup:** Assign no more than 5 or 6 kids per baseplate. Give each team access to elements, either by their own bin or a shared pile.

**Verbal instructions**: Nothing is to be built on the baseplate. Teams must build a pylon on both sides and then build **a bridge at least 6 studs wide** *(to give enough surface to hold the weight )*to span the baseplate. Make sure you make your bridge tall enough to sink a little once weights are placed on it, because once the bridge touches the lava/water, it is considered compromised.

**Time:** Approximately 30 minutes. It will vary based on age, team size, and ability. Give more time if they’re doing well; add more time after a sample weight check, if needed. The point is to keep the kids engaged in the competition.

**Additional Challenge** – Sometimes, the weights you have won’t be enough. IF you fall into this situation, get someone really strong to over emphasize pushing down on the books with reasonable force. Depending on the ages and weights, you can have a kid try to balance their own weight on it. A reasonably well constructed bridge could withstand 30+ lbs of pressure.

**Instructor tips:**

* “At least” 6 studs wide. It can be wider, if desired.
* Avoid using plates for the pylons. It will be much harder to keep the 2 sides at the same height
* Make sure you build the bridge higher than 3-4 inches from the baseplate. It will give!
* When you place the weights, make a production over how much creaking and cracking the bridge makes! The kids will love it
* Make sure you place the weights in the same order each time on each bridge. Have it be as fair as possible and makes it easier to just say the number of increments bridges held – “Team 1 held 5 books!”
* Technic beams (bricks with holes through them) connected with at least 2 pins will provide a rigid support system for the bridge.
* Long plates are the most dense and easiest way to build a strong bridge.
* Make sure to build in an overlaying fashion, where elements cover the gaps between elements beneath them.