ACTIVITY SUMMARY

Students will use a variety of skills and FIRST Core Values, while building a tower to help Andrea create a new building in her town. Students can use LEGO® bricks, blocks, boxes, or other toys and found materials.

Age Range & Grade Level: Ages 4-6, Grades Pre-K through 1st
Program Connection: FIRST® LEGO® League Discover

ACTIVITY OUTCOMES

Participants will:
1. Sketch designs of towers
2. Construct towers for different purposes
3. Explore concepts learned and share what they discovered about their design

RELEVANCE MATRIX – Subject Area Crosswalks and Core Values Addressed

<table>
<thead>
<tr>
<th>Science</th>
<th>Math</th>
<th>Literacy</th>
<th>Social Studies</th>
<th>Technology Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion, Stability, Forces</td>
<td>Counting, Geometry</td>
<td>Reading Foundational Skill, Speaking &amp; Listening</td>
<td>N/A</td>
<td>Engineering Design Design Thinking</td>
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<tr>
<td>Discovery</td>
<td>Innovation</td>
<td>Impact</td>
<td>Inclusion</td>
<td>Teamwork</td>
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FUN! Our last core value should always be used when doing any FIRST activities.

Explore FIRST Core Values

KEY VOCABULARY

Height Balance Stable Gravity

MATERIALS & SUPPLIES NEEDED FOR THIS ACTIVITY

- At least 12 similar-sized blocks or boxes, preferably rectangular instead of cubes. For example, LEGO DUPLO 2x4 bricks. (Number of blocks does not matter)
- (Optional) measuring tape
**GUIDANCE SET-UP**

<table>
<thead>
<tr>
<th>Description – Action – Guidance</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Provide students with the student Design Brief. Share FIRST core values with students, ask them to think about using these during the activity. <a href="#">Explore FIRST Core Values</a>.</td>
<td>The design brief document is for the students and is in a separate link. Encourage students to plan and draw a design before building their tower. Use the design brief to reflect on the learning.</td>
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<tr>
<td>Set out the blocks for the student to use</td>
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<tr>
<td>Review the problem statement and criteria/constraints with the students. Remind students they will be using the engineering design process to work towards a solution.</td>
<td>Review the age appropriate engineering design process with your students.</td>
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</table>
| **Criteria / Constraints:**  
  - Tower should be free-standing (not held up by hands or propped up by any other objects)  
  - Blocks cannot be "clicked" or stuck together (such as when using LEGO bricks). The must freely separate when one is picked up. | Sharing can take place virtually by showing video or pictures of the towers built. |
| Determine how students will complete the activity, what their length of time will be, how to collaborate and how to share their solutions. Have students work on their solutions. | Questions for Reflection: How many ways can they think of to stack the blocks to build a tower? Which way is most stable? Tallest? Use the measuring tape to measure the height of each tower and compare to determine the tallest. |
| Determine how (or if) the activity will be graded, such as with the student design brief or evaluation of the tower itself. | |
| Explore the Go Further! opportunities | See below |
| Wrap up – Have students complete their self-reflection and review. | Core Values self-reflection is found in the student Design Brief document. |

**STUDENT OR TEAM ACTIONS**

1. Review the student design brief, problem statement and criteria/constraints.
2. Students complete the design brief by drawing sketches.
3. Students set out their blocks separately, in any order.
4. Students build towers.
5. *Optional* - Explore the Go Further! opportunities.
6. Students share their solution and reflect on their learning by explaining what they did to a teacher, friend, or family member.
7. Students complete their self-reflection.

**GO FURTHER!**

- Try changing hands or using only one hand.
- Team up with a family member to combine all their blocks to build a single tower.
- Add additional blocks and see how tall a tower they can build.

*FIRST is a global robotics community that prepares young people for the future.*  
[www.firstinspires.org](http://www.firstinspires.org)