

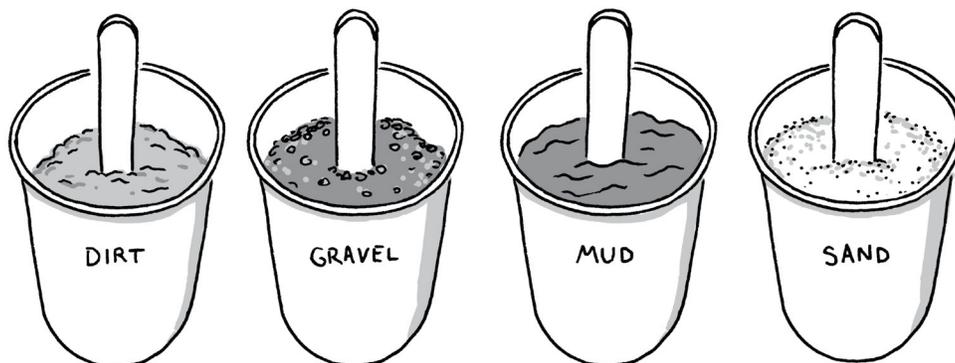
**BUILD IT YOURSELF****The Right Footing**

**Supplies:** marker, 4 paper cups, dirt, gravel, mud, sand, 4 craft sticks, blow dryer with multiple settings, science journal and pencil, water

**A pagoda's tiers hold up to the force of powerful winds by moving independently. Shibam's mud skyrises also stand up to the force of wind. But Shibam is vulnerable to floods. Experiment with natural materials to build foundations, determining which best stand up to the forces of wind and water.**

1 Label each of the paper cups: Dirt, Gravel, Mud, Sand. Fill the cups halfway with the materials indicated. Each represents a different ground condition on which a tower will be built. Tamp down each material with your fingertips to compact it.

2 Firmly plant a craft stick in each cup. Allow each tower to stand for a few minutes. What do you observe? Has there been any movement or leaning? Which tower appears most solidly planted?



3 Predict what will happen when you simulate wind's force. At its lowest setting, aim the blow dryer at the flat side of each tower in turn. How does each respond? What happens when you switch to higher settings? Record your observations on the data chart.

## ACTIVITY!

Dirt	Gravel	Mud	Sand
Low Wind Trial:	Low Wind Trial:	Low Wind Trial:	Low Wind Trial:
High Wind Trial:	High Wind Trial:	High Wind Trial:	High Wind Trial:
Flood Trial:	Flood Trial:	Flood Trial:	Flood Trial:

**4** Predict what will happen when you simulate flooding. How will each foundation hold up? How will each tower respond? Pour water into each cup until it reaches the top of the foundation. Record your observations on the data chart.

**5** Assess your findings. What conclusions can you draw about foundations and forces?



## DID YOU KNOW?

The Tiger Hill Pagoda tilts! Officially known as the Huqui Tower of Suzhou, China, the elegant pagoda stands 154 feet tall (47 meters). In about 960 BCE, ancient engineers constructed it with brick and mud. But they erected it on an unstable foundation that is part rock and part soil. The Huqui Tower's top tilts by about 7.6 feet (2.32 meters).

