



# In-Tense Engineering

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# In-Tense Engineering

## OVERVIEW

Camping can be a fun and peaceful adventure! Whether you're going on a short trip for a weekend or for several days, you're going to need something to stay in! If you've never been camping before, you might start with camping in a tent on a short weekend trip. Camping in a tent is something almost anyone can do and setting up a tent is just as easy!

There are many different types of tents that you can use for camping. Today we are going to teach you how to set up a dome tent. Dome tents are a good choice because they are simple to set up, they're fairly strong in stormy conditions and they can be pitched without stakes.

There are many different kinds of tents and even more reasons for wanting to go camping. For more information about different kinds of tents and camping in general, visit [Camps and Trails](#) and [Outdoor Fact](#).



**Ground Cloth** - A layer of material beneath your tent to help keep dirt, moisture and sharp objects from entering the floor of the tent.

**Rainfly** - A rainfly is the floorless, waterproof outer layer of a double-wall tent.

**Semicircle** - Half of a circle

**Wind Load** - the force on a structure arising from the impact of wind on it.

**Deflect** - To cause something to change direction by interposing another object or force; turn aside from a straight course.

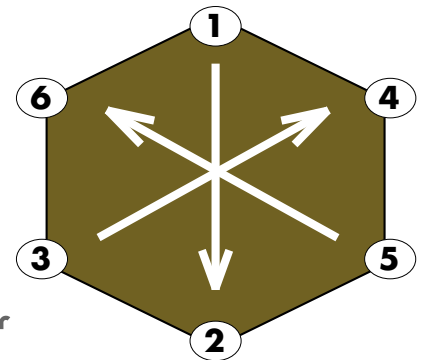
**Vacuum** - A space from which most or all of the matter has been removed, or where there is little or no matter



# CONSTRUCTION

## MATERIALS NEEDED

- 6 sided dome tent
- 1 ground cloth
- Tent stakes



Step 5 Diagram

## STEPS

**Step 1:** Locate your ideal camping area. Check for bumps, lumps, and rocks on the ground. You want to set your tent up on a slight hill so that the slope allows water to drain away if it rains. Do not place your tent on a flat area, because if it rains the water will pool up around your tent and get everything wet. Check the trees around your tent space. Don't set your tent up under any dead trees, branches or anything else that may fall on you or your tent!

**Step 2:** Lay down your ground cloth. Think about where you are going to place the door of your tent. If your tent is on a hill slope you'll want the door to be on the downhill side.

**Step 3:** Unpack your tent and lay it out flat over your ground cloth. Always be aware of your tent door location.

**Step 4:** Stake down your tent. Choose a corner to stake first and then stake down opposite corners of the tent until all corners are secured. Staking down opposite corners one at a time will ensure that your tent is secure and uniform.

**Step 5:** Connect your tent poles together. The tent poles will serve as the skeleton or frame of the tent's structure.

**Step 6:** Slide your tent poles into the holes while your tent is laying flat. During this step, you are connecting the tent's material with the poles to form its structure.

**Step 7:** One at a time, slowly bring the tent poles upwards. Place each tent pole in it's peg. Once this step is completed, the tent's structure becomes locked.

**Step 8:** Get your rainfly ready (insert the pole into the rainfly)

**Step 9:** Drape your rainfly over the outside of the tent and hook it to each loop around the tent. The rainfly serves as a barrier between the tent and the natural elements such as rain. Be sure not to let the rainfly touch your tent. If this happens, the inside of your tent can become dewy. The rainfly helps to keep you dry if it rains or if there is a heavy dew during the night.

**Step 10:** Enjoy your tent and your camping adventure!



# STRAW STRUCTURES

## OVERVIEW

Now that we have learned how to set up a tent, we're going to show you how to build your own tiny tent structure out of straws, pipe cleaners, toothpicks, marshmallows and gumdrops or gummy candies. During this activity, we're going to learn about tent shapes and why they're important!

Shapes are the key to a strong structure. The tent we constructed was a six sided dome tent. Our tent features shapes such as a hexagon, triangles, and several semicircles. The top 3 semicircles formed our roof. When we cut the bottom of our hexagon in half we find two more semicircles.

The reason that some tents, like dome tents, have rounded roofs is because a semicircle or a rounded roof reduces the amount of wind load on a tent structure. This is because the rounded shape reduces the surface area of your tent's roof and decreases the surface area that wind can push against. Reducing the wind load helps to maintain the stability of your tent.

A triangle or A frame tent structure will deflect wind, but due to the sharp peak the wind will speed up creating a vacuum on the opposite side of the tent. This can cause structure deformation, damage or cause the tent structure to move. The reason we're talking about this is because if we are camping in an area with high winds, a triangle shaped tent structure will need to be staked down more securely and have a strong frame.



# STRAW STRUCTURES

## MATERIALS NEEDED

Straws  
Pipe cleaners  
Toothpicks  
Marshmallows  
Gum drop or orange slice candies



## STEPS

**Let's create an A frame/ triangle shaped tent!**

Step 1: Use pipe cleaners or gummy candies to form the 6 corners of your tent.

Step 2: If you're using pipe cleaners, bend them to form three legs like a chicken foot.  
If you're using gummies, you may need to cut them to be smaller.

Step 3: Use straws, toothpicks or pipe cleaners to form each side of your tent.

Step 4: Form a rectangular bottom.

Step 5: Form two triangles on each end of the rectangle.

Step 6: Finally add one more straw on the top to form a roof.

**\*\* Extra challenge \*\* build a dome shaped tent and share it with us in our zoom meeting at the end of this week!**



# CAMPSITE CLEANUP

## CHECKLIST

- ◇ Clean up all trash, including waste from animals
- ◇ Make sure to have all personal items packed away
- ◇ Ensure that fires are completely put out
- ◇ Make sure that extra wood is neatly stacked or hauled away
- ◇ If lots of wood has been burned for the campfire, haul off the extra ash
- ◇ Leave your campsite better than you found it so the next person may easily use it



**Resources:** [PITSCO Education Straw Structures](#), [Texas 4-H Outdoor Education](#), [Iowa 4-H Outdoor Adventure](#), [Utah Discover Environmental Education](#), and [National 4-H Curriculum](#).

