

Basics of Balsa
Building a Legal Structure
for
Prob 4: *Save Me Structure*

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Balsa

- Not BASS
 - Looks like Balsa wood
 - Heavier than Balsa wood
- Properties of Balsa
 - Porous, Bendy
 - Certain Grades
- What are the OM Requirements?
 - 1/8 inch by 1/8 inch 36" sticks
 - Stray marks
 - Strengthening (Not allowed)
 - Where to buy? (Keep Receipt)
 - Hobby stores
 - Odyssey of the Mind - CCI
 - Packs: Kids pick out individual sticks



Types of Glue?

- Should say “glue” “adhesive” on label
- Can not be painted on! (Considered Strength)
- Safety First Always!
 - Epoxy fumes
 - Be careful of outside assistance, though always safety first

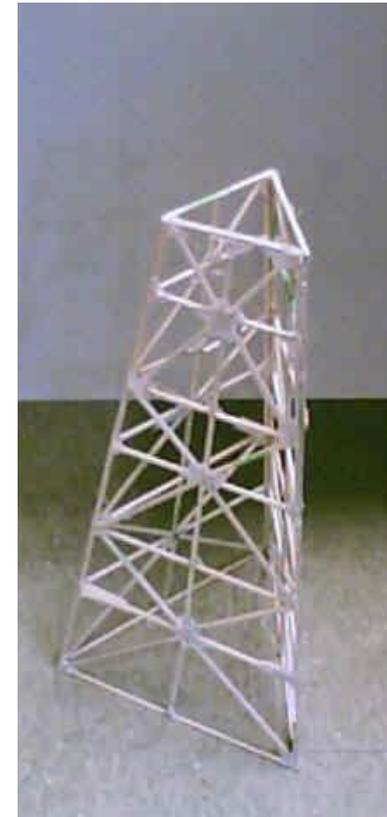


simply designing



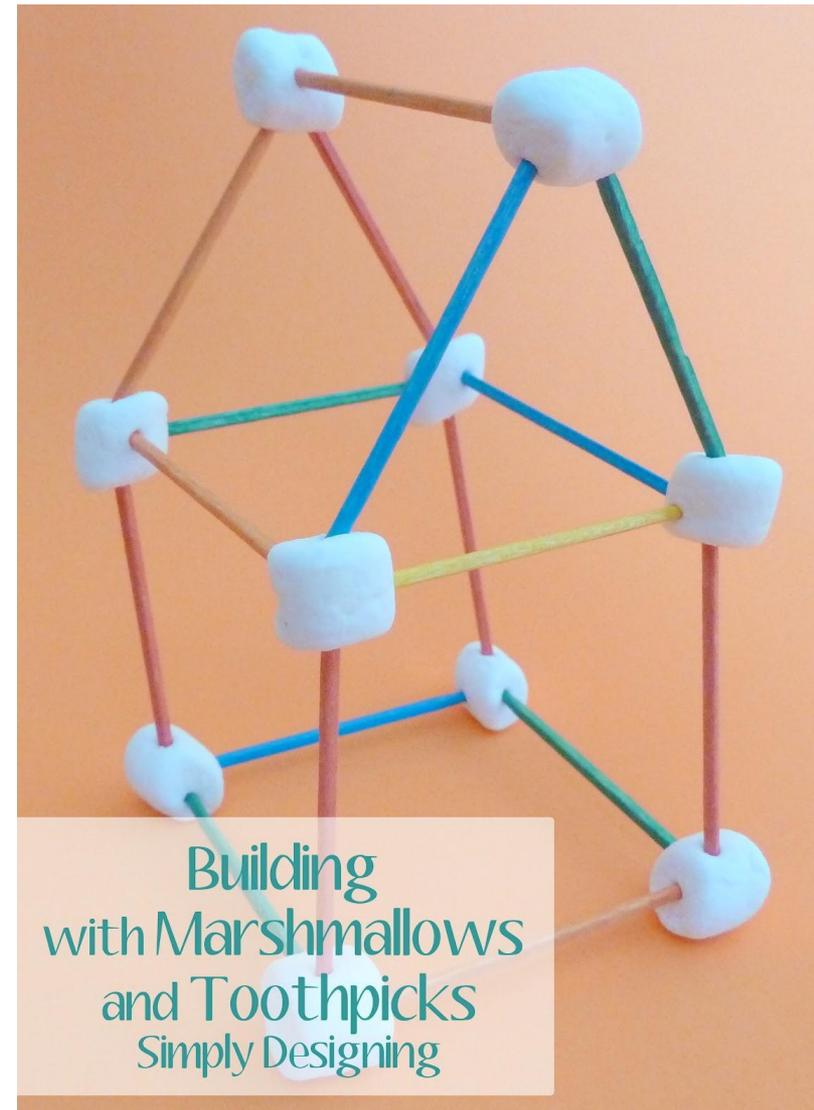
More OM Requirements

- 8" or taller
- 18 grams or less for Division I
- 17 grams or less for Division II
- 15 grams or less for Divisions III-IV
- 2" hole
- 10" wide or less
- sticks must be 1/8" x 1/8" inch for most of its length



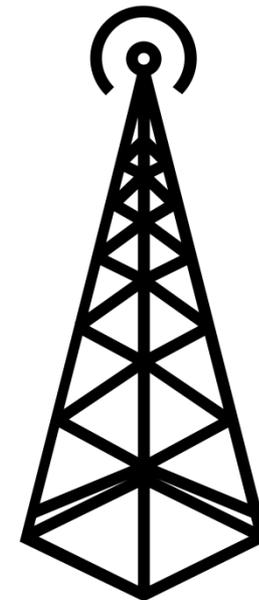
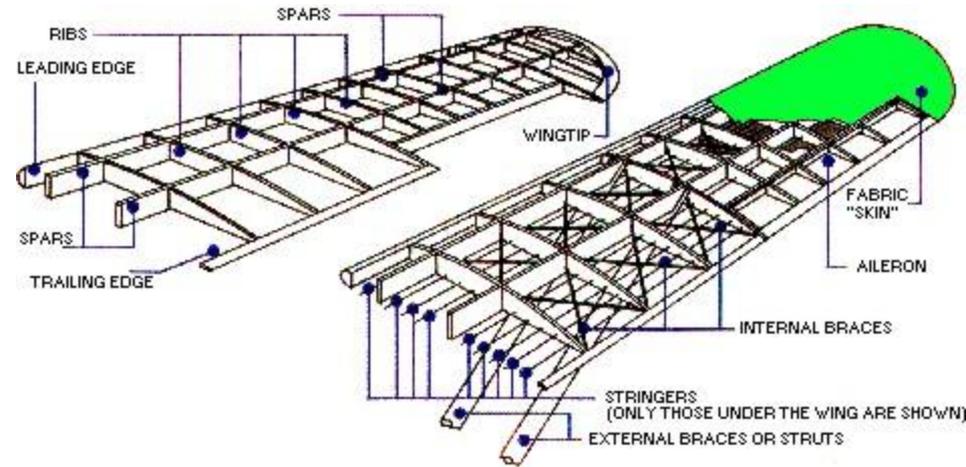
Designing – the Hard Part!

- Difficult for kids to go from 2D design to 3D design
- What is the plan?
 - Design Aids
 - Paper (Draw the plan)
 - Tinker Toys, Popsicle sticks and hot glue
 - Kinex, Toothpicks and marshmallows, straws
 - What can you use to make sure sides are equal in size?
 - jigs



Designing – the Hard Part!

- What are types of structures in our environment?
- Discuss cell towers, towers, skyscrapers, airplane wings, bridges



What is the building process?

- Several day affair
- Measuring
- Cutting (What can you use to cut balsa?)
 - Remember Safety First
- All about the joint!
 - The less space the better!
 - Right angle vs. diagonal
 - Sanding
 - No glue strands



Building

- Good teams build at least a structure a week – share the wealth!
- Remember to have the team test their structures!

The Crusher!

- OM Requirements - Remember what they are
- Putting on weights - Should be decided by the team

TESTING

- Don't want to build a crusher?
 - Textbooks
 - Anything heavy!
 - Try to use the same thing (that's why classroom textbooks are great!) and just weigh one, then multiply by how many it took to crush the structure

TESTING

- Weighing your structure
 - (What can you use to weigh your structure?)
 - conversion from ounces to grams: 1 ounce = 28.34 grams
- Take Pictures before you crush
- Have the future engineers evaluate the weak spots

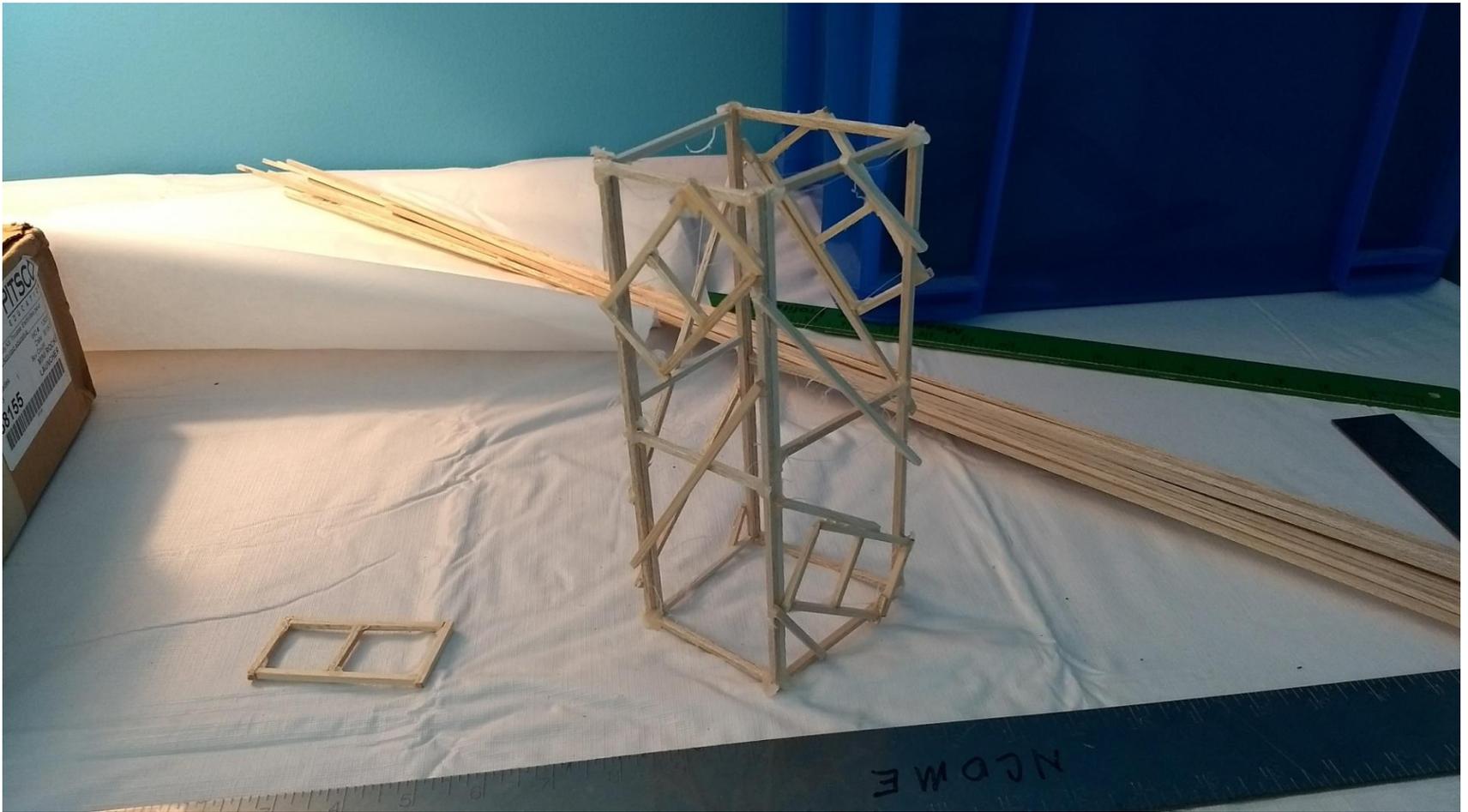
You have one side



Glue them together



Add 'stuff' – be creative!



Questions for you to consider...

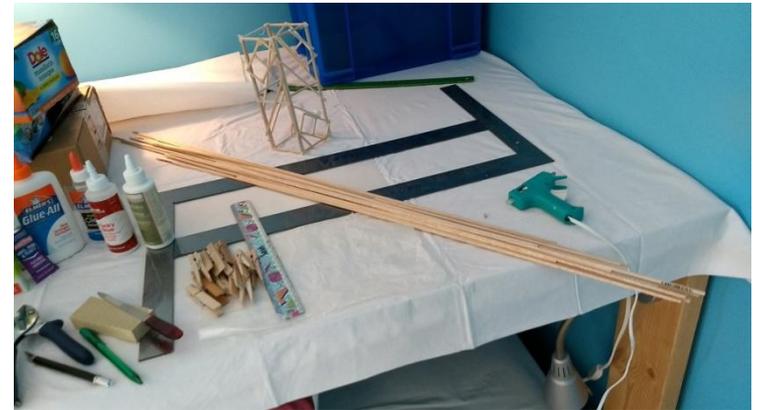
- Do structures have to have four sides? **NO!**
- Do structures have to be perfectly rectangular? **NO!**
- Do structures have to be built by the sides first? **NO!**
- Do you need to use jigs? **NO!**

Coach's Tool kit

Rulers, pens, cutting tools, adhesives, items to create jigs:



Balsa sticks for the kids to select from:



Coach's tool kit:



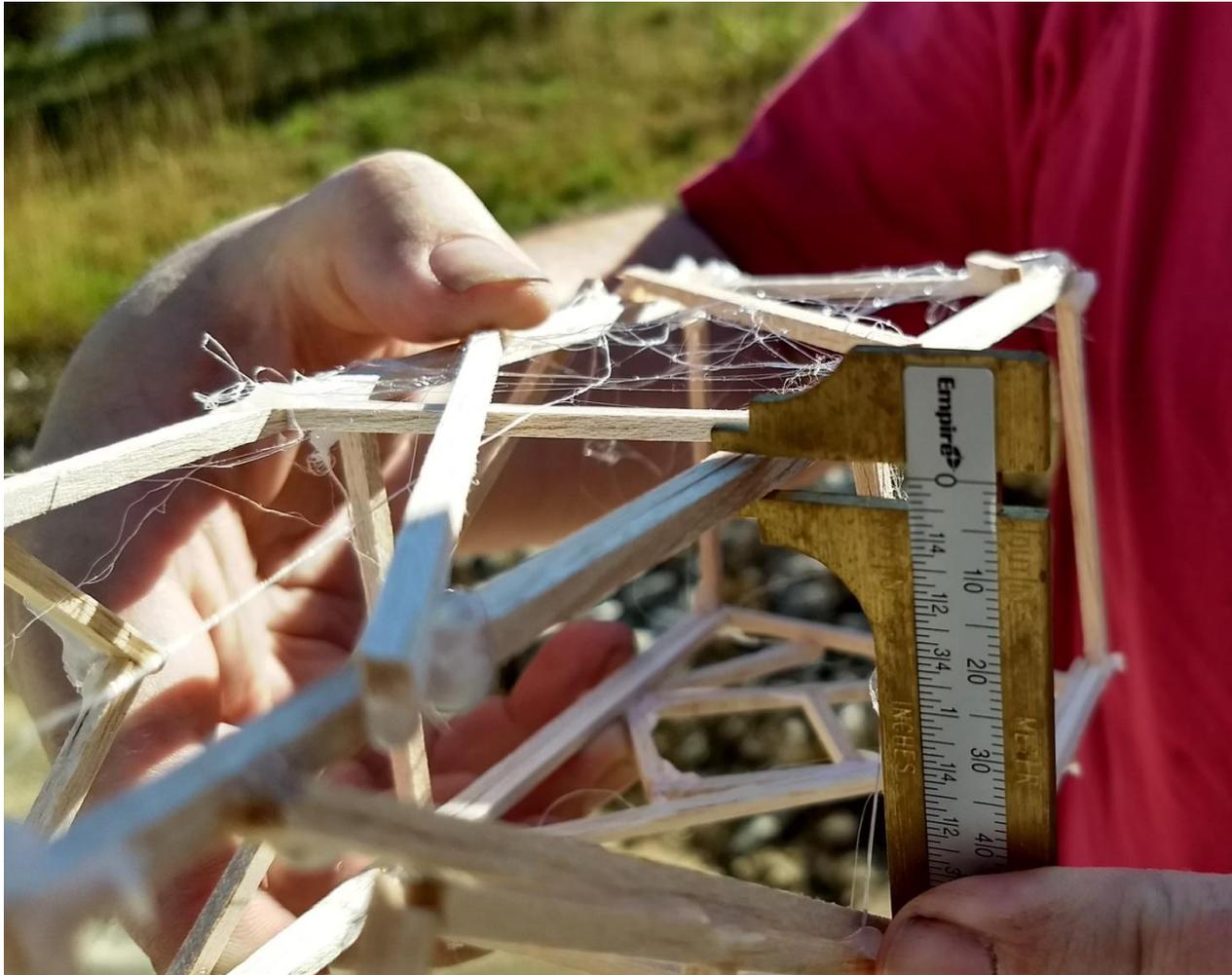
Getting the structure to competition:

- Be careful!! It will break if crushed from the sides!



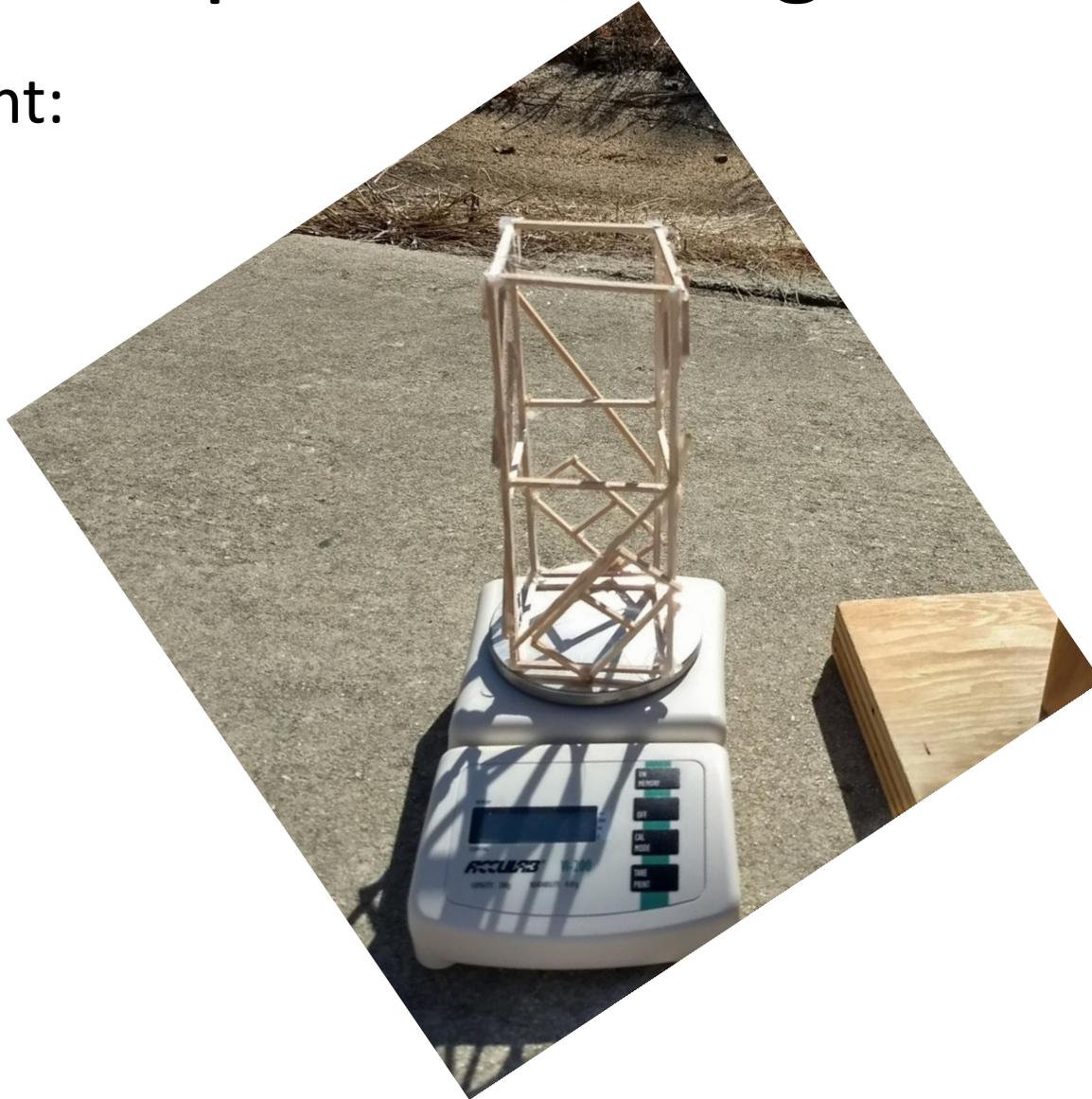
At Competition, weigh-in checks:

Thickness of sticks:



At Competition, weigh-in checks:

Weight:



At Competition, weigh-in checks:

Will it fit on the crusher?



Odyssey of the Mind Crusher



Your job...

- Help these future engineers understand the requirements
- LET THEM CREATE A STRUCTURE
- Support and encourage, but don't build
- Have fun!