Homes for Different Climates

Our Plan for Today

- Review what we learned last week
- Learn about energy in the countryside in China
- Work in engineering teams to design houses for specific climates in China
Engineers design different types of houses for different climates

China is a BIG country and has many different climates

US Dept. of Agriculture: http://www.ars.usda.gov/Main/docs.htm?docid=9815&pf=1&cg_id=0
Engineers design different types of houses for different climates

Steps of the engineering design process:

- **Design**
  - Understand the need
  - Brainstorm different designs
  - Select a design
  - Plan (drawings, materials)

- **Build**

- **Test & improve**

→ Why does it go in this order?
Engineering Design → Build → Test

• Today we are going to **design** a house for one of three climates:
  – Very cold
  – Desert
  – Tropical

  **How do you think these houses should be different from each other?**

• Then, we will **build** and **test** our houses.
Things to know before you design

- Latitude
- Altitude
- Number of rainy/snowy days
- Average summer temperature
- Average winter temperature
Harbin: very cold climate

**Test:** Your house must be able to keep the roof from caving in when we put a lot of snow (weight) on top
Test: Your house must keep dry a piece of tissue paper inside when we pour water (rain) on top.
Urumqi: very dry

**Test:** your house must be able to keep an ice cube from melting as we heat the house with a hairdryer.
Your Drawing

**Floorplan:** rooms, doorways, windows...

**Elevation:** foundation, porch, roof shape and overhangs...

National Park Service:
- [http://www.nps.gov/fiis/historyculture/old-mastic-house.htm](http://www.nps.gov/fiis/historyculture/old-mastic-house.htm)
- [http://www.nps.gov/hdp/samples/HABS/coincoin/drawings.htm](http://www.nps.gov/hdp/samples/HABS/coincoin/drawings.htm)
Your engineering instructions

1. Choose a partner
2. Choose the climate you want to design for
3. Fill out the information on the top of your worksheet about the location you chose
4. Write your goal for your *model house*
5. Make a rough sketch of your house
6. Build, test and improve your house
7. Create a final drawing of your house
8. Turn in your worksheet to the teacher
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