**LEAF MODEL INSTRUCTIONS**

See p. 681 of your text for a cross-section

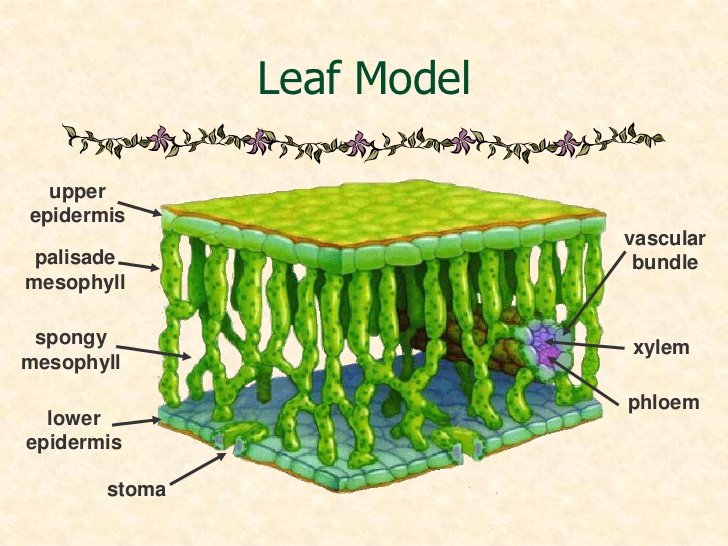
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Use Google Images to choose a **leaf blade shape**. You must model your leaf after a real plant and identify the species on your leaf model. Want to be seasonal? Choose holly, poinsettia, or ivy.

**Model Labels Checklist:**

First and last name, Class period

* Plant species name
* stem
* epidermis (upper & lower)
* cuticle (upper & lower)
* stoma
* guard cells
* vascular bundle (veins)
  + xylem
  + phloem
* palisade mesophyll
  + chloroplasts
  + accessory pigments
* spongy mesophyll



Materials and procedure:

* green construction paper = epidermis
  + cut matching epidermis pieces (top & bottom) Your leaf must be at least 20 cm long. **Label the species of leaf, your full name and your class period.**
  + Don’t forget to leave a **stem** on one end of your leaf!
  + use hole punch to make 8 **stomata** on the bottom epidermis.
* hole protectors = **guard cells**
  + use a sharpie to draw the two guard cell subunits
* wax paper = **cuticle** (top & bottom)
  + cut pieces to make them the same shape as your leaf. Tape\* on top and bottom.
* 4 straws = **vascular bundle (veins)**
  + hot glue 2 together to represent **xylem & phloem**
  + cut 2 in half to act as 4 pillars to support upper epidermis at the corners
* adding machine tape = **palisade mesophyll cells**
  + draw and trim lower edge of mesophyll cells
  + color cells & add **chloroplasts** and **two other accessory pigments**
  + tape upper edge of palisade mesophyll to edge of upper surface of leaf
* packing styrofoam = **spongy mesophyll**
  + hot glue to your bottom leaf inside

Add the following labels to help describe how the leaf helps in photosynthesis:

a flag labeled “H2O” coming out of the xylem (use a toothpick)

a flag labeled “carbs” coming out of the phloem (use a toothpick)

a pipe cleaner showing “oxygen” moving into the stomata

a pipe cleaner showing “carbon dioxide” moving out of the stomata

\*Note: Hot glue does not work with wax paper. Cuticle must be **taped to epidermis**.

