# Class #23

Should we talk about congruence?

Sure, for a change…

# Comments about homework

- "opposite sides of $m$ as M" ???
- By homework4, #1 P, Q, L, M are distinct points.
  - HW4, #1 says: A*B*C and A*C*D then A, B, C, D are distinct.
  - You had P*M*Q and P*L*Q
- Crossbar theorem was used in Proof of 3.8(c)

# Proposition 3.13

1. Exactly one of the following holds: AB < CD, AB≅CD, or AB>CD.
2. If AB<CD and CD ≅ EF, then AB<EF.
3. If AB<CD and AB ≅ EF, then EF<CD.
4. If AB<CD and CD<EF, then AB<EF.

- *Definition:* AB<CD if there exists a point E between C and D such that AB ≅ CE.

# Sketch of 1.

- Either $AB \cong CD$ or $AB \ncong CD$.
  - If $AB \cong CD$ you must show that $AB \not< CD$ and $AB \not> CD$. Which axiom might be helpful?
  - If $AB \ncong CD$, then show that either $AB < CD$ or $AB > CD$. In each case you must show that remaining option is not possible (that is, if $AB<CD$, show that $AB \not> CD$).

# Supplementary angles

- If two angles $\sphericalangle BAC$ and $\sphericalangle DAC$ have a common side $\overrightarrow{AC}$ and two other sides $\overrightarrow{AB}$ and $\overrightarrow{AD}$ are opposite rays then we say the angles are *supplements* of each other, or *supplementary angles*.

- An angle $\sphericalangle BAC$ is a right angle if it is congruent to its supplementary angle.

- Proposition 3.14: Supplementary angles of congruent angles are congruent.