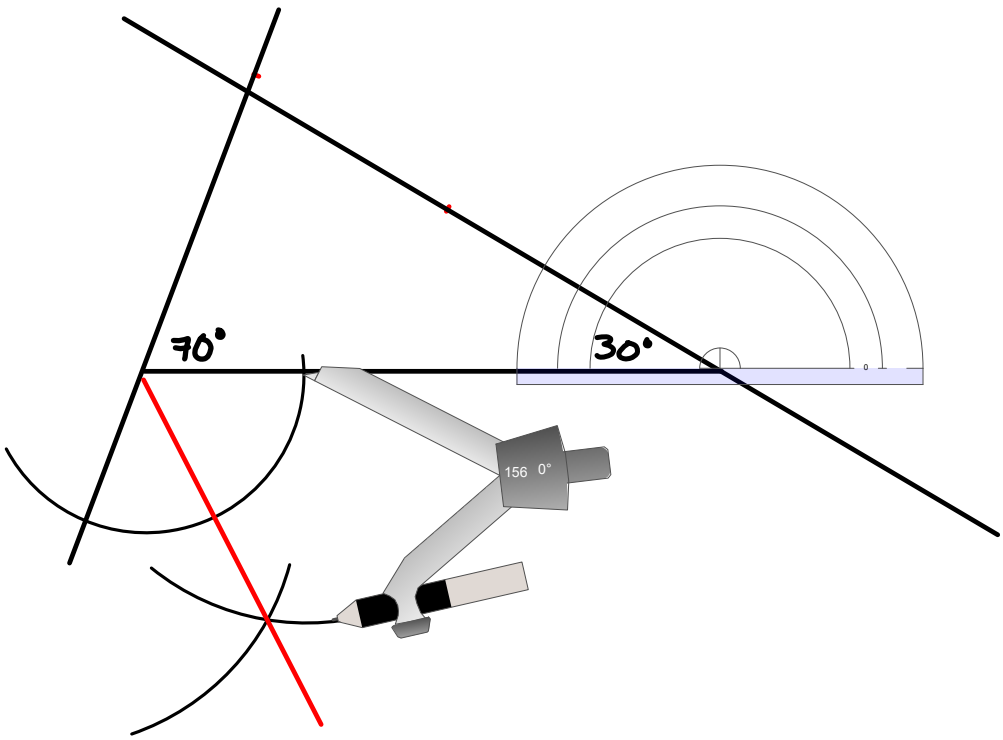
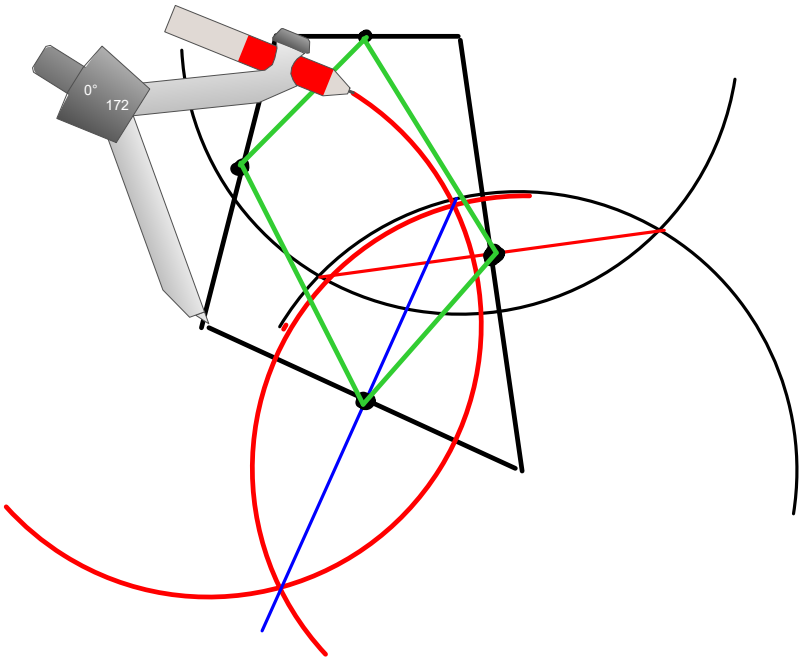
HW #1
- Read syllabus, add Khan Academy coach code, and fill out survey
- Read Ch 1.
  Note that you are responsible for knowing all definitions, theorems, and formulas in your text, even if not explicitly gone over in class.
  Key words are highlighted in your textbook in red.

HW #2
- Ch 1 Review Problems pp. 36-38 - all problems from sets I, II, & III Due Friday. Show all of your own work!

HW #3
- Ch 2 Review pp.71-74 #1-50. Due early next week.





Geometry Quiz #3 09 Nov 2018
2nd Period

For the true statement "You need to catch your nose if it is running."

1. Restate it in "if, then" form. $a \rightarrow b$
   If your nose is running, then you need to catch it.
2. State the converse of the statement. $b \rightarrow a$
   If you need to catch your nose, then it is running.
3. State the contrapositive of the statement. $\sim b \rightarrow \sim a$
   If you do not need to catch your nose, then it is not running.

Write in the missing statements for the following proofs.

20. *Theorem:* If two hungry vultures took an airplane, they would be told that there is a limit of two carrion per passenger.

Proof:

If two hungry vultures took an airplane, they would want to take along some food.

> If they want to take along some food, then they will try to carry on six dead raccoons.

If they tried to carry on six dead raccoons, the flight attended would object.

> If the flight attendent objects, then they will be told there is a limit of two carrion per passenger.

Therefore, if two hungry vultures took an airplane, then they would be told there is a limit of two carrion per passenger.

21. *Theorem:* If a group of chess players checked into a hotel, the manager would say "I can't stand chess nuts ~~boating~~ boasting in an open foyer."

Proof:

> If a group of chess players checked into a hotel, then they would stand in the lobby bragging about their tournament victories.

If they stood in the lobby bragging about their tournament victories, the manager would ask them to leave.

> If the manager asked them to leave, then they would ask why.

If they asked why, the manager would say "I can't stand chess nuts boasting in an open foyer."

Therefore if a group of chess players checked into a hotel, then the manager would say, "I can't stand chess nuts boasting in an open foyer."

2.4 – Indirect Proof

In an indirect proof, an assumption is made at the beginning that leads to a contradiction. The contradiction indicates that the assumption is false and the desired conclusion is true.

Direct versus Indirect proof of the theorem "If a, then d."

Direct Proof:

If a, then b.

If b, then c.

If c, then d.
Therefore, if a, then d.

Indirect Proof:

Suppose not d is true.

If not d, then e.

If e, then f,

And so on until we come to a contradiction.

Therefore, not d is false; so d is true.

List the assumption with which an indirect proof of each of the following statements would begin.

Example: If a tailor wants to make a coat last, he makes the pants first.

Answer: Suppose that he does not make the pants first.

4. If a teacher is cross-eyed, he has no control over his pupils.

Suppose he does have control over his pupils.

5. If a proof is indirect, then it leads to a contradiction.

Suppose it does not lead to a contradiction.