

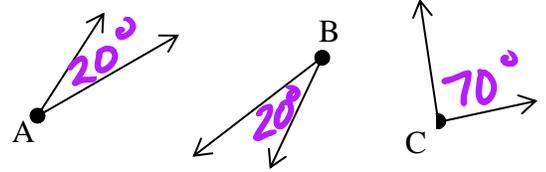
2.6 DAY 2 NOTES: DRAWING CONCLUSIONS AND PROOFS

Target: Draw conclusions and write two-column proofs

TWO NEW THEOREMS: Let's think about them algebraically first ☺

- If $\angle A$ and $\angle B$ are complementary to $\angle C$, and the $m\angle A = 20^\circ$, then... what can you conclude about $\angle A$ and $\angle B$?

$$\angle A \cong \angle B$$



- If $\angle 1$ is complementary to $\angle 2$ and $\angle 3$ is complementary to $\angle 4$ and $\angle 1 \cong \angle 3$ and $\angle 1 = 20^\circ$, what can you conclude about $\angle 2$ and $\angle 4$?

$$\text{If } \angle 1 = 20^\circ, \text{ then } \angle 2 = 70^\circ$$

$$\text{If } \angle 3 = 20^\circ, \text{ then } \angle 4 = 70^\circ$$

- How are these new theorems similar? How are they different?

EX 1: Complementary to the same \angle
 EX 2: Complementary to $\angle \cong \angle S$

CONGRUENT COMPLEMENTS THEOREM:

- If two angles are complementary to the same angle, then the two angles are congruent.
- If two angles are complementary to two congruent angles, then the other two angles are congruent.

CONGRUENT SUPPLEMENTS THEOREM:

- If two angles are supplementary to the same angle, then the two angles are congruent.
- If two angles are supplementary to two congruent angles, then the other two angles are congruent.

LET'S PRACTICE:

- Given: $\angle M$ is supplementary to $\angle A$
 $\angle T$ is supplementary to $\angle H$
 $\angle M \cong \angle T$

Conclusion: $\angle A \cong \angle H$

Reason: If 2 \angle s are
supp to $\cong \angle$ s, then
 \angle s are \cong .

- Given: $\angle S$ is complementary to $\angle G$
 $\angle E$ is complementary to $\angle G$

Conclusion: $\angle S \cong \angle E$

Reason: If 2 \angle s are
complementary to
the same \angle , then \angle s \cong .

A TWO COLUMN PROOF DESCRIPTION:

1. Every proof will start with a Given statement.
2. Every proof will end with the proving statement.
3. Every proof has numbered statements and reasons!

Statements	Reasons
<p>1) A</p> <p>2) B</p>	<p>1) Given</p> <p>2) If A, then B.</p>
<ul style="list-style-type: none"> • Remember that reasons should always be written as <u>conditional statements (IF... THEN...)</u> • The <u>hypothesis</u> of the reason always comes from the previous step. • The <u>conclusion</u> of the reason always refers to information from the current step. 	

Use the information below to write a two column proof:

1. **Given:** I love peanut butter
Prove: I got jelly on my shirt



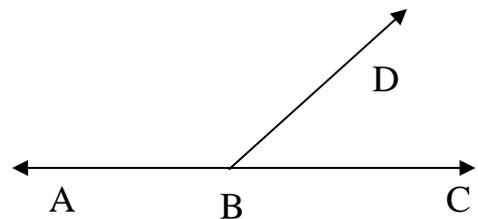
2. **Given:** I see a snake
Prove: I turn green



Statements	Reasons
	<p style="font-size: 2em; color: purple;">answers vary</p>

Statements	Reasons
	<p style="font-size: 2em; color: purple;">☺</p>

3. **Given:** $\angle ABD$ and $\angle CBD$ form a linear pair
Prove: $\angle ABD$ and $\angle CBD$ are supplementary



As drawing a conclusion...

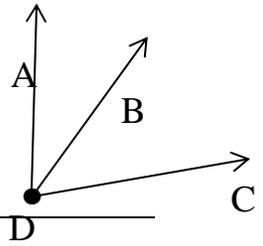
Conclusion: $\angle ABD$ and $\angle CBD$ are supp

As a two-column proof...

Statements	Reasons
<p>1) $\angle ABD$ and $\angle CBD$ form a linear pair</p> <p>2) $\angle ABD$ and $\angle CBD$ are supp</p>	<p>1) Given</p> <p>2) If 2 \angles form a linear pair, then \angles are supp</p>

4. Given: \overline{DB} bisects $\angle ADC$

Prove: $\angle ADB \cong \angle BDC$



Statements	Reasons
1) \overline{DB} bisects $\angle ADC$	1) Given
2) $\angle ADB \cong \angle BDC$	2) If a ray bisects an \angle , then it divides the \angle into 2 \cong \angle s.

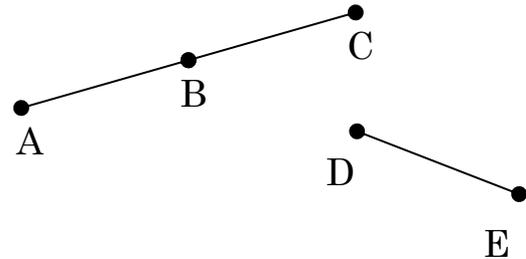
Think-Pair-Share:

Why would we need to write something in "Proof" format instead of just drawing a conclusion?

What does a proof look like when there are more than two steps?

5. Given: B is the midpoint of \overline{AC}
 $\overline{BC} \cong \overline{DE}$

Prove: $\overline{AB} \cong \overline{DE}$



Statements	Reasons
① B is midpoint of \overline{AC}	① Given
② $\overline{BC} \cong \overline{DE}$	② Given
③ $\overline{AB} \cong \overline{BC}$	③ If a point is a midpoint, then it divides the segment into 2 \cong segments
④ $\overline{AB} \cong \overline{DE}$	④ Transitive Property

PARTNER CHALLENGE: Come up with a proof where we would have to use the Substitution Property!