

**Drawing Conclusions –  
Midpoints, Bisectors, Transitive, Reflexive**

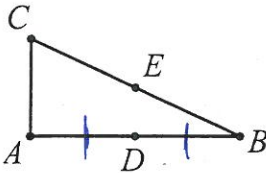
Midpoint: divides segment into 2 congruent segments.

As a conditional:

**Condition**  
If a point is a midpoint, then the point divides a segment into 2 congruent segments.

Result is made from the given condition.

Ex:



Known Fact: D is the midpoint of  $\overline{AB}$ . ← Condition.

Which conclusion can now be called a fact?

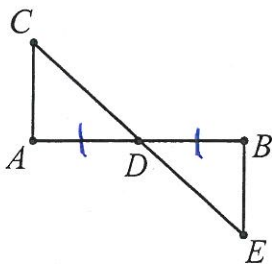
Conclusion A:  $\overline{AD} \cong \overline{DB}$       Conclusion B:  $\overline{CE} \cong \overline{EB}$

Segment Bisector: goes through the midpt. of a segment.

As a conditional:

**Condition**  
If a segment bisects another segment, then it goes through the midpt of that segment.

Ex:



Known Fact:  $\overline{CE}$  bisects  $\overline{AB}$ . ← Condition.

Which conclusion can now be called a fact?

Conclusion A: D is midpoint of  $\overline{AB}$ .

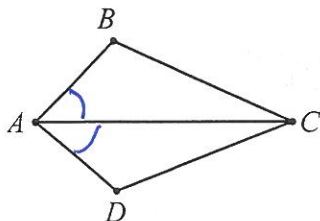
Conclusion B: D is midpoint of  $\overline{CE}$ .

Angle Bisector: divides an angle into 2  $\cong$   $\angle$ 's.

As a conditional:

Condition	Conclusion
If Ray is an <del>right</del> angle Bisector	, then it <del>divides</del> the angle into 2 $\cong$ $\angle$ 's.

Ex:



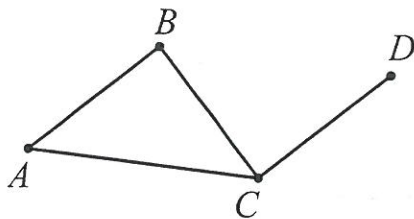
Known Facts:  $\overline{AC}$  bisects  $\angle BAD$ . ← Condition

Which conclusion can now be called a fact?

Conclusion A:  $\angle BAC \cong \angle DAC$ .

Conclusion B:  $\angle BCA \cong \angle DCA$ .

Transitive Property of Equality: If  $a=b$  and  $b=c$ , then  $a=c$  (Chain Rule)



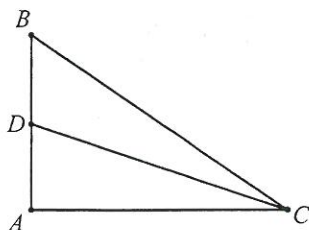
Known Facts:  $\overline{AB} \cong \overline{BC}$  ← common link  
 $\overline{BC} \cong \overline{CD}$

Which conclusion can now be called a fact?

Conclusion A:  $\overline{AB} \cong \overline{CD}$

Conclusion B:  $\overline{AB} \cong \overline{AC}$

Reflexive Property of Equality: a figure is always  $\cong$  to itself.



Known Facts: (only the picture)

Which conclusions can now be called a fact?

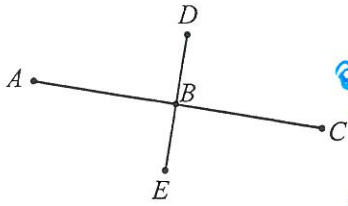
Conclusion A:  $\angle A \cong \angle A$

Conclusion B:  $\overline{AC} \cong \overline{AC}$

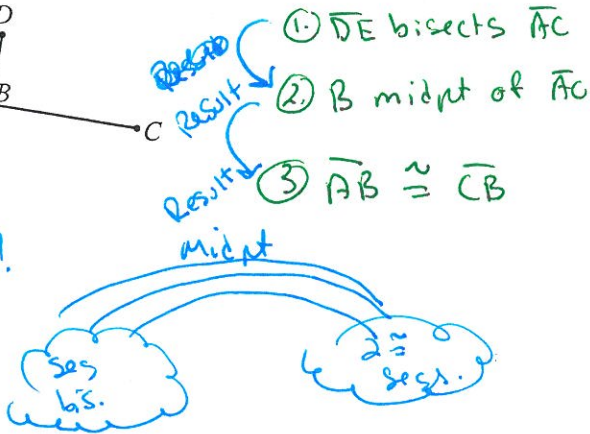
Conclusion C: D is the midpoint of  $\overline{AB}$ . no!

Drawing Conclusions Using a Two Column Format:

Ex: Given:  $\overline{DE}$  bisects  $\overline{AC}$

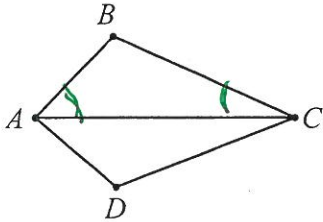


Rain bow connection!



Statements	Reasons
① $\overline{DE}$ bisects $\overline{AC}$	① Given
② B midpt of $\overline{AC}$	② Seg bisector goes through a midpt.
③ $\overline{AB} \cong \overline{CB}$	③ midpt makes 2 $\cong$ segments.

Ex: Given:  $\overline{AC}$  bisects  $\angle BCD$   
 $\angle BCA \cong \angle BAC$



Statements	Reasons
① $\overline{AC}$ bisects $\angle BCD$	① Given.
② $\angle BAC \cong \angle DAC$	② $\angle$ bisector $\div$ $\angle$ into 2 $\cong$ $\angle$ 's.
③ $\angle BCA \cong \angle BAC$	③ Given
④ $\angle BCA \cong \angle DAC$	④ Transitive.