

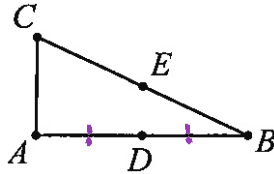
Drawing Conclusions –  
Midpoints, Bisectors, Transitive, Reflexive

**Midpoint:** a midpoint divides a segment into 2 congruent segments.  
(midpt ÷ seg into 2 ≅ seg)

As a conditional:

Condition	Conclusion
If <span style="border: 1px solid black; padding: 2px;">a point is a midpoint</span>	, then <span style="border: 1px solid black; padding: 2px;">it divides a segment into 2 ≅ segments.</span>

Ex:



Given: D is the midpoint of  $\overline{AB}$ .

Which conclusion can now be called a fact?

Conclusion A:  $\overline{AD} \cong \overline{DB}$

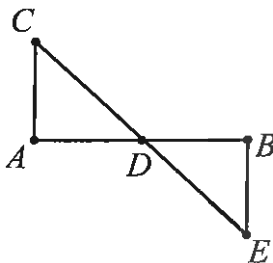
Conclusion B:  $\overline{CE} \cong \overline{EB}$

**Segment Bisector:** a segment bisector passes thru the midpoint  
(seg. bis. passes thru midpt)

As a conditional:

Condition	Conclusion
If <span style="border: 1px solid black; padding: 2px;">there is a segment bisector</span>	, then <span style="border: 1px solid black; padding: 2px;">it passes thru the midpt.</span>

Ex:



Given:  $\overline{CE}$  bisects  $\overline{AB}$ .

Which conclusion can now be called a fact?

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

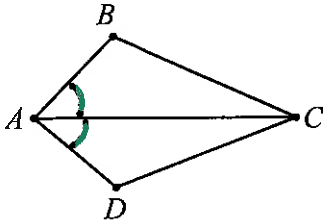
Conclusion B: D is midpoint of  $\overline{CE}$ .

Angle Bisector: Angle bisector divides an angle into 2 congruent angles  
 ( $\angle \text{bis} \div \angle \text{ into } 2 \cong \angle \text{s}$ )

As a conditional:

Condition	Conclusion
If <span style="border: 1px solid black; padding: 2px;">there is a <math>\angle</math> bisector</span>	then <span style="border: 1px solid black; padding: 2px;">it divides an <math>\angle</math> into 2 <math>\cong</math> <math>\angle</math>s</span>

Ex:



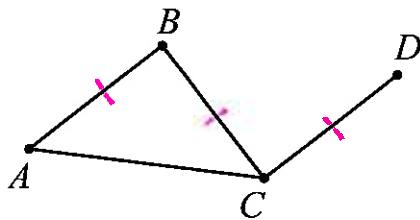
Given:  $\overline{AC}$  bisects  $\angle BAD$ .

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  $a=c$ .



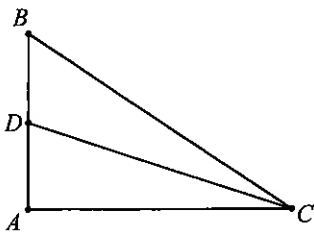
Given:  $\overline{AB} \cong \overline{BC}$   
 $\overline{BC} \cong \overline{CD}$

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 (line or angle) is congruent to itself



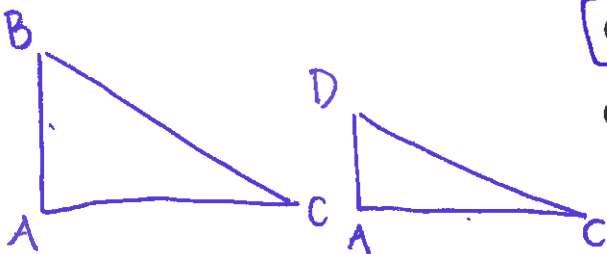
Given: (only the picture)

Which conclusions can now be called a fact?

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

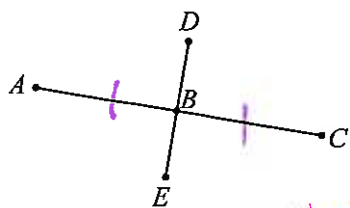
Conclusion B:  $\overline{AC} \cong \overline{AC}$

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



Drawing Conclusions Using a Two Column Format:

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

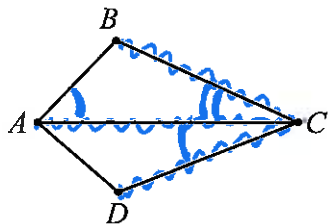


Statements	Reasons
① $\overline{DE}$ bis $\overline{AC}$	① Given
② B is midpt $\overline{AC}$	② seg bis passes thru midpt
③ $\overline{AB} \cong \overline{BC}$	③ midpt $\div$ seg into 2 $\cong$ seg



seg bis  
↓  
midpt  
↓  
2  $\cong$  seg

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



Statements	Reasons
① $\overline{AC}$ bis $\angle BCD$	① Given
② $\angle BCA \cong \angle DCA$	② $\angle$ bis $\div$ $\angle$ into 2 $\cong$ $\angle$ s
③ $\angle BCA \cong \angle BAC$	③ Given
④ $\angle DCA \cong \angle BAC$	④ Transitive

$\angle$  bis  
↓  
2  $\cong$   $\angle$ s

