$\sqrt{80} = 4\sqrt{5}$
why???

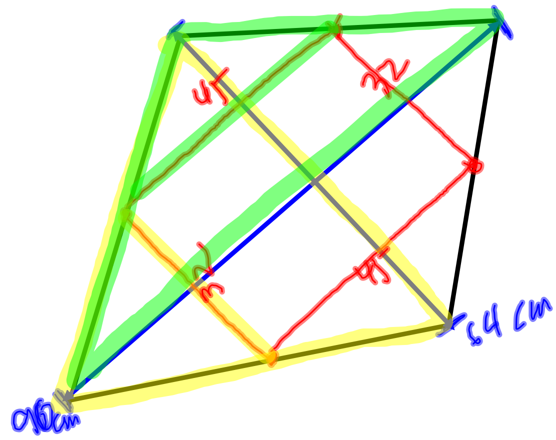
$\frac{2}{4} = \frac{1}{2}$ ... you always reduce fractions right?
... well we do the same for radicals.

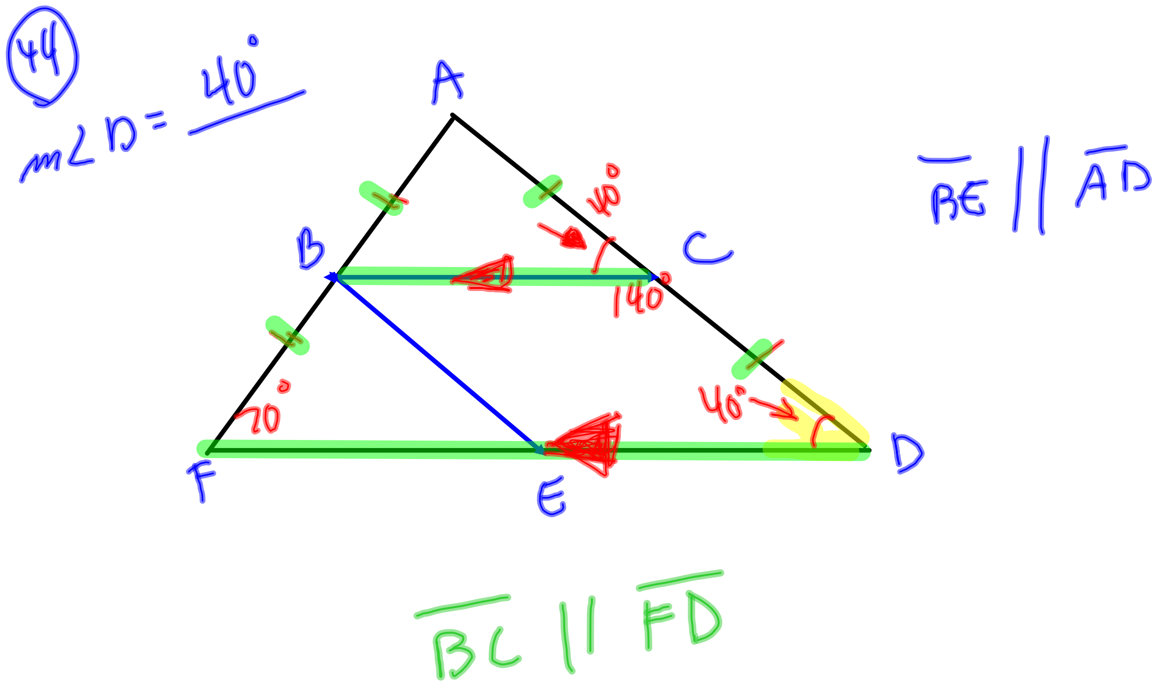
$80 = 2 \cdot 40$
and
$80 = 4 \cdot 20$
and
$80 = 16 \cdot 5$ largest perfect square factor

$\sqrt{80} = \sqrt{16 \cdot 5} = \sqrt{16} \cdot \sqrt{5} = 4 \cdot \sqrt{5} = 4\sqrt{5}$ simplest radical form

perfect squares: 4, 9, (16), 25, 36, 49, 64, 81, ...
÷ 80 ?

(33)





Construct a Perpendicular Bisector to a Segment

1) Using a straight edge, draw a segment on your paper.

2) Using your compass, construct its perpendicular bisector.

Construct an Angle Bisector

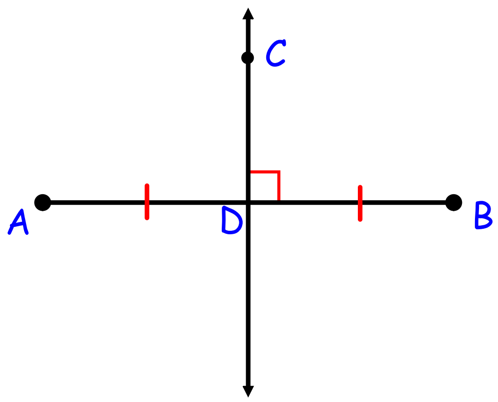
1) Using a straight edge, draw an angle on your paper.

2) Using your compass, construct its bisector.

Theorem 5-2: Perpendicular Bisector Theorem

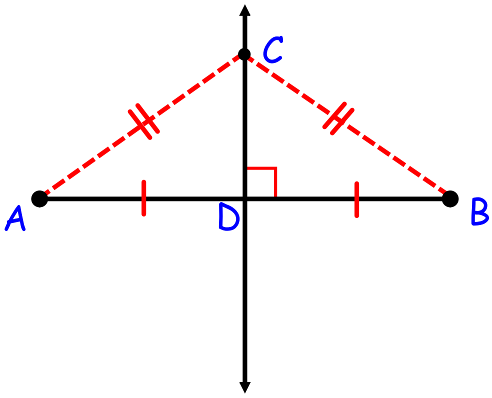
Theorem 5-2: Perpendicular Bisector Theorem

If a pt is on ⊥ bisector of a seg.



Theorem 5-2: Perpendicular Bisector Theorem

If a pt is on ⊥ bisector of a seg.
then it is equidist from endpts of the seg.



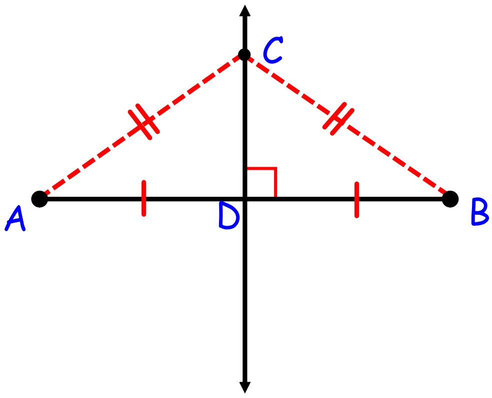
Theorem 5-2: Perpendicular Bisector Theorem

If a pt is on ⊥ bisector of a seg.
then it is equidist from endpts of the seg.

<u>Given</u>: $\overleftrightarrow{CD} \perp \overline{AB}$

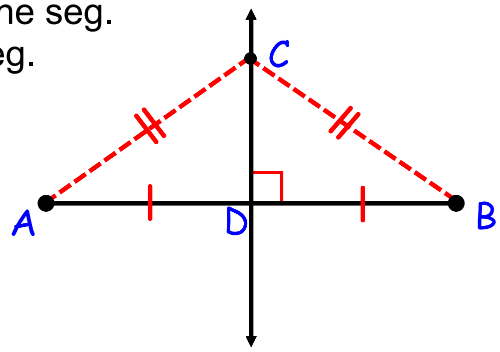
$\overleftrightarrow{CD}$ bisects $\overline{AB}$

<u>Then</u>: $\overline{CA} \cong \overline{CB}$



Theorem 5-3: Conv of Perpendicular Bisector Theorem

If a pt is equidist from endpts of the seg.
Then it is on ⊥ bisector of that seg.



<u>Given</u>: $\overline{CA} \cong \overline{CB}$

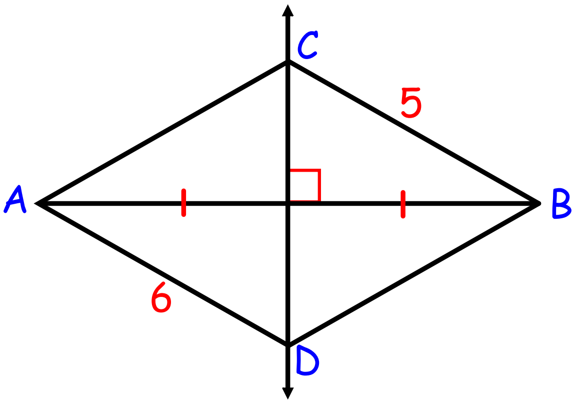
<u>Then</u>: $\overleftrightarrow{CD} \perp \overline{AB}$

$\overleftrightarrow{CD}$ bisects $\overline{AB}$

Questions

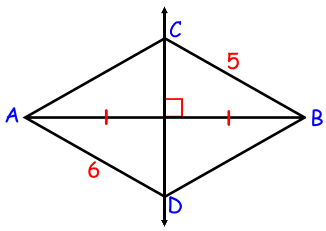
Next...

1 CA =



1) *CA* = ?

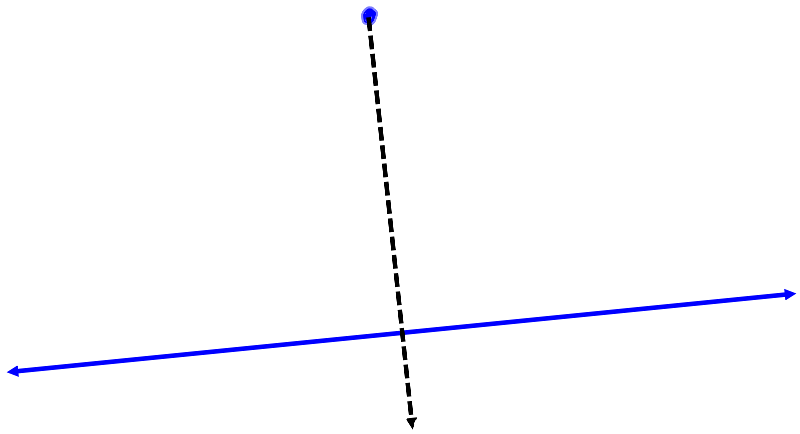
2) *DB* = ?



back...

2

Defn: Distance from a pt to a line



Defn: Distance from a pt to a line

The dist from a pt to a line

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The dist from a pt to a line

is the len of ⊥ seg from pt to line.

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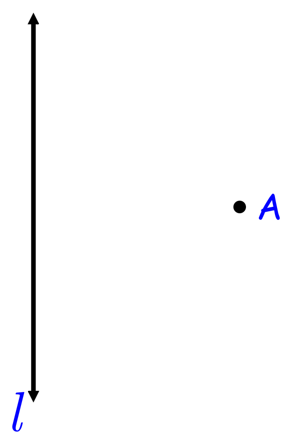
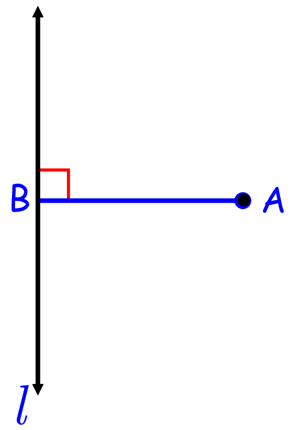


dist fm pt A to line l =

Defn: Distance from a pt to a line

The dist from a pt to a line

is the len of ⊥ seg from pt to line.



dist fm pt *A* to line l = *AB*

Theorem 5-4: Angle Bisector Theorem

Theorem 5-4: Angle Bisector Theorem

If a pt is on an ∠ bisector
then it is equidist from sides of the ∠.

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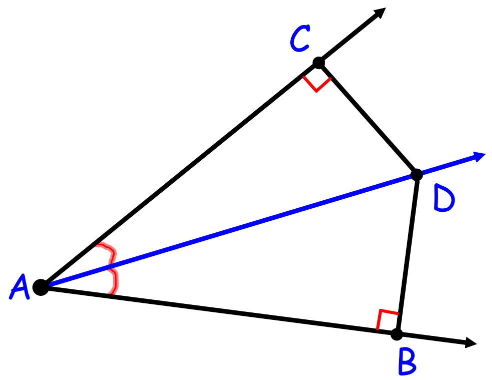
If a pt is on an ∠ bisector
then it is equidist from sides of the ∠.



Theorem 5-4: Angle Bisector Theorem

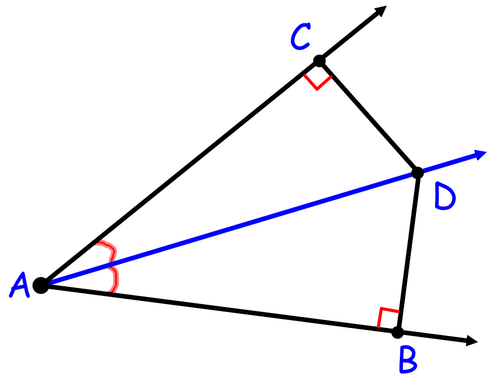
If a pt is on an $\angle$ bisector
then it is equidist from sides of the $\angle$.

<u>Given</u>: $\overrightarrow{AD}$ bisects $\angle CAB$

$\overline{CD} \perp \overrightarrow{AC}$

$\overline{BD} \perp \overrightarrow{AB}$

<u>Prove</u>: $CD = BD$



Theorem 5-4: Angle Bisector Theorem

If a pt is on an $\angle$ bisector
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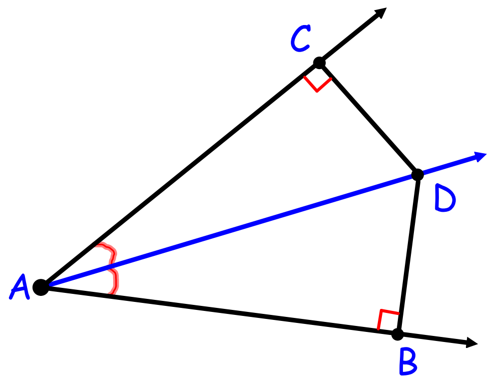
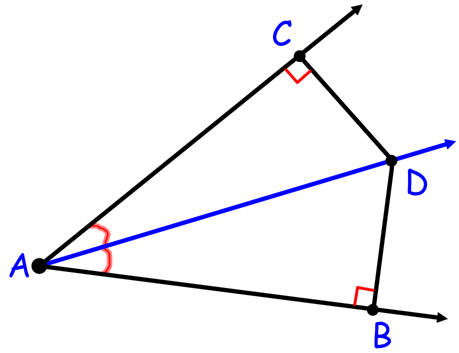


$\angle CAD \cong \angle BAD$ — *defn $\angle$ bisector*

Theorem 5-4: Angle Bisector Theorem

If a pt is on an $\angle$ bisector
then it is equidist from sides of the $\angle$.



Given: $\overrightarrow{AD}$ bisects $\angle CAB$

$\overline{CD} \perp \overrightarrow{AC}$

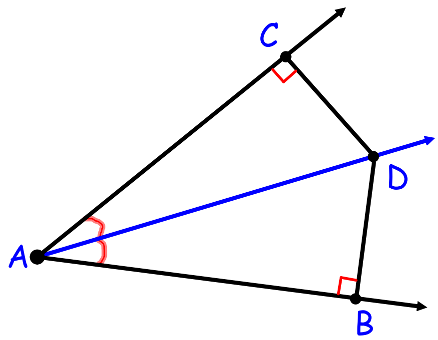
$\overline{BD} \perp \overrightarrow{AB}$

Prove: $CD = BD$

$\angle CAD \cong \angle BAD$	*defn $\angle$ bisector*
$\angle ACD \cong \angle ABD$	*all rt $\angle$'s $\cong$*

Theorem 5-4: Angle Bisector Theorem

If a pt is on an $\angle$ bisector
then it is equidist from sides of the $\angle$.



Given: $\overrightarrow{AD}$ bisects $\angle CAB$

$\overline{CD} \perp \overrightarrow{AC}$

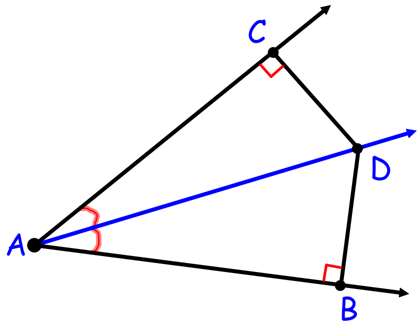
$\overline{BD} \perp \overrightarrow{AB}$

Prove: $CD = BD$

$\angle CAD \cong \angle BAD$	*defn $\angle$ bisector*
$\angle ACD \cong \angle ABD$	*all rt $\angle$'s $\cong$*
$\overline{AD} \cong \overline{AD}$	*reflex POC*

Theorem 5-4: Angle Bisector Theorem

If a pt is on an ∠ bisector
then it is equidist from sides of the ∠.



Given: $\overrightarrow{AD}$ bisects ∠*CAB*

$\overline{CD} \perp \overrightarrow{AC}$

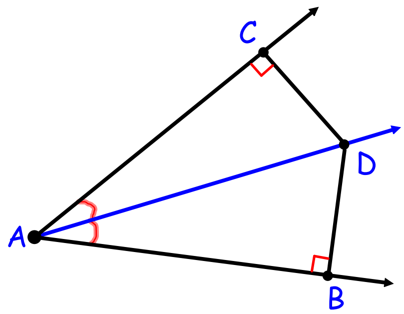
$\overline{BD} \perp \overrightarrow{AB}$

Prove: *CD* = *BD*

∠*CAD* ≅ ∠*BAD*	*defn ∠ bisector*
∠*ACD* ≅ ∠*ABD*	*all rt ∠'s ≅*
$\overline{AD} \cong \overline{AD}$	*reflex POC*
Δ*CAD* ≅ Δ*BAD*	*AAS*

Theorem 5-4: Angle Bisector Theorem

If a pt is on an ∠ bisector
then it is equidist from sides of the ∠.



Given: $\overrightarrow{AD}$ bisects ∠*CAB*

$\overline{CD} \perp \overrightarrow{AC}$

$\overline{BD} \perp \overrightarrow{AB}$

Prove: *CD* = *BD*

∠*CAD* ≅ ∠*BAD*	*defn ∠ bisector*
∠*ACD* ≅ ∠*ABD*	*all rt ∠'s ≅*
$\overline{AD} \cong \overline{AD}$	*reflex POC*
Δ*CAD* ≅ Δ*BAD*	*AAS*
$\overline{CD} \cong \overline{BD}$	*CPCTC*

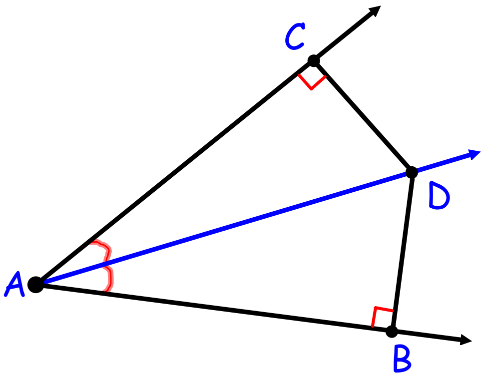
Theorem 5-4: Angle Bisector Theorem

If a pt is on an ∠ bisector
then it is equidist from sides of the ∠.

Given: $\overrightarrow{AD}$ bisects ∠CAB

$\overline{CD} \perp \overrightarrow{AC}$
$\overline{BD} \perp \overrightarrow{AB}$

Prove: CD = BD

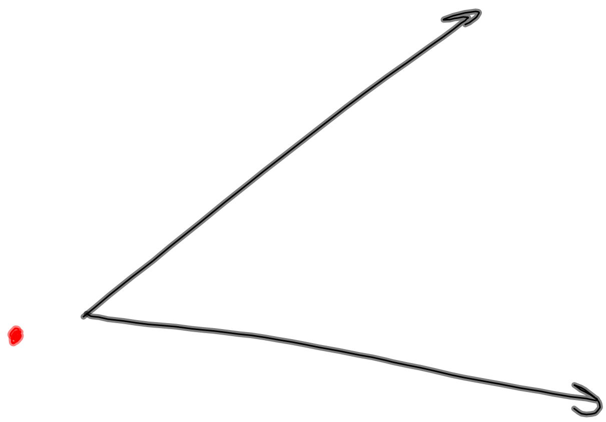


∠CAD ≅ ∠BAD	defn ∠ bisector
∠ACD ≅ ∠ABD	all rt ∠'s ≅
$\overline{AD} \cong \overline{AD}$	reflex POC
△CAD ≅ △BAD	AAS
$\overline{CD} \cong \overline{BD}$	CPCTC

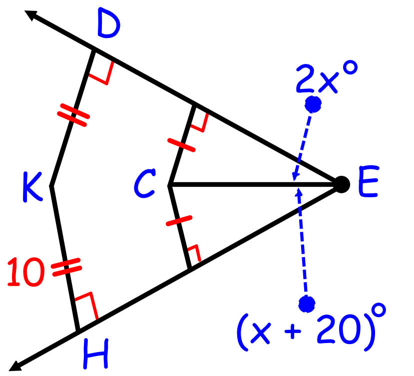
QED

Theorem 5-5: Converse of Angle Bisector Theorem

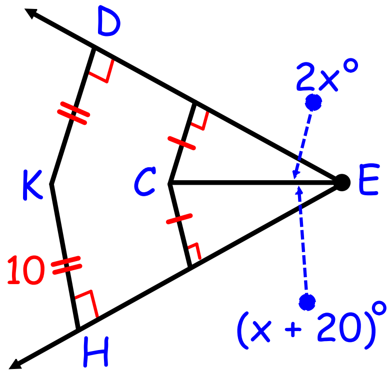
If a pt in the interior of an ∠ is equidist from sides of the ∠
then it is on the ∠ bisector.

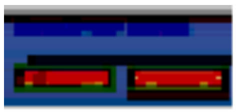


1 KD = ?



2 $x = ?$

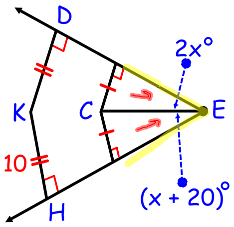




1) $KD = ?$

2) $x = ?$ 20

3) $m\angle DEH = ?$ 2x+(x+20)
40 + 40
80



back...

L5-2 HW Problems

Pg 251 #1-25,
35-39 odd,
44, 46, 50-52