Geo H **Name:**
4.1-4.4 Review

1. Write A for always, S for sometimes, and N for never.

A 1. If two points, A and B, are equidistant from the endpoints of a segment PQ, then a third point, C, between A and B is also equidistant from P and Q.

S 2. If $\overline{AB} \perp$ bisector $\overline{CD}$, then $\overline{CD} \perp$ bisector $\overline{AB}$.

S 3. If two angles are congruent, then they are right angles

A 4 . If two lines intersect to form two congruent supplementary angles, then they are perpendicular.

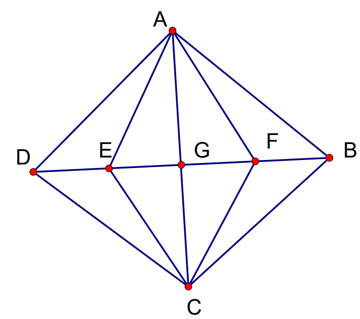
A 5. If a line is a perpendicular bisector to a segment, then any point on the perpendicular bisector is equidistant to the endpoints of the segment.

2. Fill in the blanks with the correct response or write no perpendicular bisector.

a) Given: G is the midpoint of $\overline{EF}$

$\overline{CE} \cong \overline{CF}$

$\overleftrightarrow{AC}$ is the perpendicular bisector of $\overline{EF}$

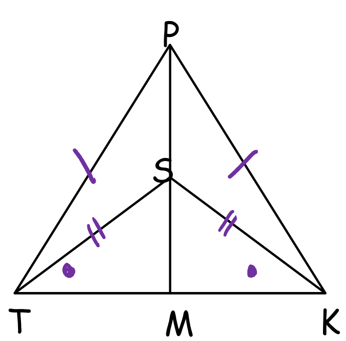


b) Given: $\overline{EA} \cong \overline{EC}$

$\overline{AD} \cong \overline{DC}$

$\overleftrightarrow{DG}$ is the perpendicular bisector of $\overline{AC}$

3. If $\overline{PT} \cong \overline{PK}$ and $\measuredangle MTS \cong \measuredangle MKS$, is PM a perpendicular bisector of KT? If so, state the theorem that tells you this. If not, say what information you are missing.



yes! $\overline{PM} \perp$ bis $\overline{KT}$.

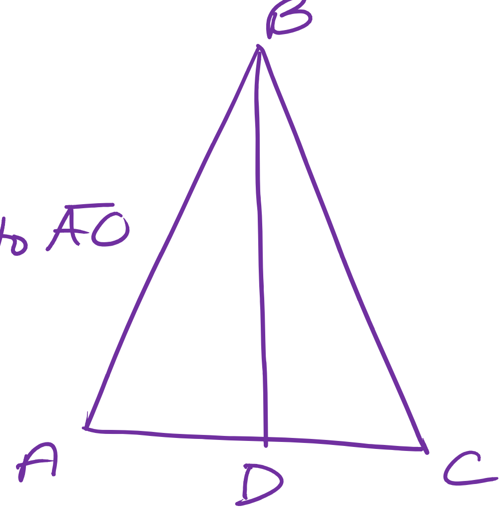
If 2 pts are equidistant from the endpts of a segment, then they form the $\perp$ bis of the seg.

4. Set up a given statement, a diagram, and prove statement for the following: "The altitude to the base of an isosceles triangle divides the triangle into 2 congruent triangles."

Given: isosceles triangle $\triangle ABC$ w/ vertex B

$\overline{BD}$ is an altitude to $\overline{AC}$

Prove: $\triangle ABD \cong \triangle CBD$

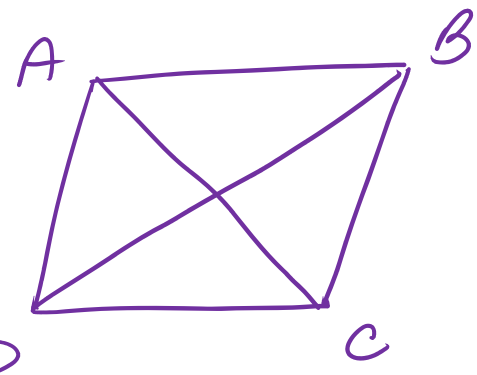


5. Set up a given statement, a diagram, and prove statement for the following: "If each pair of opposite sides of a four-sided figure are congruent, then the segments joining opposite vertices bisect each other."

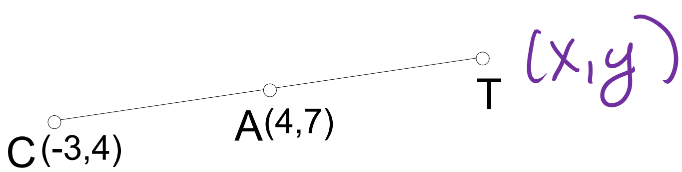
Given: $\overline{AB} \cong \overline{DC}$

$\overline{AD} \cong \overline{BC}$

Prove: $\overline{AC}$, $\overline{DB}$ bisect each other



6. A is the midpoint of $\overline{CT}$. Find the coordinates of T.

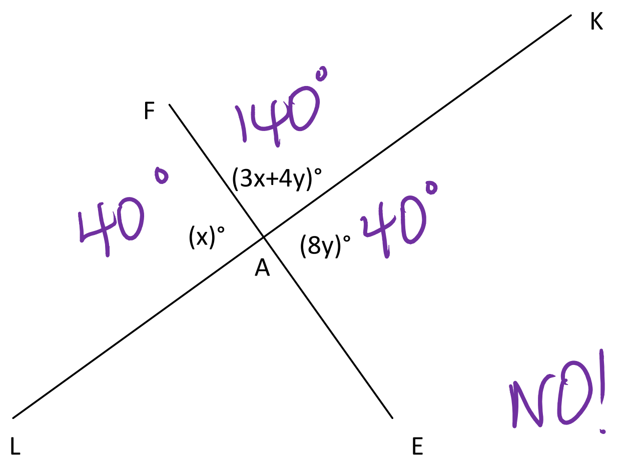


$$\frac{-3+x}{2}=4 \qquad \frac{4+y}{2}=7 \qquad (11,10)$$

$$-3+x=8 \qquad 4+y=14$$

$$x=11 \qquad y=10$$

7. Are the segments perpendicular? Use algebra to justify your answer.



$4x+4y=180 \rightarrow x+y=45$

$3x+12y=180 \rightarrow x+4y=60$

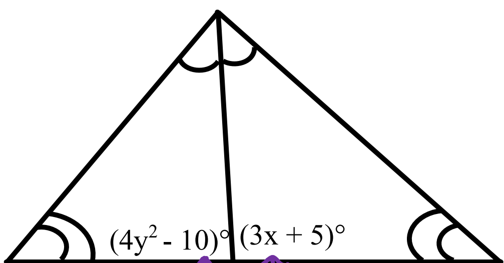
$-3y=-15$

$y=5$

$x=40$

NO!

8. Solve for x and y.



$4y^2-10=90$

$4y^2=100$

$y^2=25$

$y=\pm 5$

$3x+5=90$

$3x=85$

$x=\frac{85}{3}$

must be ⊥ because ≅ and supp

9.

Given: $\overline{EA} \cong \overline{ED}$

EA = 4x + 15

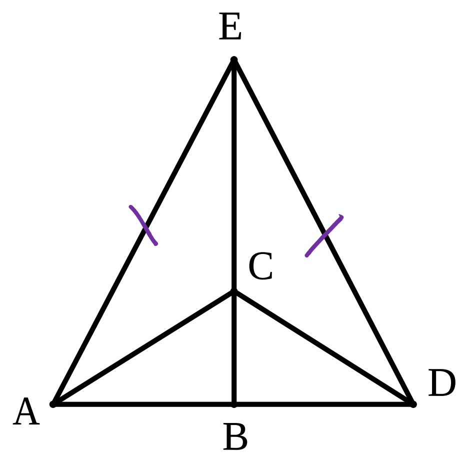
ED = 7x - 21

CA = 3x - 6

CD = x + 18

$\angle CBA = (10y + 5)°$

Determine if $\overline{EB}$ is the ⊥ bisector of $\overline{AD}$ and explain how you know. Then find the value of y.



$4x+15=7x-21$

$36=3x$

$12=x$

CA = 30 ✓

CD = 30

∠CBA = 90

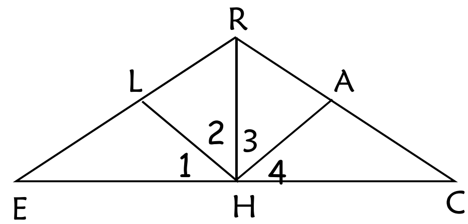
y = 8.5

$\overline{EB}$ is the ⊥ bis of $\overline{AD}$ because 2 pts are equidistant from the endpts of $\overline{AD}$.

10. Given: $\Delta EHL \cong \Delta CHA$

$\overrightarrow{HR}$ bisects $\angle LHA$

Prove: $\overline{RH} \perp \overline{EC}$

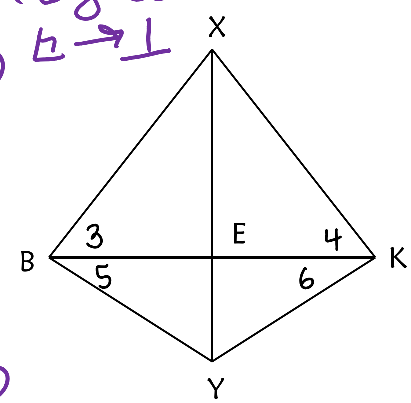


S	R
1. $\Delta EHL \cong \Delta CHA$ $\overrightarrow{HR}$ bis $\angle LHA$	1. Given
2. $\angle 1 \cong \angle 4$	2. CPCTC
3. $\angle 2 \cong \angle 3$	3. Def. of bisect
4. $\angle RHE \cong \angle RHC$	4. Addition
5. $\angle EHC$ is st.	5. Assumed
6. $\angle RHE$ supp $\angle RHC$	6. If 2 angles form a st. angle → supp
7. $\angle RHE, \angle RHC$ ⊾	7. If 2 angles are ≅ & supp → ⊾
8. $\overline{RH} \perp \overline{EC}$	8. If ⊾ → ⊥

11. Given: $\angle 3 \cong \angle 4$

$\angle 5 \cong \angle 6$

Prove: $\overline{BE} \cong \overline{EK}$



S	R
1. $\angle 3 \cong \angle 4$, $\angle 5 \cong \angle 6$	1. Given
2. $\overline{XB} \cong \overline{XK}$, $\overline{BY} \cong \overline{YK}$	2. If △ → △
3. $\overline{XY}$ ⊥ bis $\overline{BK}$	3. If 2 pts are equidistant from the endpts of a seg, then they form ⊥ bis of seg.
4. $\overline{BE} \cong \overline{EK}$	4. If a pt lies on the ⊥ bis, then they are equidistant from the endpts of the seg.