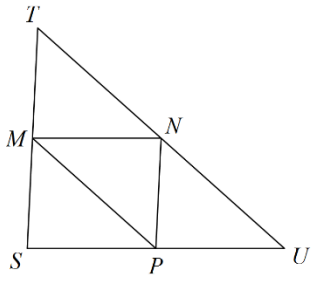
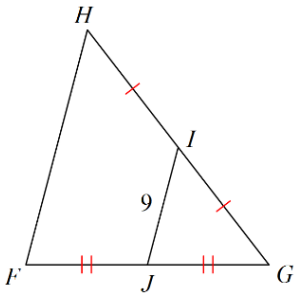
Name: _____Hr:____ **Triangle Proofs ws**

1. Name the parallel segment

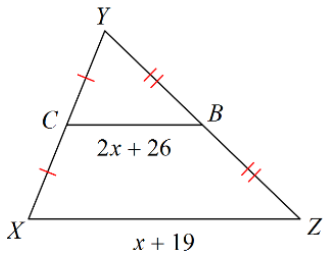


$\overline{MP} \parallel$ ___

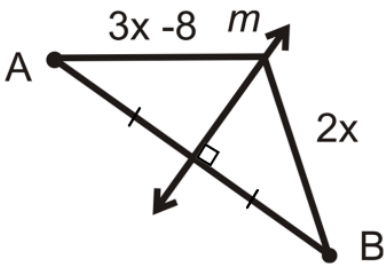
2. Find HF



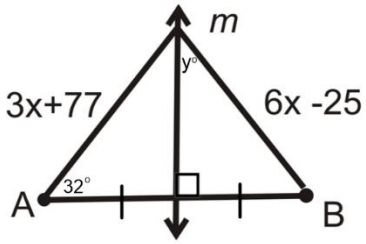
3. Find XZ



4. Solve for x.

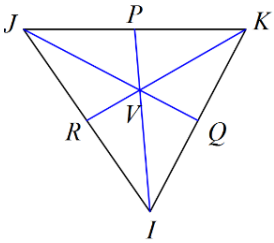


5. Solve for x and y

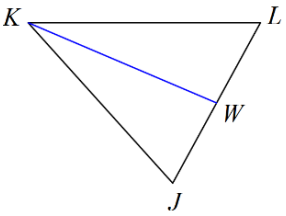


For problems 6-8 assume the segments that appear to be medians are medians.

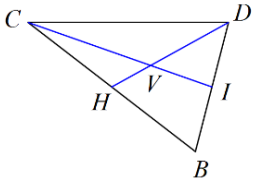
6. Find VR if $KR = 33$



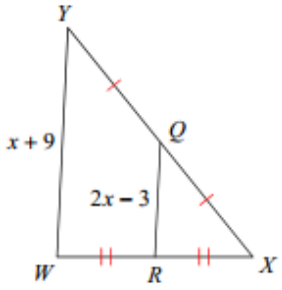
7. Find JL if $WL = 2.1$



8. Find x if $CI = 5x + 11$ and $VI = 5x - 9$

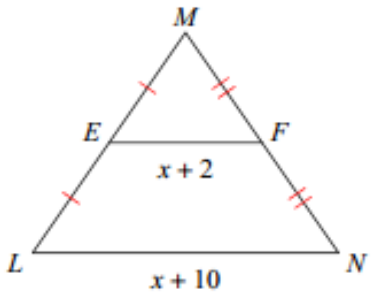


9. Given: $\overline{QR}$ is a midsegment of $\triangle XYW$
Prove: $x = 5$



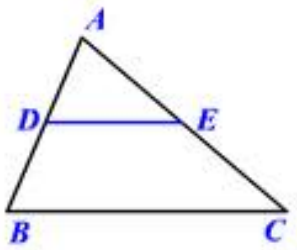
Statement	Reason
1. $\overline{QR}$ is a midsegment of $\triangle XYW$	1.
2. $\overline{QR} = \frac{1}{2}\overline{YW}$	2.
3. $\overline{YW} = x + 9$; $\overline{QR} = 2x - 3$	3.
4. $2x - 3 = \frac{1}{2}(x + 9)$	4.
5. $4x - 6 = x + 9$	5.
6. $3x - 6 = 9$	6.
7. $3x = 15$	7.
8. $x = 5$	8.

10. Given: $\overline{EF}$ is a midsegment of $\triangle MLN$
Prove: $x = 6$



Statement	Reason
1. $\overline{EF}$ is a midsegment of $\triangle MLN$	1.
2. $\overline{EF} = \frac{1}{2}\overline{LN}$	2.
3. $\overline{LN} = x + 10$; $\overline{EF} = x + 2$	3.
4. $x + 2 = \frac{1}{2}(x + 10)$	4.
5. $2x + 4 = x + 10$	5.
6. $x + 4 = 10$	6.
7. $x = 6$	7.

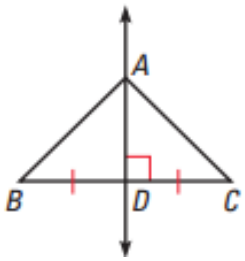
11. Given: $\angle A = 75^\circ$
$\angle ADE = 80^\circ$
$\overline{DE}$ is a midsegment in $\triangle ABC$
Prove: $\angle C = 25^\circ$



Statement	Reason
1. $\angle A = 75^\circ$; $\angle ADE = 80^\circ$	1.
2. $\angle A + \angle ADE + \angle AED = 180^\circ$	2.
3. $75^\circ + 80^\circ + \angle AED = 180^\circ$	3.
4. $155^\circ + \angle AED = 180^\circ$	4.
5. $\angle AED = 25^\circ$	5.
6. $\overline{DE}$ is a midsegment in $\triangle ABC$	6.
7. $\overline{DE} \parallel \overline{BC}$	7.
8. $\angle AED \cong \angle C$	8.
9. $\angle C = 25^\circ$	9.

Prove the Perpendicular Bisector Theorem

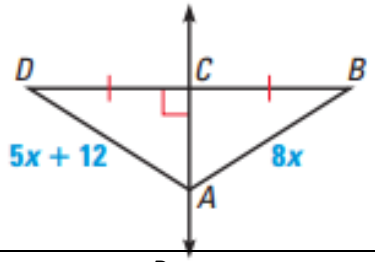
12. Given: $\overleftrightarrow{AD}$ is the $\perp$ bisector of $\overline{BC}$
Prove: $AB = AC$



Statement	Reason
1. $\overleftrightarrow{AD}$ is the $\perp$ bisector of $\overline{BC}$	1.
2. $\overline{DB} \cong \overline{DC}$	2.
3. $\angle ADC$ and $\angle ADB$ are right angles	3.
4. $\angle ADC \cong \angle ADB$	4.
5. $\overline{AD} \cong \overline{AD}$	5.
6. $\triangle ADB \cong \triangle ADC$	6.
7. $\overline{AB} \cong \overline{AC}$	7.
8. $AB = AC$	8.

13. Given: $\overleftrightarrow{AC}$ is the $\perp$ bisector of $\overline{DB}$

Prove: $AB = 32$

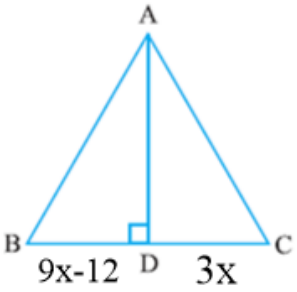


Statement	Reason
1. $\overleftrightarrow{AC}$ is the $\perp$ bisector of $\overline{DB}$	1.
2. $\overline{AB} = \overline{AD}$	2.
3. $AD = 5x+12$; $AB = 8x$	3.
4. $8x = 5x+12$	4.
5. $3x = 12$	5.
6. $x = 4$	6.
7. $AB = 8(4)$	7.
8. $AB = 32$	8.

14. Given: $AB = AC$

$\angle ADB = 90^\circ$

Prove: $BD = 6$

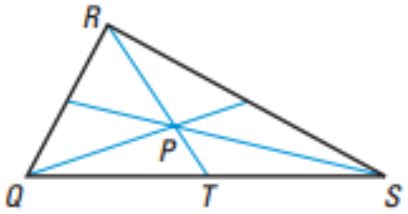


Statement	Reason
1. $AB = AC$	1.
2. $\overline{AD} \perp \overline{BC}$	2.
3. $\overline{BD} = \overline{DC}$	3.
4. $DC = 3x$ $BD = 9x-12$	4.
5. $9x-12 = 3x$	5.
6. $6x-12 = 0$	6.
7. $6x = 12$	7.
8. $x = 2$	8.
9. $BD = 9(2)-12$	9.
10. $BD = 6$	10.

15. Given: P is the centroid of $\triangle QRS$

$PT = 5$

Prove: $RT = 15$

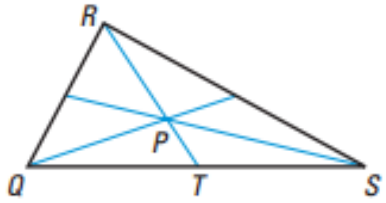


Statement	Reason
1. P is the centroid of $\triangle QRS$	1.
2. $PR = \frac{2}{3}RT$	2.
3. $PR + PT = RT$	3.
4. $\frac{2}{3}RT + PT = RT$	4.
5. $PT = \frac{1}{3}RT$	5.
6. $PT = 5$	6.
7. $5 = \frac{1}{3}RT$	7.
8. $15 = RT$	8.
9. $RT = 15$	9.

16. Given: P is the centroid of $\triangle QRS$

$PR = 26$

Prove: $PT = 13$



Statement	Reason
1. P is the centroid of $\triangle QRS$	1.
2. $PR = \frac{2}{3}RT$	2.
3. $PR = 26$	3.
4. $26 = \frac{2}{3}RT$	4.
5. $39 = RT$	5.
6. $PR + PT = RT$	6.
7. $26 + PT = 39$	7.
8. $PT = 13$	8.