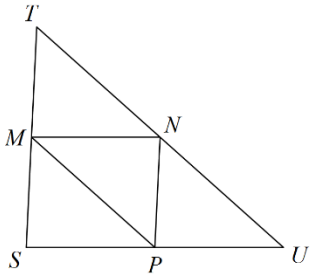
Section 8.3 Midsegment Proofs

Name: _____Hr:____

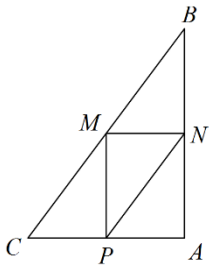
Name the parallel segment.

1.



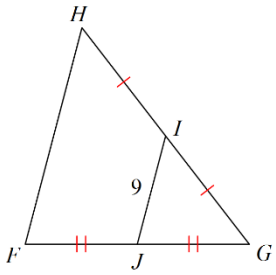
$\overline{MP} \parallel$ ___

2.

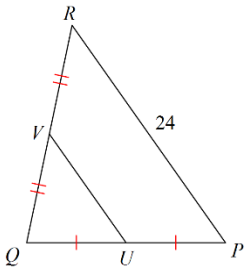


$\overline{BA} \parallel$ ___

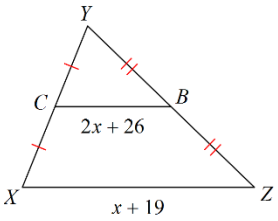
3. Find HF



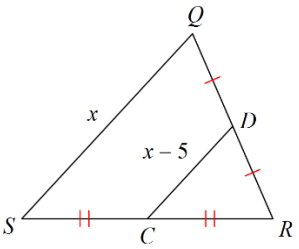
4. Find UV



5. Find XZ

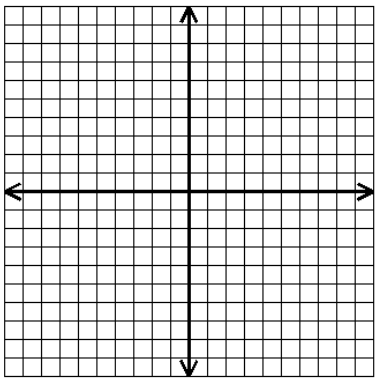


6. Find QS



Graph A, B, and C. Determine the midsegment $\overline{EF}$ that joins $\overline{AB}$ and $\overline{BC}$ in each triangle. Show that the midsegment is parallel to $\overline{AC}$ and half its length.

7) A (−4, 3) B(0,−1) C (6, 1)



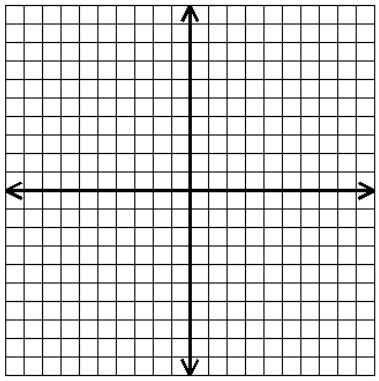
Midpoint of $\overline{AB}$: E _____

Midpoint of $\overline{BC}$: F _____

Slope of $\overline{AC}$: _____Distance of $\overline{AC}$: _____

Slope of $\overline{EF}$: _____Distance of $\overline{EF}$: _____

8) **A (−4, 2) B(0,−6) C (4, 2)**



Midpoint of $\overline{AB}$ **: E** _____

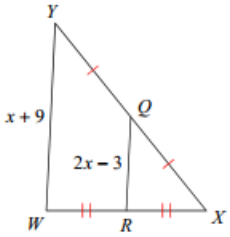
Midpoint of $\overline{BC}$ **: F** _____

Slope of $\overline{AC}$ **:** _____ **Distance of** $\overline{AC}$ **:** _____

Slope of $\overline{EF}$ **:** _____ **Distance of** $\overline{EF}$ **:** _____

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

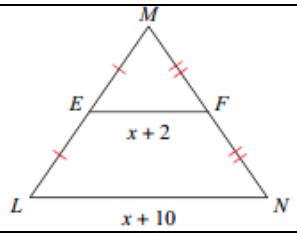
Prove: $x = 5$



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.

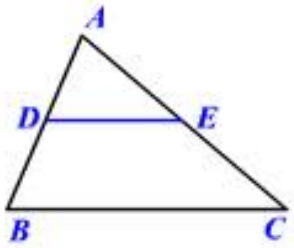
10. Given: $\overline{EF}$ is a midsegment of $\triangle MLN$

Prove: $x = 6$



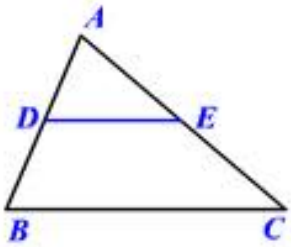
Statement	Reason
1. $\overline{EF}$ is a midsegment of $\triangle MLN$	1.
2. $\overline{EF} = \frac{1}{2}\overline{LN}$	2.
3. $\overline{LN} = x + 10$; $\overline{EF} = x + 2$	3.
4. $x + 2 = \frac{1}{2}(x + 10)$	4.
5. $2x + 4 = x + 10$	5.
6. $x + 4 = 10$	6.
7. $x = 6$	7.

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.

12. Given: $\overline{DE}$ is a midsegment in $\triangle ABC$
$\angle AED = 30^\circ$
$\angle B = 78^\circ$
Prove: $\angle A = 72^\circ$



Statement	Reason
1. $\overline{DE}$ is a midsegment in $\triangle ABC$	1.
2. $\overline{DE} \parallel \overline{BC}$	2.
3. $\angle B = \angle ADE$	3.
4. $\angle B = 78^\circ$	4.
5. $\angle ADE = 78^\circ$	5.
6. $\angle A + \angle ADE + \angle AED = 180^\circ$	6.
7. $\angle AED = 30^\circ$	7.
8. $\angle A + 78^\circ + 30^\circ = 180^\circ$	8.
9. $\angle A + 108^\circ = 180^\circ$	9.
10. $\angle A = 72^\circ$	10.