Unit 7 Relationships with Triangles

Date	Target	Assignment	Done!
M 1-8		Pre Assessment	
T 1-9	7.1a	7.1a Worksheet	
W 1-10	7.1b	7.1b Worksheet	
R 1-11	Quiz	Quiz 7.1	
F 1-12	7.2	7.2 Worksheet	
M 1-15		NO SCHOOL – MLK BIRTHDAY	
T 1-16	Rev	7.2 Review	
W 1-17	Quiz	Quiz 7.2	
R 1-18	Rev	Unit 7 Test Review	
F 1-19	Test	Unit 7 Test	

Target 7.1: Use the midsegment and proportionality to determine unknown information of triangles

Target 7.2: Prove and apply properties of similarity in triangles AA, SSS, SAS

Name: _____

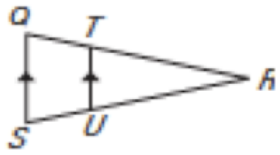
7.1a – Use Proportionality Theorems

Target 1 – Use the midsegment and proportionality to determine unknown information of triangles

Triangle Proportionality Theorem

If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides _____.

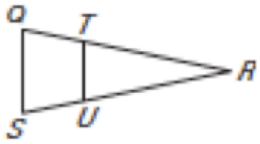
If $TU \parallel QS$, then _____= _____



Converse Triangle Proportionality Theorem

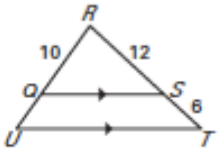
If a line divides two sides of a triangle proportionally, then it is parallel to the _____.

If $\frac{RT}{TQ} = \frac{RU}{US}$, then _____= _____



Example 1: Find the length of a segment

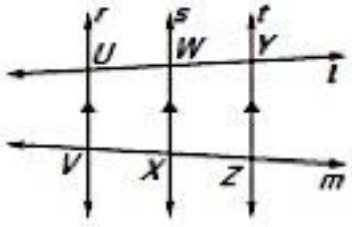
In the diagram, $\overline{QS} \parallel \overline{UT}$, RT = 10, RS = 12, and ST = 6. What is the length of $\overline{QU}$?



Three Parallel Lines & Two Transversals

If three parallel lines intersect TWO transversals then they divide the transversals _____.

$\frac{UW}{WY} =$



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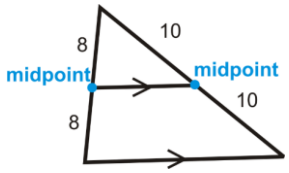
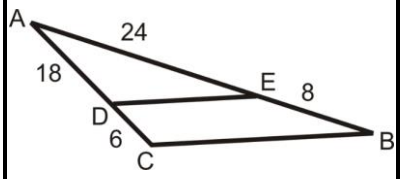
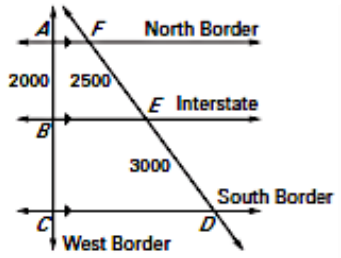




Example 2: Find the length of a segment

A farmer's land is divided by a newly constructed interstate. The distance shown is in meters. Find the distance CA between the North Border and the South Border of the farmer's land.



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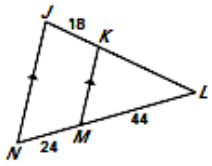
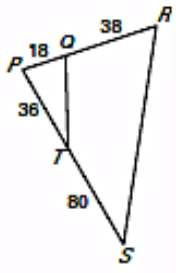
YOU TRY NOW!

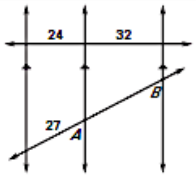
1) Find the length of $\overline{KL}$.



2) Deteremine whether $\overline{QT} \parallel \overline{RS}$.



3) Find the length of $\overline{AB}$.



YOUTRYNOW

1) KL = 33
2) No, the sides of the triangle are not proportional
3) AB = 35

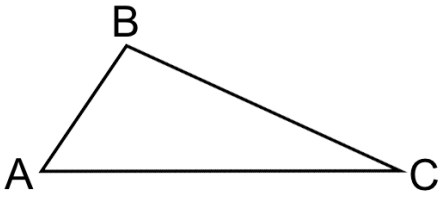
7.1b– Midsegment

Target 1 – Use the midsegment and proportionality to determine unknown information of triangles

Vocabulary:

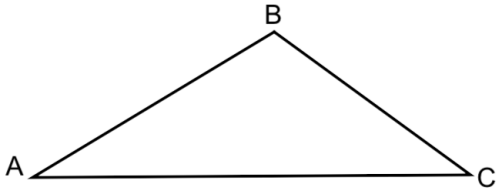
Midsegment: _____

_____



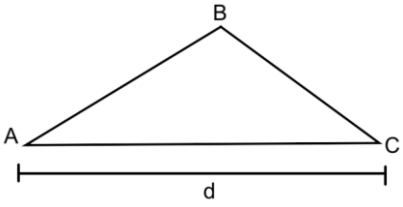
Midsegment Theorem: Parallel to third side

If a segment joins two triangle sides at their _____, then it is parallel to the _____.



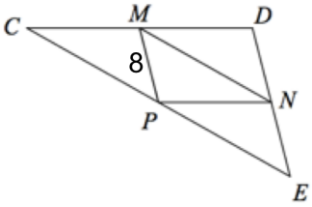
Midsegment Theorem: Length is half of third side

If a segment joins two triangle sides at their midpoints, then its length is _____ of the third side's length.



Example 1: Applying the midsegment theorem (A little different from video)

In each triangle, M, N, and P are midpoints of the sides. Name the segment parallel to the one given.



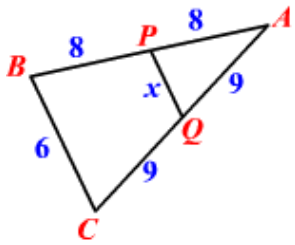
$\overline{CD} \parallel$ ___

$DE =$

$NE =$

Annotate Here

Compare ΔAPQ to ΔABC



P is a _____

Q is a _____

$\overline{PQ}$ is a _____

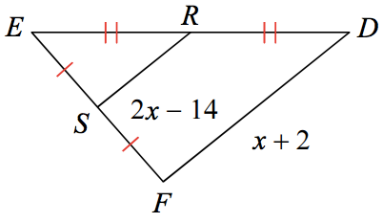
When there is a midsegment, ___ _____ triangles are created

$$\frac{AP}{AB} = \_$$

$$\frac{PQ}{BC} = \_ = \_$$

Example 2: Applying the midsegment theorem

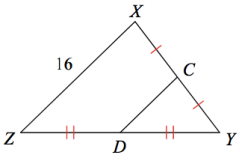
Find the length of SR and FD.



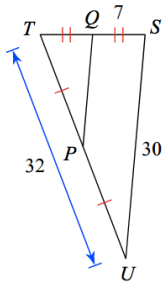
YOU TRY NOW!

Find the missing length indicated.

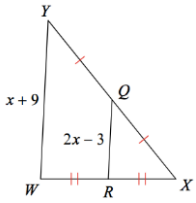
1) Find CD



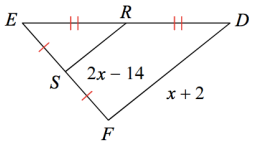
2) Find PQ



3) Find the length of QR and WY.



4) Find the sum of the lengths of SR and FD.



YouTryNow

1) CD= 8
2) PQ = 15
3) QR = 7; WY=14
4) sum = 18

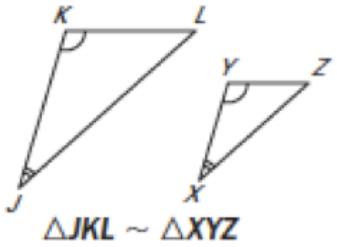
Annotate Here

7.2 – Prove Triangles Similar by AA ~, SSS~, SAS~

Target 2 – Prove and apply properties of similarity in triangles using AA~, SSS~, SAS~

ANGLE ANGLE (AA) Similarity

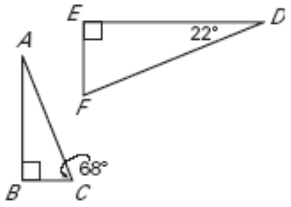
If _____ angles of one triangle are _____ to two angles of another triangle, then the two triangles are similar.



$\triangle JKL \sim \triangle XYZ$

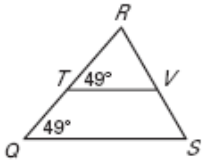
Example 1: Use the AA Similarity Postulate

Determine whether the triangles are similar. If they are, write a similarity statement. *Explain* your reasoning.



Example 2: Show that triangles are similar

A) Prove: ΔRTV and ΔRQS *are similar*



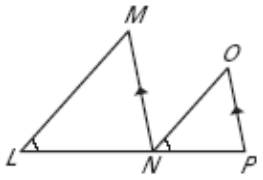
Statements	Reason
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Annotate Here

Part 1

Example 2: Show that triangles are similar

B) Prove: ΔLMN *and* ΔNOP *are similar*

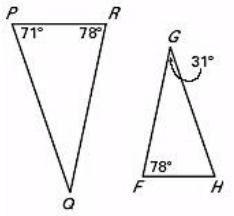


Statements	***Reason***
1.	***1.***
2.	***2.***
3.	***3.***
4.	***4.***
5.	***5.***

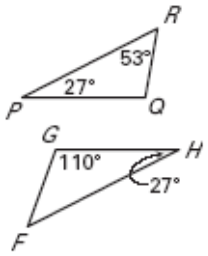
YOU TRY NOW!

Determine whether the triangles are similar. If they are, write a similarity statement.

1)

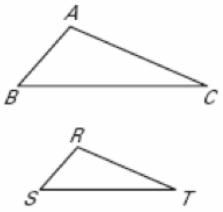


2)



Side-Side-Side (SSS) Similarity

If the _____ side lengths of two triangles are _____, then the triangles are similar.



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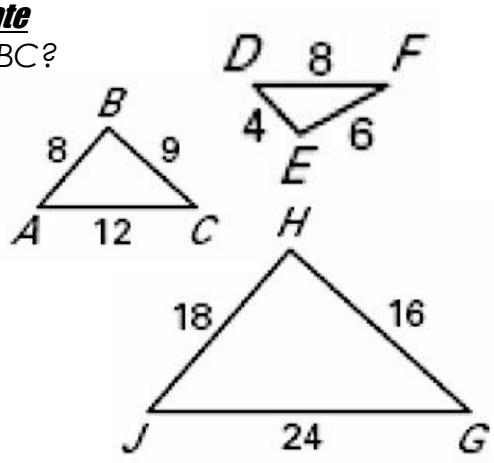
Part 2

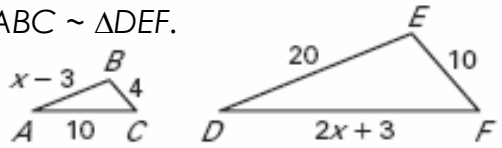
Example 3: Use the SSS Similarity Postulate

Is either ΔDEF or ΔGHJ similar to ΔABC?



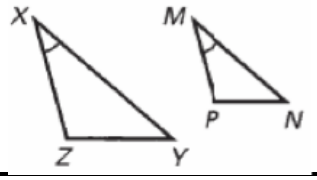
Example 4: Use the SSS Similarity Theorem

Find the value of x that makes $\Delta ABC \sim \Delta DEF$.



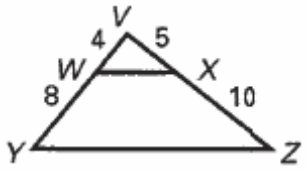
Side-Angle-Side (SAS) Similarity

If an angle of one triangle is _____ to an angle of a second triangle AND the lengths of the sides that include these angles are _____, then the triangles are _____.



Example 5: Similarity in Overlapping Triangles

Show that ΔVYZ ~ ΔVWX.

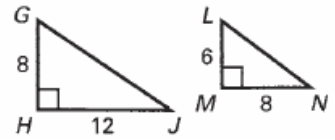


Annotate Here

YOU TRY NOW!

Determine whether the triangles are similar. If they are similar, write a similarity statement. Explain using the similarity statements and theorems

3)



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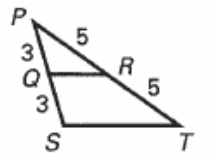
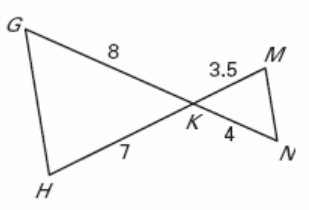


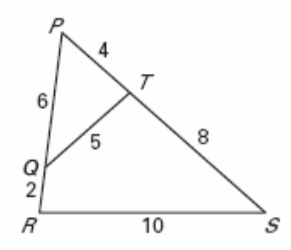
5)



Select all that apply

(A) Yes
(B) No
(C) *AA*~
(D) *SSS*~
(E) *SAS*~

6)



Select all that apply

(A) Yes
(B) No
(C) *AA*~
(D) *SSS*~
(E) *SAS*~

YOU TRY NOW

1) Yes, AA~; ΔRQP~ΔFGH
2) No
3) No
4) Yes, SAS~; ΔPQR~ΔPST
5) A, E
6) A with D or E

Annotate Here