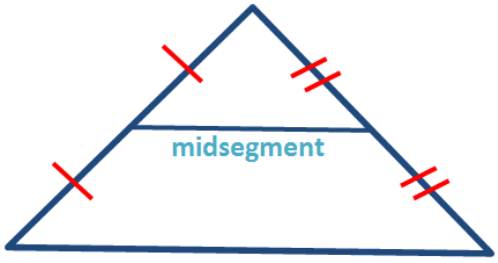
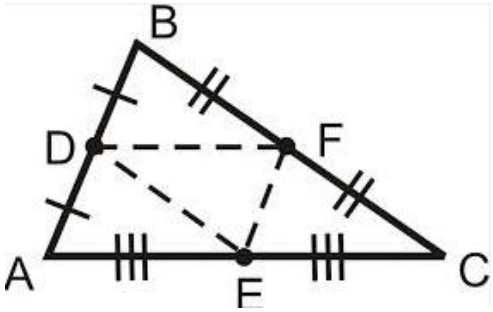
Name _____ Date _____

# Day 3/4 – Triangle Midsegment Theorem and Triangle Proportionality Theorem

A **midsegment** of a triangle is a segment that joins the midpoints of two sides of the triangle. Every triangle has three midsegments, which forms the midsegment triangle.

**Triangle Midsegment Theorem:** A midsegment of a triangle is parallel to a side of the triangle, and its length is half the length of that side.



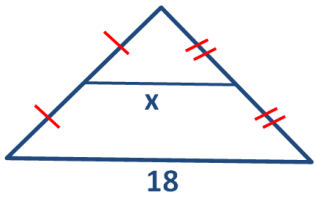

The Midsegment is:
- Parallel to one side of the triangle
- Is half the length of the parallel side
- Connects to the midpoints

Midsegments:

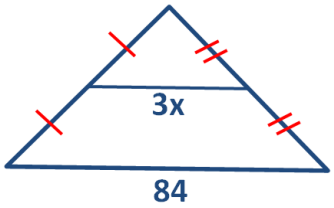
Midsegment Triangle:

**Practice:**

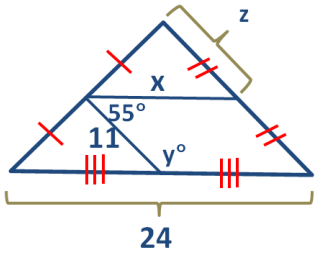
A. Solve for x:



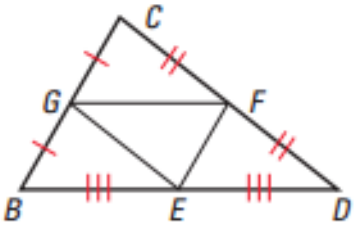

B. Solve for x:




C. Solve for x, y, and z:




D. Given CD = 14, GF = 8, and GC = 5, Find the perimeter of $\Delta BCD$.

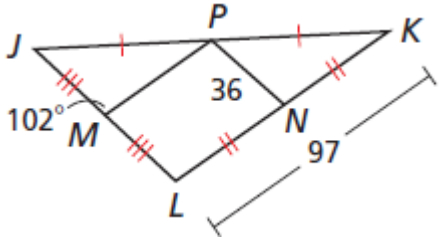



E. Find the measure of the following:

$\overline{JL}$

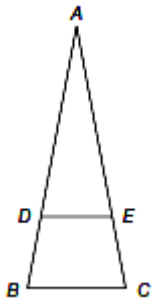
$\overline{PM}$

$\angle MLK$



## Triangle Proportionality Theorem (Side Splitter Theorem)

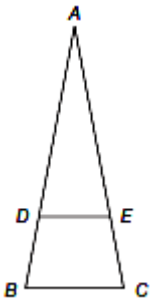
The **Triangle Proportionality Theorem**, which states "If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides proportionally."




**If:**

**Then:**

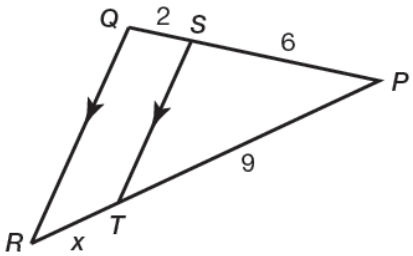
The **Converse of the Triangle Proportionality Theorem**, states "If a lines divides two sides of a triangle proportionally, then it is parallel to the third side."



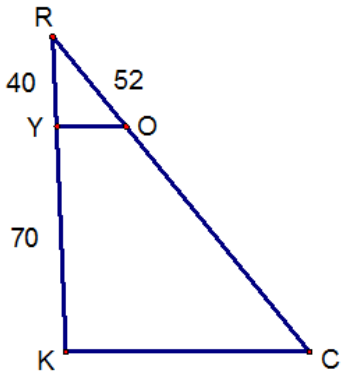

**If:**

**Then:**

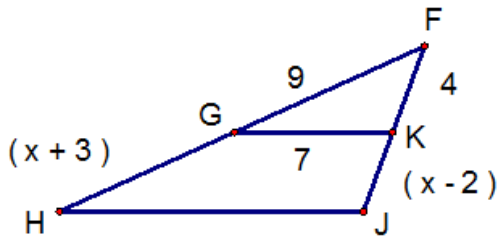
**Example 1:** Find the value of x if ST || QR.




**Example 2:** Find RC if YO || KC.




**Example 3:** Find the value of x if GK || HJ.




**Example 4:** If AC = 60 units and EC = 36 units, is $\overline{AE} \| \overline{BD}$?