

# Chapter 6

## Relationships Within Triangles

6.1 Perpendicular and Angle Bisectors

6.2 Bisectors of Triangles

6.3 Medians and Altitudes of Triangles

**6.4 The Triangle Midsegment Theorem**

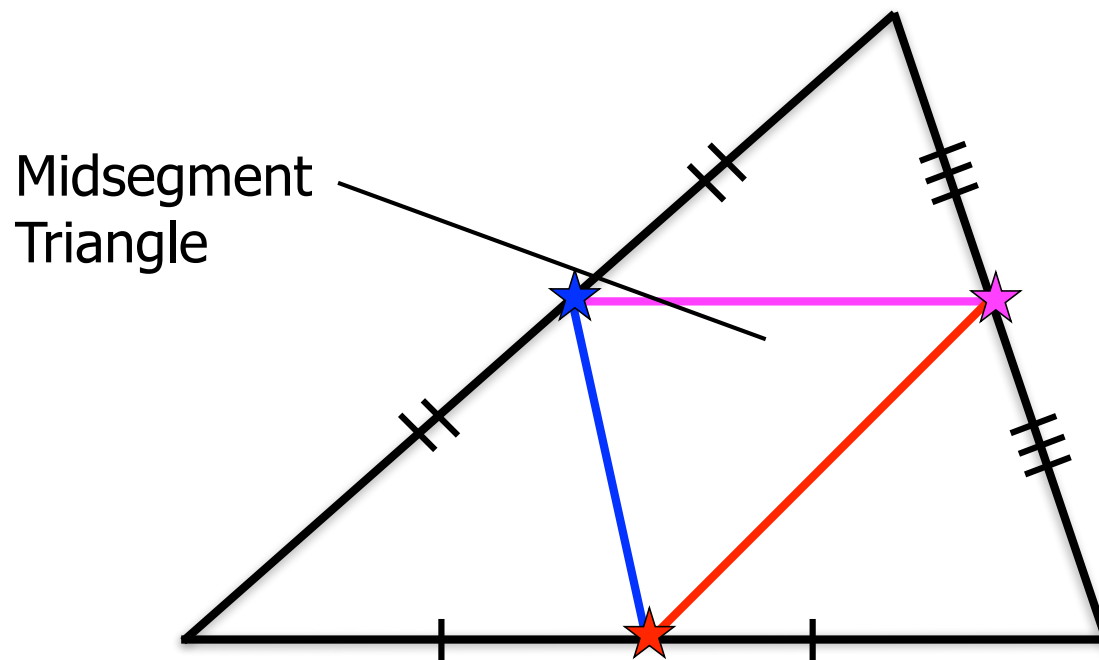
6.5 Indirect Proof and Inequalities in One Triangle

6.6 Inequalities in Two Triangles



## 6.4 The Triangle Midsegment Theorem

**Midsegment:** a segment that connects the midpoints of two sides of the triangle.

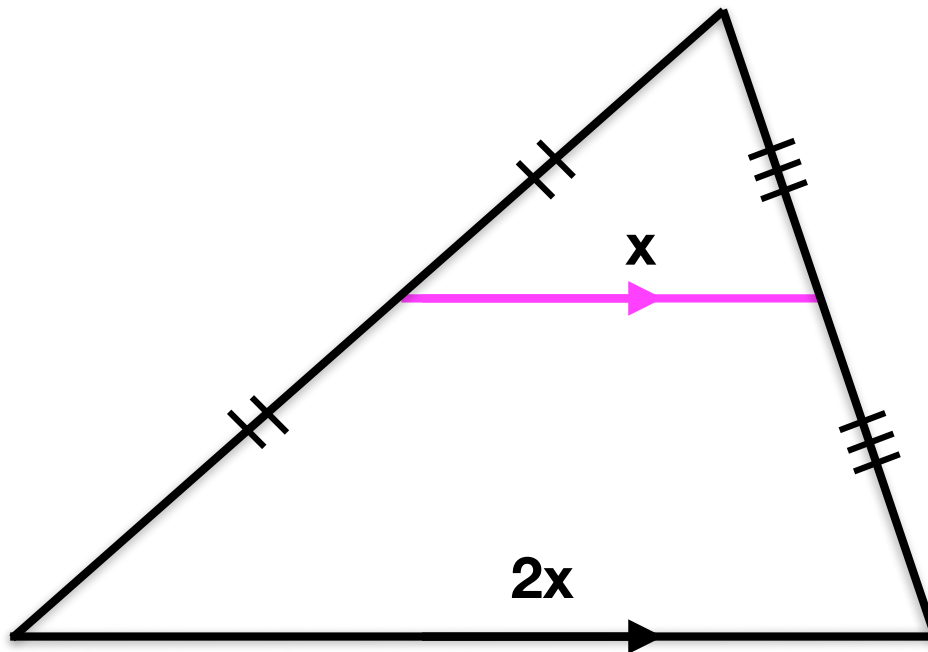


# 6.4 The Triangle Midsegment Theorem

## Theorem

### Midsegment Theorem

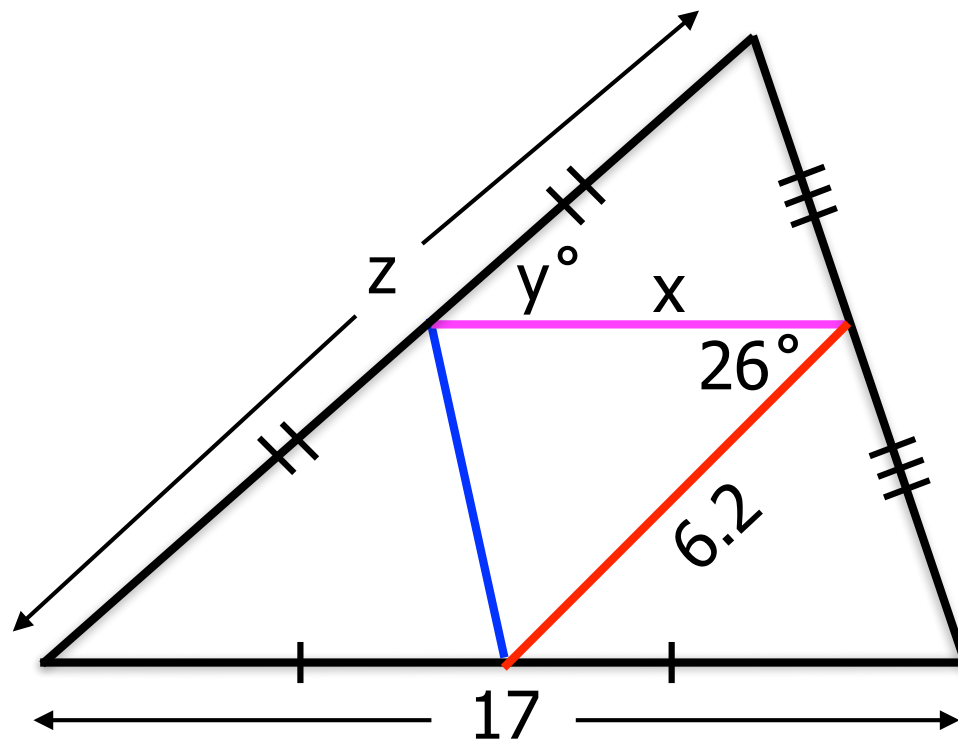
The segment connecting the midpoints of two sides of a triangle is parallel to the third side and is half as long as that side.



## 6.4 The Triangle Midsegment Theorem

**Example:** The colored lines are midsegments.

Find the values of  $x$ ,  $y$ ,  $z$ .



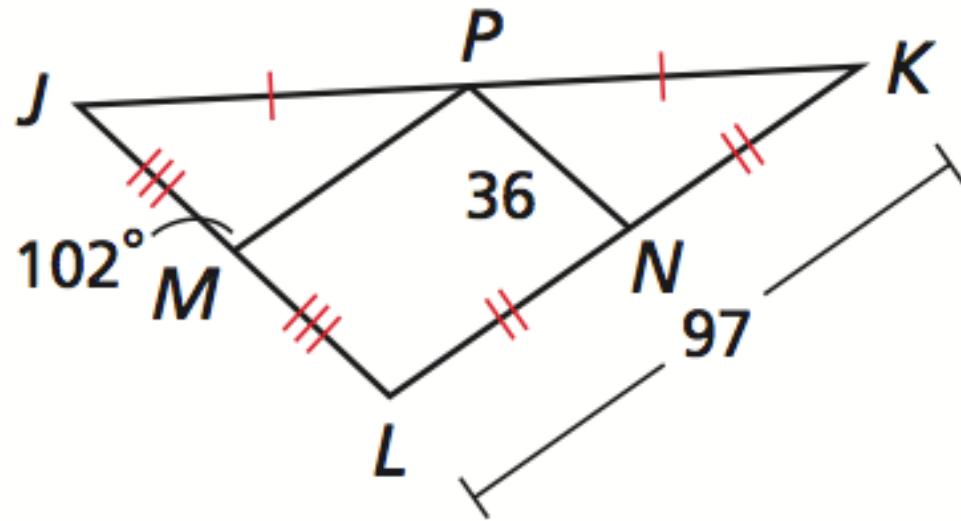
## 6.4 The Triangle Midsegment Theorem

**Solve for:**

JL

PM

$m\angle MLK$



## 6.4 The Triangle Midsegment Theorem

### Exercise:

The vertices of  $\triangle RST$  are  $R(-7, 0)$ ,  $S(-3, 6)$ , and  $T(9, 2)$ .  $M$  is the midpoint of  $RT$ , and  $N$  is the midpoint of  $ST$ .

Show that  $MN \parallel RS$

and  $MN = \frac{1}{2}RS$

