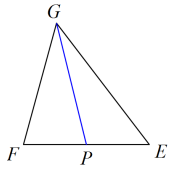
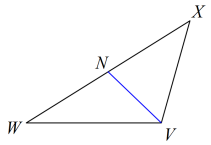
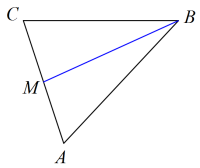
More Facts about Triangles (Beginning of Chapter 5: Relationships in Triangles)

Simple facts to add to our repertoire (that means, more interesting things we know about triangles that we can use to answer questions about triangles)!

A **median of a triangle** connects one angle of a triangle to the *midpoint* of the opposite side of the triangle.

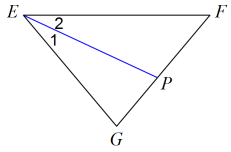
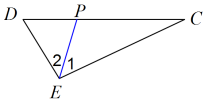
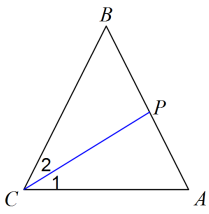
How is this information useful? Look at the following 3 examples:

Given segment GP is a median of triangle GFE, Find PE if $FE = 2$  Since segment GP is the median, we know that P is the midpoint of segment FE, so that means if FE = 2, then PE = ½ (FE) PE = ½ (2) PE = 1	Given that segment VN is a median of triangle XVW, Find NX if $NW = 4.6$  Since N is the midpoint of segment WX, then WN = NX because of definition of midpoint, so: NW = NX 4.6 = NX	Given that segment BM is a median of triangle ABC, Find CA if $MA = 5$  Since M is the midpoint of segment CA, and CA is the whole thing, then MA = ½(CA), 5 = ½(CA) and 10 = CA

ASSIGNMENT: USE WHAT YOU HAVE SEEN HERE TO WORK ON THE WORKSHEET "MEDIANS."

An **angle bisector** does just that – it ***bisects*** one angle of the triangle, and does not touch any special point on the opposite side. ***All it does it bisect the one angle!***

How is this information useful? Look at the following 3 examples:

Given that segment EP is the bisector of angle FEG, Find $m\angle 1$ if $m\angle 2 = 25°$.  Since it is given that segment EP is the angle bisector of angle FEG, I know that m∠1 = m∠2, by definition of angle bisector. So, m∠1 = m∠2 (Def. ∠ bisector) m∠2 = 25 (Given) m∠1 = 25 (Substitution)	Given that segment EP is the bisector of angle CED and $m\angle CED = 96°$. Find $m\angle 1$.  Since it is given that segment EP is the angle bisector of angle CED, I know that m∠1 = ½ m∠CED by the definition of angle bisector. So, m∠1 = ½ m∠ CED (Def. ∠ bisector) m∠CED = 96 (Given) m∠1 = ½(96) (Substitution) m∠1 = 48 (Substitution)	Given that segment CP is the bisector of angle ACB and Find $m\angle ACB$ if $m\angle 2 = 31°$.  m∠2 = ½ m∠ACB (Def of ∠ bisector) m∠2 = 31 (Given) 31 = ½ m∠ACB (Substitution) 2(31) = 2(½) m∠ACB (Multiplication prop =) 62 = m∠ACB (Substitution)

ASSIGNMENT: USE WHAT YOU HAVE SEEN HERE TO WORK ON THE WORKSHEET "ANGLE BISECTORS."

SOLUTIONS ARE POSTED, SO YOU MAY CHECK YOUR PROGRESS.