

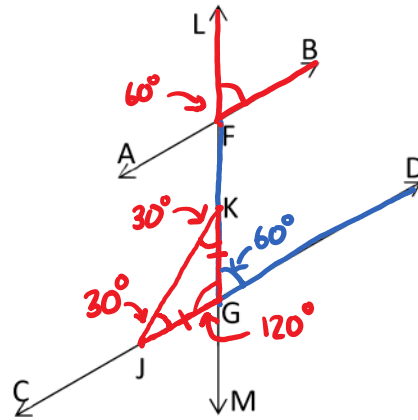
3.3 - Proving Angle Relationships

October 11, 2019 2:58 PM

A **guided proof** is a partially completed proof; the goal is to finish the proof.

exercise: Given: $JG = KG$
 $\angle KJG = 30^\circ$
 $\angle LFB = 60^\circ$

Prove: $AB \parallel CD$



statements	reasons
$JG = KG$	given
$\angle KJG = 30^\circ$	given
$\angle KJG = \angle JKG$	Angles opposite equal sides are equal (isosceles triangle).
$\angle JKG = 30^\circ$	transitive property
$\angle JGK = 120^\circ$	Angles in a triangle must sum to 180° .
$\angle FGD = 60^\circ$	$\angle FGD$ is supplementary with $\angle JGK$
$\angle LFB = 60^\circ$	given
$\angle FGD = \angle LFB$	Proven/ Transitive Property.
$AB \parallel CD$	Equal corresponding angle.
	Q.E.D.

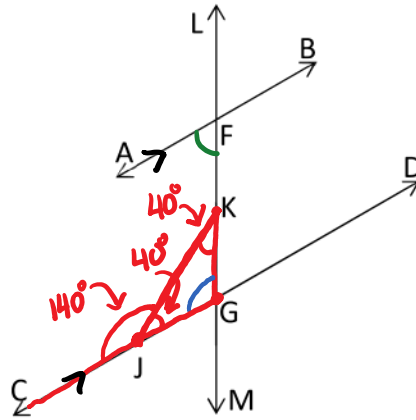
Transitive Property
 $A=B$
 $B=C$
 $\therefore A=C$

exercise: Given: $AB \parallel CD$

$\angle KJG = \angle JKG$

$\angle CJK = 140^\circ$

Prove: $\angle AFK = 80^\circ$



statements	reasons
$\angle CJK = 140^\circ$	given
$\angle KJG = \underline{40}^\circ$	Supplementary with $\angle CJK$
$\angle KJG = \angle JKG$	Given
$\angle JKG = \underline{40}^\circ$	Transitive Property
$\angle JGK = \underline{100}^\circ$	Angles in triangle must sum to 180°
$AB \parallel CD$	given
$\angle AFK + \underline{\angle JGK} = 180^\circ$	Co-interior angles
$\angle AFK + 100^\circ = 180^\circ$	Substitution of known Value
$\angle AFK = 80^\circ$	Solving for $\angle AFK$.
	Q.E.D.