Bellwork:

Name as many ideas, definitions, theorems, etc. that you have learned so far in Geometry.

Bellwork:

Solve with reasons:

$$60 = -3(8x - 4)$$ given

$60 = -24x + 12$ distributive

$-12 \quad -12$ subtraction or =

$\frac{48}{-24} = \frac{-24x}{-24}$ division or =

$-2 = x$

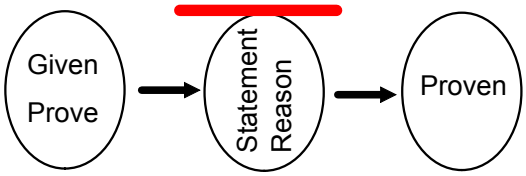
Chapter 2.7: Prove Angle Pair Relationships

Remember for a proof you need.....

- a given statement(s)
- a prove statement
- statements and reasons

a couple ways to outline a proof

Flow chart



List

- Given: Prove:
- Statement ..... Reason
- Thus, ... Proven

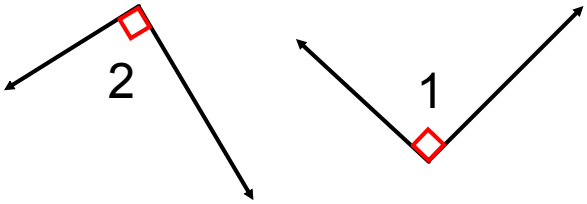
Two column

Given:

Prove:

Statement	Reason
1	1. Given
2	2

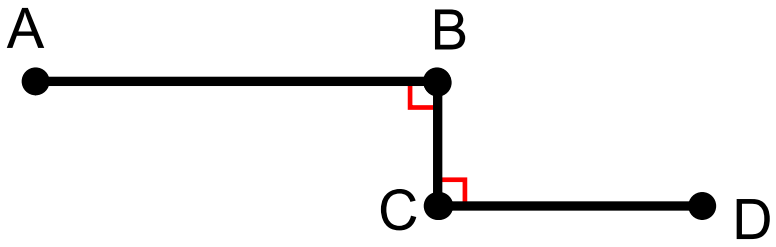
Right angles are congruent.



Given: ∠1 + ∠2 are right ∠'s

Prove: ∠1 ≅ ∠2

∠1 + ∠2 are rt ∠'s	given
∠1 = 90°, ∠2 = 90°	def of rt ∠'s
∠1 = ∠2	Transitive
∠1 ≅ ∠2	def of ≅



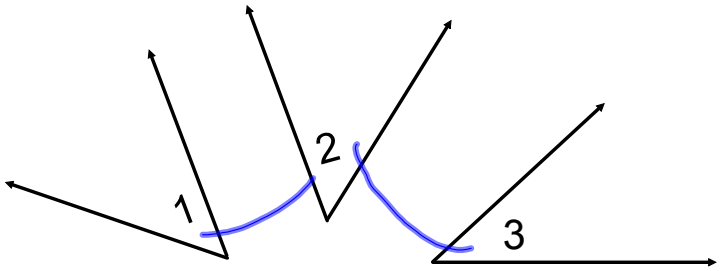
Given: $\overline{AB} \perp \overline{BC}$, $\overline{BC} \perp \overline{CD}$

Prove: $\angle B \cong \angle C$

$\overline{AB} \perp \overline{BC}$, $\overline{BC} \perp \overline{CD}$	given
∠B is rt, ∠C rt. ∠	def of ⊥
∠B ≅ ∠C	rt. ∠'s axiom

Congruent Complementary Theorem:

- If two angles are complementary to the same angle, then they are congruent.



Why?????

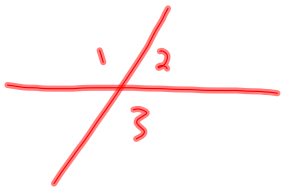
a
$\angle 1 + \angle 2 = 90$ b
$\angle 2 + \angle 3 = 90$ b } Def of Comp. $\angle$'s
c

$\angle 1 + \angle 2 = \angle 2 + \angle 3$ → Transitive

$\angle 1 = \angle 3$ → Sub prop of =

$\angle 1 \cong \angle 3$ → def of $\cong$

Get with a partner and compare and finish the proof.



Prove: if two angles are supplementary to the same angle then they are congruent.

$\angle 1 + \angle 2$
$\angle 2 + \angle 3$ } Supplementary → given

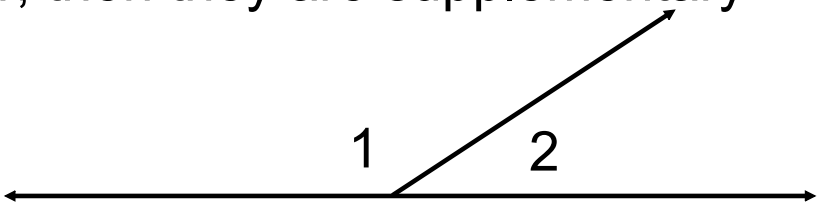
$\angle 1 + \angle 2 = 180$
$\angle 2 + \angle 3 = 180$ } → def of supp.

$\angle 1 + \angle 2 = \angle 2 + \angle 3$ → transitive

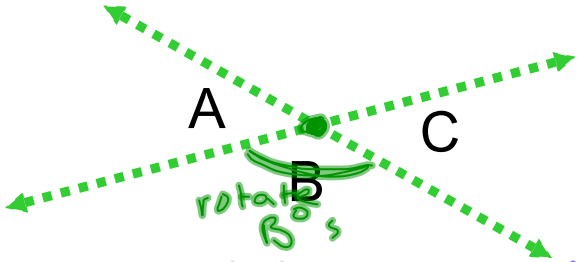
$\angle 1 = \angle 3$ → sub prop of =

$\angle 1 \cong \angle 3$ → def of $\cong$

Axiom 12: If two angles form a linear pair, then they are supplementary



Prove Vertical Angles Congruent:

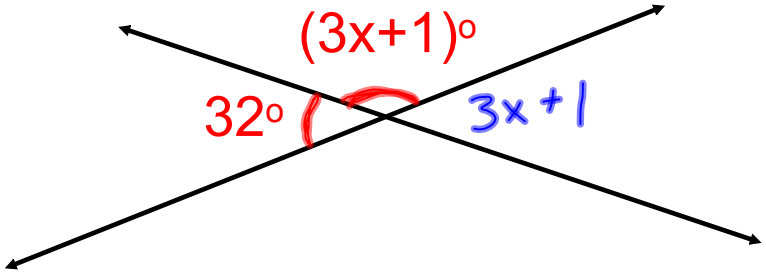


given ∠A & ∠C are vertical

prove ∠A ≅ ∠C

	given
A & B supp B & C	linear pair
∠A ≅ ∠C	≅ supp ∠ thm

ex. How do I find x? what is x?



$32 + 3x + 1 = 180$

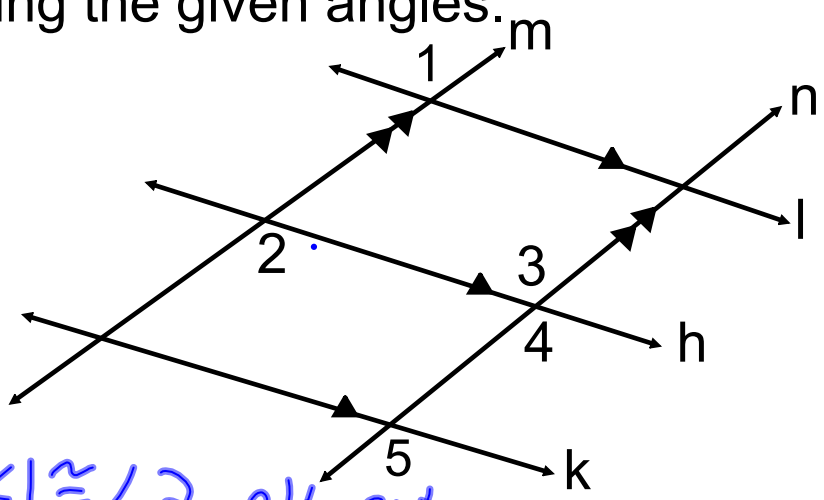
$3x + 33 = 180$

$-33 \quad -33$

$\frac{3x}{3} = \frac{147}{3}$

$x = 49$

Prove that the angles 1 and 5 are congruent using the given angles.



$\angle 1 \cong \angle 2$ alt. ext

$\angle 2 \cong \angle 3$ alt int

$\angle 3 \cong \angle 4$ vert $\angle$'s

$\angle 4 \cong \angle 5$ corres.

Homework: Chapter 2.7 pg.127
#'s 2-12e, 18-26e