

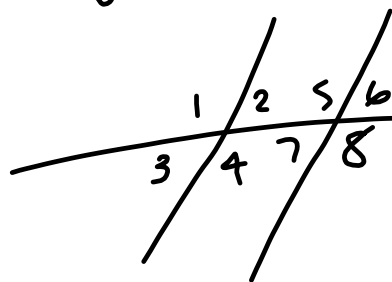
Parallel Postulate:

Through a point not on a line, there is exactly one line parallel to the given line

Thm 18: In a plane, two lines parallel to a third line are parallel to each other

Thm 19

Parallel lines form equal corresponding angles.



- 1 & 5
- 2 & 6
- 3 & 7
- 4 & 8

Parallel lines form...

Cor 1: equal alternate interior angles

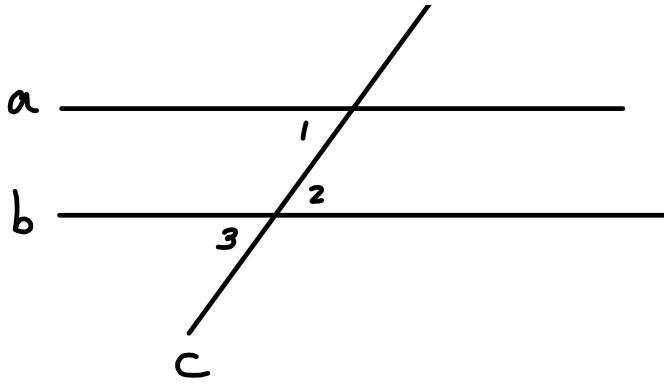
Cor 2: supplementary interior angles on the same side

Cor 3: A line perpendicular to one of two parallel lines, is also perpendicular to the other

Proof of Cor 1

Given :  $a \parallel b$

Prove :  $\angle 1 = \angle 2$



Proof:

Statements

1.  $a \parallel b$
2.  $\angle 1 = \angle 3$
3.  $\angle 3 = \angle 2$
4.  $\angle 1 = \angle 2$

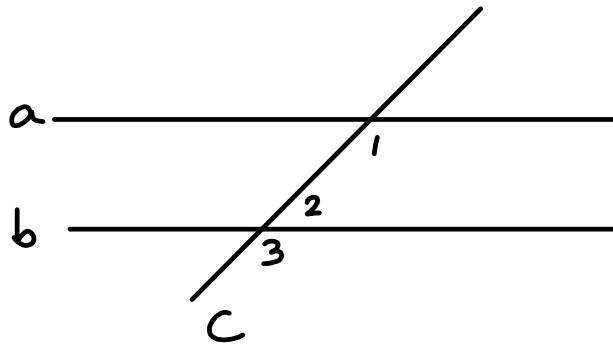
Reasons

Given  
 parallel lines form equal corresponding angles  
 vertical  $\angle$ 's are equal  
 Substitution

Proof of Cor 2

Given:  $a \parallel b$

Prove :  $\angle 1$  &  $\angle 2$  are supplementary



Proof:

Statements

1.  $a \parallel b$
2.  $\angle 1 = \angle 3$
3.  $\angle 3$  &  $\angle 2$  are supplementary
4.  $\angle 1$  &  $\angle 2$  are supplementary

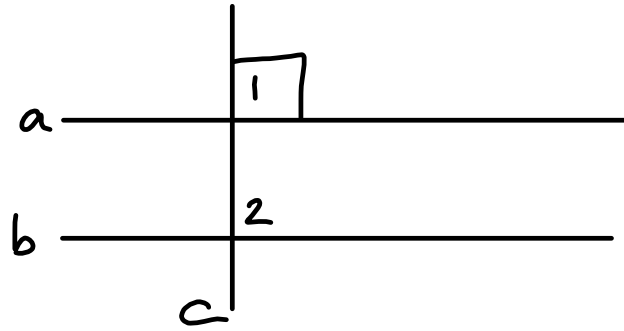
Reasons

Given  
 Parallel lines form equal corresponding angles  
 angles in a linear pair are supplementary  
 Substitution

Proof of Cor 3

Given:  $c \perp a$  &  $a \parallel b$

Prove:  $c \perp b$



Proof:

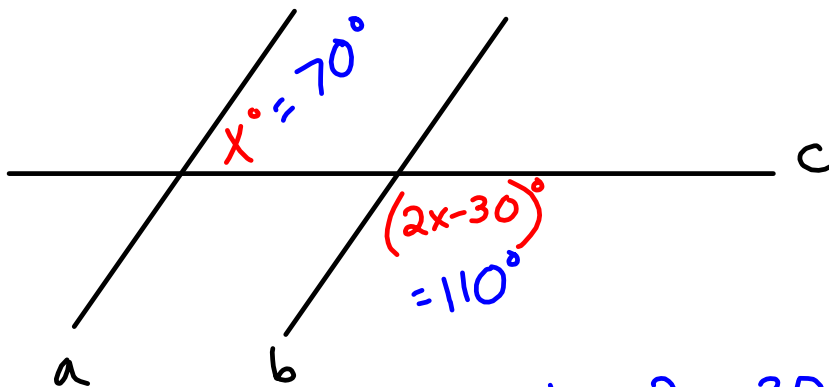
Statements

1.  $c \perp a$  &  $a \parallel b$
2.  $\angle 1$  is a right angle
3.  $\angle 1 = \angle 2$
4.  $\angle 2$  is a right angle
5.  $c \perp b$

Reasons

- Given
- Perpendicular lines meet at right angles
- Parallel lines form equal corresponding angles
- substitution
- Perpendicular lines meet @ right  $\angle$ 's

45. SAT Problem



$$x + 2x - 30 = 180^\circ$$