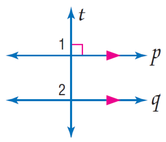
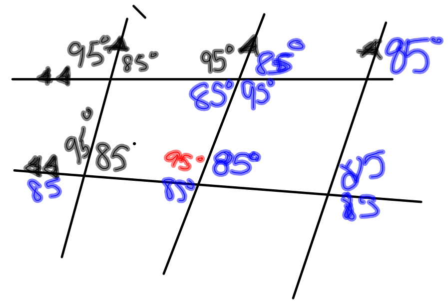
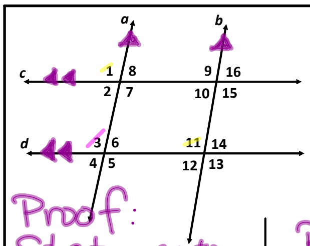
Given: $p \parallel q, t \perp p$
Prove: $t \perp q$
Proof:



Statements	Reasons
1. $p \parallel q, t \perp p$	**1.** Given
2. $\angle 1$ is a right angle.	**2.** Definition of $\perp$ lines
3. $m\angle 1 = 90$	**3.** Definition of right angle
4. $\angle 1 \cong \angle 2$	**4.** Corresponding Angles Postulate
5. $m\angle 1 = m\angle 2$	**5.** Definition of congruent angles
6. $m\angle 2 = 90$	**6.** Substitution Property
7. $\angle 2$ is a right angle.	**7.** Definition of right angles
8. $t \perp q$	**8.** Definition of $\perp$ lines



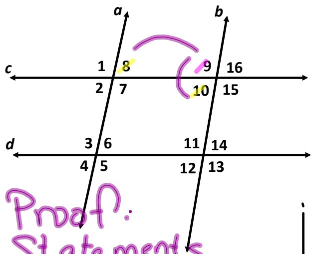


Given: $a \parallel b \quad c \parallel d$

Prove: $\angle 1 \cong \angle 11$

Proof:

Statements	Reasons
c ∥ d	Given
∠1 ≅ ∠3	Corresponding ∠s post.
a ∥ b	Given
∠3 ≅ ∠11	Corresponding ∠s post.
∠1 ≅ ∠11	Transitive Prop of ≅ ∠s



Given: $m\angle 8 + m\angle 9 = 180$

Prove: $\angle 8 \cong \angle 10$

Proof:

Statements	Reasons
m∠8 + m∠9 = 180	Given
∠9 & ∠10 form a linear pair	Def of linear pair
m∠9 + m∠10 = 180	Supplement Theorem
∠8 ≅ ∠10	≅ Supplements Theorem.

3-5 Proving Lines Parallel (and Perpendicular)

Addional "Ingredients" for our proofs
- that is, "Reasons"

If corr. ∠s are ≅, then lines are ∥.

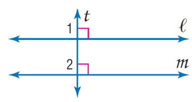
If alt. int. ∠s are ≅, then lines are ∥.

If cons. int. ∠s are suppl., then lines are ∥.

If alt. ext. ∠s are ≅, then lines are ∥.

If 2 lines are ⊥ to the same line, then lines are ∥.

Given: $\ell \perp t$
$m \perp t$
Prove: $\ell \parallel m$



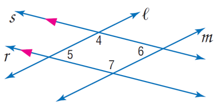
Proof:

Statements	Reasons
1. $\ell \perp t, m \perp t$	**1.** ?
2. $\angle 1$ and $\angle 2$ are right angles.	**2.** ?
3. $\angle 1 \cong \angle 2$	**3.** ?
4. $\ell \parallel m$	**4.** ?

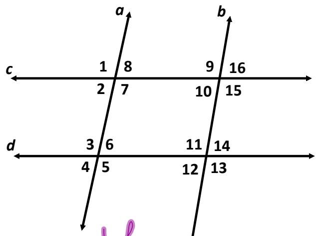
Given: $r \parallel s$; $\angle 5 \cong \angle 6$

Prove: $\ell \parallel m$

Proof:



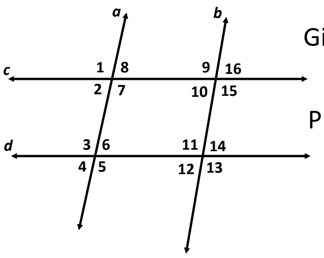
Statements	Reasons
1. $r \parallel s$; $\angle 5 \cong \angle 6$	1. Given
2. $\angle 4$ and $\angle 5$ are supplementary.	2. Consecutive Interior Angle Theorem
3. $m\angle 4 + m\angle 5 = 180$	3. Definition of supplementary angles
4. $m\angle 5 = m\angle 6$	4. Definition of congruent angles
5. $m\angle 4 + m\angle 6 = 180$	5. Substitution
6. $\angle 4$ and $\angle 6$ are supplementary.	6. Definition of supplementary angles
7. $\ell \parallel m$	7. If cons. int. ∠s are suppl., then lines are $\parallel$.



Given: $\angle 9 \cong \angle 13$

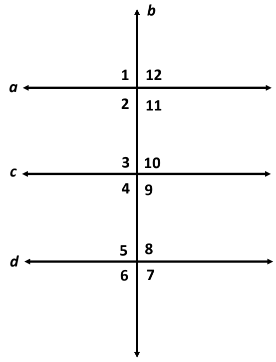
Prove: $c \parallel d$

this one for HW 10/30



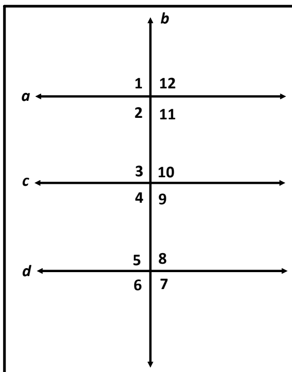
Given: $c \parallel d$ $\quad \angle 2 \cong \angle 12$

Prove: $a \parallel b$



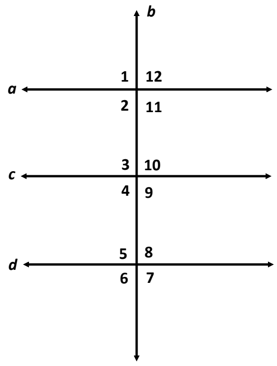
Given: $a \perp b$ $\quad \angle 1 \cong \angle 2$

Prove: $b \perp c$



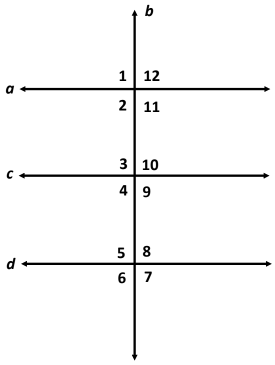
Given: $a \perp b$ $\quad b \perp c$

Prove: $a \parallel c$



Given: $a \parallel c$ $\quad c \parallel d$

Prove: $\angle 6 \cong \angle 12$



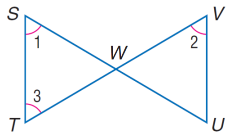
Given: $a \parallel c \parallel d$

Prove:

$\angle 12$, $\angle 2$, $\angle 10$, $\angle 4$, $\angle 8$, $\angle 6$ are all congruent.

Given: $\angle 2 \cong \angle 1$
$\angle 1 \cong \angle 3$

Prove: $\overline{ST} \parallel \overline{UV}$



Given: $\overline{JM} \parallel \overline{KN}$
$\angle 1 \cong \angle 2$
$\angle 3 \cong \angle 4$

Prove: $\overline{KM} \parallel \overline{LN}$