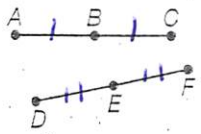
NOTES - Proving Segment + Angle Relationships (See 2.7 + 2.8 Intro)

Complete the following proof.

1. Given: $\overline{AB} \cong \overline{DE}$
   B is the midpoint of $\overline{AC}$.
   E is the midpoint of $\overline{DF}$.
   Prove: $\overline{BC} \cong \overline{EF}$



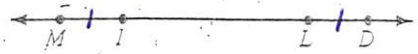
* Definition of midpoint *
If M is the midpoint of segment AB then AM = MB or $\overline{AM} \cong \overline{MB}$

DCFinition of congruent segs/Angles
If seg/Angles are ≅ then the seg/Angles have equal measures

Proof:

Statements	Reasons
a. $\overline{AB} \cong \overline{DE}$ B is midpoint of $\overline{AC}$ E is midpoint of $\overline{DF}$	a. Given
b. $AB = DE$	b. Definition of congruence
c. $AB = BC$ $DE = EF$	c. Definition of Midpoint
d. $BC = DE$, AC = DF	d. TRANSITIVE =
e. $BC = EF$	e. ~~TRANSITIVE~~ = substitution
f. $\overline{BC} \cong \overline{EF}$	f. DCF of congruence

2. Given: $\overline{MI} \cong \overline{LD}$
   Prove: $\overline{ML} \cong \overline{ID}$



Proof:

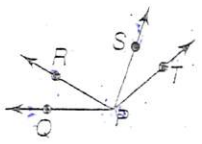
Statements	Reasons
1. $\overline{MI} \cong \overline{LD}$	1. Given
2. $MI = LD$	2. DCFinition of congruence
3. $IL = IL$	3. Reflexive property =
4. $MI + IL = LD + IL$	4. Addition equality
5. $MI + IL = ML$; $LD + IL = ID$	5. segment addition postulate
6. $ML = ID$	6. Substitution
7. $\overline{ML} \cong \overline{ID}$	7. DEFinition of congruence

3. Complete the following proof.

Given: $\angle QPS \cong \angle TPR$

Prove: $\angle QPR \cong \angle TPS$

Proof:

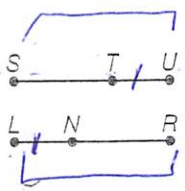


Statements	Reasons
a. $\angle QPS \cong \angle TPR$	a. Given
b. $m\angle QPS = m\angle TPR$	b. Definition of $\cong$
c. $m\angle QPS = m\angle QPR + m\angle RPS$ $m\angle TPR = m\angle TPS + m\angle RPS$	c. Angle Addition postulate
d. $m\angle QPR + m\angle RPS = m\angle TPS + m\angle RPS$	d. Substitution
e. $m\angle QPR = m\angle TPS$	e. subtraction $=$
f. $\angle QPR \cong \angle TPS$	f. Definition of congruence

4. Given: $\overline{SU} \cong \overline{LR}$
$\overline{TU} \cong \overline{LN}$

Prove: $\overline{ST} \cong \overline{NR}$

Proof:



Statements	Reasons
a. $\overline{SU} \cong \overline{LR}, \overline{TU} \cong \overline{LN}$	a. Given
b. $SU = LR, TU = LN$	b. Definition of $\cong$ segments
c. $SU = ST + TU$ $LR = LN + NR$	c. segment Addition postulate
d. $ST + TU = LN + NR$	d. substitution $=$
e. $ST + LN = LN + NR$	e. Substitution $=$
f. $ST + LN - LN = LN + NR - LN$	f. subtraction $=$
g. $ST = NR$	g. Substitution Property
h. $\overline{ST} \cong \overline{NR}$	h. Definition of $\cong$