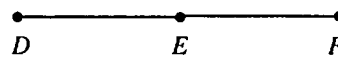


SEGMENT *Proofs*

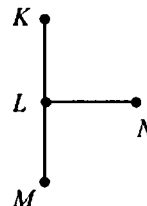
Complete the proofs below by giving the missing statements and reasons.

- ① **Given:** E is the midpoint of \overline{DF}
Prove: $2DE = DF$



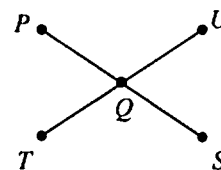
Statements	Reasons
1. E is the midpoint of \overline{DF}	1. Given
2. $DE = EF$	2. Def. of Midpoint
3. $DE + DE = DE + EF$	3. Addition Property
4. $2DE = DE + EF$	4. Simplify
5. $DE + EF = DF$	5. Segment Addition Postulate
6. $2DE = DF$	6. Transitive Property

- ② **Given:** $\overline{KL} \cong \overline{LN}$, $\overline{LM} \cong \overline{LN}$
Prove: L is the midpoint of \overline{KM}



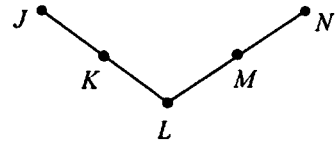
Statements	Reasons
1. $\overline{KL} \cong \overline{LN}$, $\overline{LM} \cong \overline{LN}$	1. Given
2. $KL = LN$, $LM = LN$	2. Def. of Congruence
3. $KL = LM$	3. Transitive Property
4. L is the midpoint of \overline{KM}	4. Def. of Midpoint

- ③ **Given:** $\overline{PQ} \cong \overline{TQ}$, $\overline{UQ} \cong \overline{QS}$
Prove: $\overline{PS} \cong \overline{TU}$



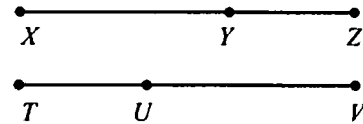
Statements	Reasons
1. $\overline{PQ} \cong \overline{TQ}$, $\overline{UQ} \cong \overline{QS}$	1. Given
2. $PQ = TQ$, $UQ = QS$	2. Def of Congruence
3. $PQ + QS = PS$; $TQ + QU = TU$	3. Segment Addition Postulate
4. $TQ + QS = PS$	4. Substitution Property ($PQ = TQ$)
5. $TQ + QS = TU$	5. Substitution Property ($QU = QS$)
6. $PS = TU$	6. Transitive Property
7. $\overline{PS} \cong \overline{TU}$	7. Def. of Congruence

- 4 Given: K is the midpoint of JL , M is the midpoint of LN ,
 $JK = MN$
 Prove: $\overline{KL} \cong \overline{LM}$



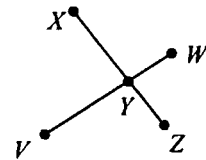
Statements	Reasons
1. K is the midpoint of JL , M is the midpoint of LN	1. Given
2. $JK = KL$, $LM = MN$	2. Def. of Midpoint
3. $JK = MN$	3. Given
4. $MN = KL$, $LM = MN$	4. Substitution Property ($JK = MN$)
5. $LM = KL$	5. Transitive Property
6. $KL = LM$	6. Symmetric Property
7. $\overline{KL} \cong \overline{LM}$	7. Def. of Congruence

- 5 Given: $\overline{XY} \cong \overline{UV}$, $\overline{YZ} \cong \overline{TU}$
 Prove: $\overline{XZ} \cong \overline{TV}$



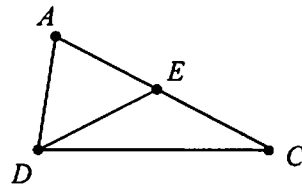
Statements	Reasons
1. $\overline{XY} \cong \overline{UV}$, $\overline{YZ} \cong \overline{TU}$	1. Given
2. $XY = UV$, $YZ = TU$	2. Def. of Congruence
3. $XY + YZ = XZ$, $TU + UV = TV$	3. Segment Addition Postulate
4. $UV + YZ = XZ$, $YZ + UV = TV$	4. Substitution Property ($XY = UV$; $TU = YZ$)
5. $XZ = TV$	5. Transitive Property
6. $\overline{XZ} \cong \overline{TV}$	6. Def. of Congruence

- 6 Given: $\overline{YW} \cong \overline{YZ}$, $\overline{XY} \cong \overline{VY}$
 Prove: $\overline{XZ} \cong \overline{VW}$



Statements	Reasons
1. $\overline{YW} \cong \overline{YZ}$, $\overline{XY} \cong \overline{VY}$	1. Given
2. $WY = YZ$, $XY = VY$	2. Def. of Congruence
3. $XY + YZ = XZ$	3. Segment Addition Postulate
4. $VY + YW = XZ$	4. Substitution Property
5. $VY + YW = VW$	5. Segment Addition Postulate
6. $XZ = VW$	6. Transitive Property
7. $\overline{XZ} \cong \overline{VW}$	7. Def. of Congruence

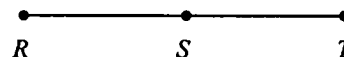
- 7 Given: E is the midpoint of \overline{AC} , $DE = EC$
 Prove: $\overline{DE} \cong \overline{AE}$



Statements	Reasons
1. E is the midpoint of \overline{AC}	1. Given
2. $AE = EC$	2. Definition of Midpoint
3. $DE = EC$	3. Given
4. $AE = DE$	4. Transitive Property
5. $\overline{AE} \cong \overline{DE}$	5. Definition of Congruence
6. $\overline{DE} \cong \overline{AE}$	6. Symmetric Property

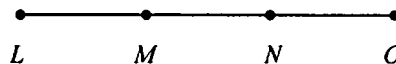
- 8 Given: $RS = \frac{1}{2}RT$

Prove: S is the midpoint of \overline{RT}



Statements	Reasons
1. $RS = \frac{1}{2}RT$	1. Given
2. $2RS = RT$	2. Multiplication Property
3. $RS + ST = RT$	3. Segment Addition Postulate
4. $2RS = RS + ST$	4. Substitution Property
5. $RS = ST$	5. Subtraction Property
6. S is the Midpoint of \overline{RT}	6. Definition of Midpoint

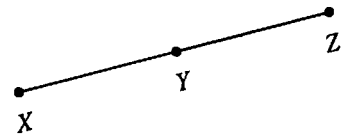
- 9 Given: M is the midpoint of \overline{LN} ,
 N is the midpoint of \overline{MO}
 Prove: $\overline{LM} \cong \overline{NO}$



Statements	Reasons
1. M is the midpoint of \overline{LN}	1. Given
2. $LM = MN$	2. Definition of Midpoint
3. N is the midpoint of \overline{MO}	3. Given
4. $MN = NO$	4. Def. of Midpoint
5. $LM = NO$	5. Transitive Property of Equality
6. $\overline{LM} \cong \overline{NO}$	6. Definition of Congruence

10 Given: Y is the midpoint of \overline{XZ}

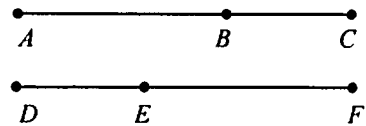
Prove: $XY = \frac{1}{2}XZ$



Statements	Reasons
1. Y is the midpoint of \overline{XZ}	1. Given
2. $XY = YZ$	2. Def of midpoint
3. $2XY = XY + YZ$	3. Addition Property
4. $XY + YZ = XZ$	4. Segment Addition Postulate
5. $2XY = XZ$	5. Transitive Property
6. $XY = \frac{1}{2}XZ$	6. Division Property

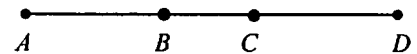
11 Given: $\overline{AC} \cong \overline{DF}$, $\overline{BC} \cong \overline{DE}$

Prove: $\overline{AB} \cong \overline{EF}$



Statements	Reasons
1. $\overline{AC} \cong \overline{DF}$, $\overline{BC} \cong \overline{DE}$	1. Given
2. $AC = DF$, $BC = DE$	2. Def. of Congruence
3. $AB + BC = AC$, $DE + EF = DF$	3. Segment Addition Postulate
4. $AB + DE = DF$	4. Substitution Property
5. $AB + DE = DE + EF$	5. Transitive Property
6. $AB = EF$	6. Subtraction Property
7. $\overline{AB} \cong \overline{EF}$	7. Def. of Congruence

12 Given: $\overline{AB} \cong \overline{CD}$; Prove: $\overline{AC} \cong \overline{BD}$



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$	1. Given
2. $AB = CD$	2. Def. of Congruence
3. $AC + CD = AD$; $AB + BD = AD$	3. Segment Addition Postulate
4. $CD + BD = AD$	4. Substitution Property
5. $AC + CD = CD + BD$	5. Transitive Property
6. $AC = BD$	6. Subtraction Property
7. $\overline{AC} \cong \overline{BD}$	7. Def. of Congruence