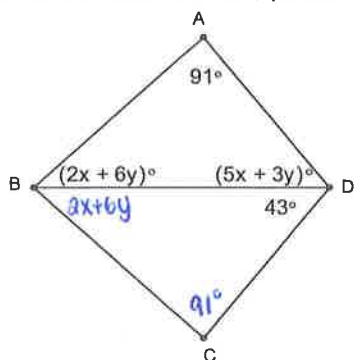


1. Given that $\triangle ABD \cong \triangle CBD$, please find the values of x and y .

$$\begin{aligned}\angle A &\cong \angle C \\ \angle B &\cong \angle D \\ \angle D &\cong \angle D\end{aligned}$$



$$43 + 91 + 2x + 6y = 180$$

$$2x + 6y + 134 = 180$$

$$2x + 6y = 46$$

$$2x + 6y + 6x + 3y + 91 = 180$$

$$7x + 9y + 91 = 180$$

$$7x + 9y = 89$$

$$\begin{aligned}7(2x + 6y = 46) &\Rightarrow 14x + 42y = 322 \\ -2(7x + 9y = 89) &\Rightarrow -14x - 18y = -178\end{aligned}$$

$$24y = 144$$

$$y = 6$$

$$2x + 6(6) = 46$$

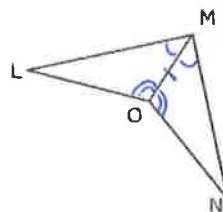
$$2x + 36 = 46$$

$$2x = 10$$

$$x = 5$$

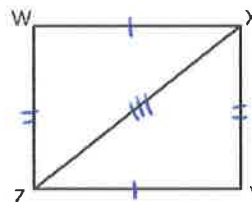
Complete the following proofs. Your proof may not require all the steps provided ☺

2. Given: \overline{OM} bisects $\angle LMN$ and $\angle LOM \cong \angle NOM$
Prove: $\triangle LMO \cong \triangle NMO$



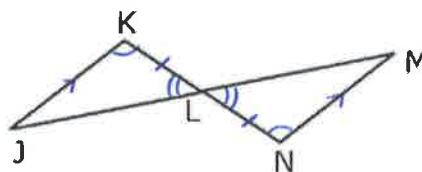
Statements	Reasons
1. \overline{OM} bisects $\angle LMN$	1. Given
2. $\angle LMO \cong \angle NMO$	2. Def of angle bisector
3. $\angle LOM \cong \angle NOM$	3. Given
4. $\overline{OM} \cong \overline{OM}$	4. Reflexive Prop
5. $\triangle LMO \cong \triangle NMO$	5. ASA
6.	6.

3. Given: $\overline{WX} \cong \overline{YZ}$ and $\overline{WZ} \cong \overline{YX}$
Prove: $\triangle ZWX \cong \triangle XYZ$



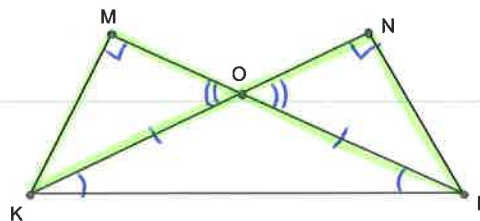
Statements	Reasons
1. $\overline{WX} \cong \overline{YZ}$	1. Given
2. $\overline{WZ} \cong \overline{XY}$	2. Given
3. $\overline{XZ} \cong \overline{XZ}$	3. Reflexive Prop
4. $\triangle ZWX \cong \triangle XYZ$	4. SSS
5.	5.
6.	6.

4. Given: $\overline{JK} \parallel \overline{MN}$ and L is the midpoint of \overline{KN}
 Prove: $\triangle JLK \cong \triangle MLN$



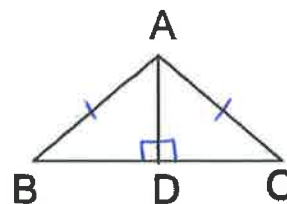
Statements	Reasons
1. $\overline{JK} \parallel \overline{MN}$	1. Given
2. $\angle JKL \cong \angle MNL$	2. Alternate Int. Angles Thm
3. L is the midpoint of \overline{KN}	3. Given
4. $\overline{KL} \cong \overline{NL}$	4. Definition of midpoint
5. $\angle KJL \cong \angle NLM$	5. VAT
6. $\triangle JLK \cong \triangle MLN$	6. ASA

5. Given: $\overline{KM} \perp \overline{ML}$, $\overline{LN} \perp \overline{KN}$, $\angle OKL \cong \angle OLK$
 Prove: $\triangle MKO \cong \triangle LNO$



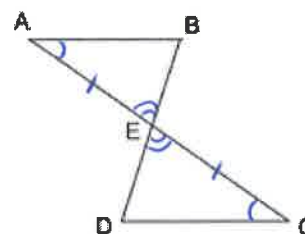
Statements	Reasons
1. $\overline{KM} \perp \overline{ML}$, $\overline{LN} \perp \overline{KN}$	1. Given
2. $\angle M$ and $\angle N$ are right angles	2. Definition of Perpendicular Lines
3. $\triangle MKO$ and $\triangle LNO$ are right \triangle 's	3. Definition of Right Triangles
4. $\angle OKL \cong \angle OLK$	4. Given
5. $\overline{OK} \cong \overline{OL}$	5. Base Angles Converse
6. $\angle MOK \cong \angle NOL$	6. VAT
7. $\triangle MOK \cong \triangle LNO$	7. AAS
8.	8.
9.	9.
10.	10.

6. Given: $\overline{AD} \perp \overline{BC}$ and $\overline{BA} \cong \overline{CA}$
 Prove: $\overline{BD} \cong \overline{CD}$ $\triangle ADB \cong \triangle ADC$



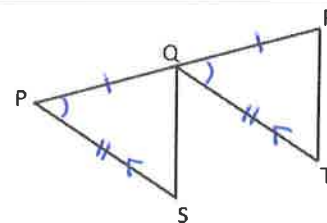
Statements	Reasons
1. $\overline{AD} \perp \overline{BC}$	1. Given
2. $\angle ADB$ and $\angle ADC$ are right angles	2. Def of perpendicular lines
3. $\triangle ADB$ and $\triangle ADC$ are right triangles	3. Def of right triangles
4. $\overline{BA} \cong \overline{CA}$	4. Given
5. $\overline{AD} \cong \overline{AD}$	5. Reflexive Prop
6. $\triangle ADB \cong \triangle ADC$	6. HL

7. Given: \overline{BD} bisects \overline{AC} , $\angle BAE \cong \angle DCE$
 Prove: $\triangle ABE \cong \triangle CDE$



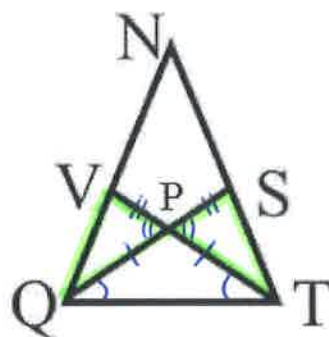
Statements	Reasons
1. \overline{BD} bisects \overline{AC}	1. Given
2. $\overline{AE} \cong \overline{CE}$	2. Def. of segment bisector
3. $\angle BAE \cong \angle DCE$	3. Given
4. $\angle AEB \cong \angle CED$	4. VAT
5. $\triangle ABE \cong \triangle CDE$	5. ASA
6.	6.

8. Given: Q is the midpoint of \overline{PR} , $\overline{PS} \cong \overline{QT}$ and $\overline{PS} \parallel \overline{QT}$
 Prove: $\triangle PSQ \cong \triangle QTR$



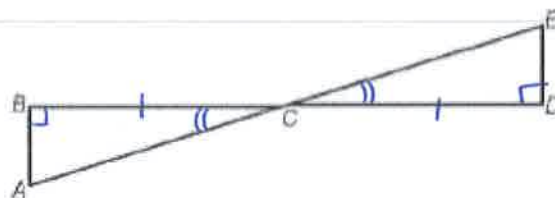
Statements	Reasons
1. Q is the midpoint of \overline{PR}	1. Given
2. $\overline{PQ} \cong \overline{RQ}$	2. Def. of midpoint
3. $\overline{PS} \cong \overline{QT}$	3. Given
4. $\overline{PS} \parallel \overline{QT}$	4. Given
5. $\angle QPS \cong \angle QRT$	5. Corresponding Angles Postulate
6. $\triangle PSQ \cong \triangle QTR$	6. SAS
7.	7.

9. Given: $\angle SQT \cong \angle VTQ$, $\overline{VP} \cong \overline{SP}$
 Prove: $\triangle VPQ \cong \triangle SPT$



Statements	Reasons
1. $\angle SQT \cong \angle VTQ$	1. Given
2. $\overline{PQ} \cong \overline{PT}$	2. Base Angles Converse
3. $\overline{VP} \cong \overline{SP}$	3. Given
4. $\angle VPQ \cong \angle SPT$	4. VAT
5. $\triangle VPQ \cong \triangle SPT$	5. SAS
6.	6.
7.	7.
8.	8.

10. Given: C is the midpoint of \overline{BD}
 $\overline{AB} \perp \overline{BD}$ and $\overline{BD} \perp \overline{DE}$
 Prove: $\triangle ABC \cong \triangle EDC$



Statements	Reasons
1. C is the midpoint of \overline{BD}	1. Given
2. $\overline{BC} \cong \overline{DC}$	2. Def of midpoint
3. $\overline{AB} \perp \overline{BD}$, $\overline{BD} \perp \overline{DE}$	3. Given
4. $\angle B$ and $\angle D$ are right angles	4. Def of perpendicular lines
5. $\triangle ABC$ and $\triangle EDC$ are right triangles	5. Def of right triangles
6. $\angle BCA \cong \angle DCE$	6. VAT
7. $\triangle ABC \cong \triangle EDC$	7. ASA