

H. Geometry - Chapter 2 - Definition Sheet

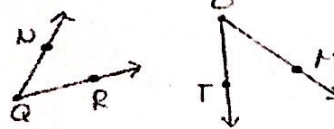
Section 2.4 (Day 2)

<p>Proof</p>	<p>A series of <u>JUSTIFIED CONCLUSIONS</u>, leading from what is given or known, and leading to a conclusion.</p>
<p>Parts of a Proof</p>	<ul style="list-style-type: none"> - Given statement (what you know → start with) - Prove statement (what we need to determine) - Diagram / Figure (if appropriate) - Argument (steps leading to the prove statement) <p style="text-align: center;">↓</p>
<p>Parts of an Argument</p>	<p><u>conclusions</u> (What I can determine)</p> <p><u>Justifications</u> (How I know the conclusion is true.)</p>

Mini-Proof Examples

MINI-PROOF EXAMPLES:

1. GIVEN: $\angle NQR \cong \angle TOM$



* can be used vice-versa

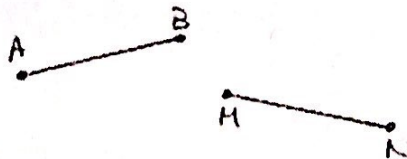
CONCLUSION

$$m\angle NQR = m\angle TOM$$

JUSTIFICATION

Defn. of $\cong \angle$'s

2. GIVEN: $AB = MN$



CONCLUSION

$$\overline{AB} \cong \overline{MN}$$

JUSTIFICATION

Defn. of \cong segments.

H. Geometry - Chapter 2 - Definition Sheet

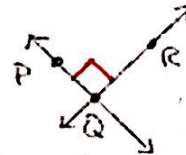
3. GIVEN: K IS THE MIDPOINT OF \overline{JL}



CONCLUSION
 $\overline{JK} \cong \overline{KL}$

JUSTIFICATION
Defn. of midpoint

4. GIVEN: $\overrightarrow{PQ} \perp \overleftrightarrow{QR}$

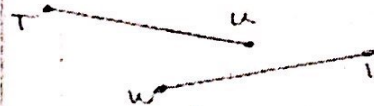


perpendicular
↳ forms a right angle

CONCLUSION
 $\angle PQR$ is a right \angle

JUSTIFICATION
Defn. of \perp

5. GIVEN: $\overline{TU} \cong \overline{VW}$

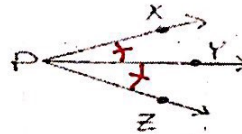


Right angle
degree of 90.

CONCLUSION
 $TU = VW$
(lengths are equal)

JUSTIFICATION
Defn. of \cong segments

6. GIVEN: \overrightarrow{PY} BISECTS $\angle XPZ$



CONCLUSION
 $\angle XPY \cong \angle YPZ$

JUSTIFICATION
Defn. of angle bisector

7. GIVEN: $\angle 1$ AND $\angle 2$ ARE A LINEAR PAIR

CONCLUSION
 $\angle 1$ and $\angle 2$ are supplementary

JUSTIFICATION
Linear Pair Thm

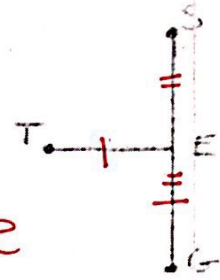
8. GIVEN: $\overline{AB} = BC$ AND $BC = \overline{CD}$

CONCLUSION
 $AB = CD$

JUSTIFICATION
Transitive Property of equality (POE)

H. Geometry - Chapter 2 - Definition Sheet

9. GIVEN: E IS THE MIDPOINT OF \overline{SG}
 $\overline{ET} \cong \overline{EG}$



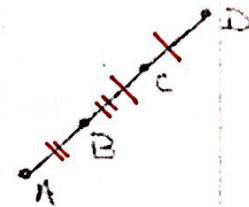
PROVE: $\overline{ET} \cong \overline{SE}$

↳ what we are trying to prove

* always write what is given

CONCLUSIONS	JUSTIFICATIONS
1. E is the midpoint \overline{SG} $\overline{ET} \cong \overline{EG}$	1. Given
2. $\overline{SE} \cong \overline{EG}$	2. Defn. of midpoint
3. $\overline{ET} \cong \overline{SE}$	3. Transitive prop \cong

10. GIVEN: B IS THE MIDPOINT OF \overline{AC}
 C IS THE MIDPOINT OF \overline{BD}
 PROVE: $\overline{AB} \cong \overline{CD}$



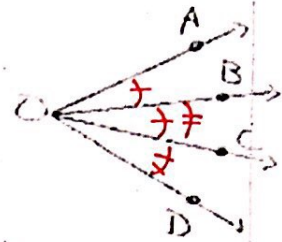
CONCLUSIONS	JUSTIFICATIONS
1. B is the midpoint \overline{AC} C is the midpoint \overline{BD}	1. Given
2. $\overline{AB} \cong \overline{BC}$ $\overline{BC} \cong \overline{CD}$	2. Defn. of midpoint
3. $\overline{AB} \cong \overline{CD}$	3. transitive prop. \cong

If justification is the same, we can double up!

H. Geometry - Chapter 2 - Definition Sheet

11. GIVEN: \vec{OB} BISECTS $\angle AOC$
 \vec{OC} BISECTS $\angle BOD$

PROVE: $\angle AOB \cong \angle COD$



CONCLUSIONS

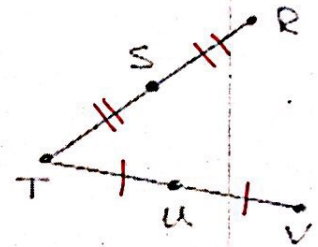
1. \vec{OB} bisects $\angle AOC$
 \vec{OC} bisects $\angle BOD$

1. $\angle AOB \cong \angle BOC$
 $\angle BOC \cong \angle COD$
2. $\angle AOB \cong \angle COD$

JUSTIFICATIONS

1. Given
1. Defn. of angle bisector
2. Transitive prop. \cong

12. GIVEN: S IS THE MIDPOINT OF \overline{RT}
 U IS THE MIDPOINT OF \overline{TV}
 $\overline{RS} \cong \overline{TU}$



PROVE: $ST = UV$

CONCLUSIONS

1. S is the midpoint of \overline{RT}
 U is the midpoint of \overline{TV}
 $\overline{RS} \cong \overline{TU}$

1. $\overline{RS} \cong \overline{ST}$; $\overline{TU} \cong \overline{UV}$
2. $\overline{ST} \cong \overline{UV}$
3. $ST = UV$

JUSTIFICATIONS

1. Given
1. Defn. of midpoint
2. Transitive prop. \cong
3. Defn of \cong segments.