

Name: _____

Mastery Quiz

Date: / /

SSS, SAS, ASA, AAS, and HL Proofs

SCORE

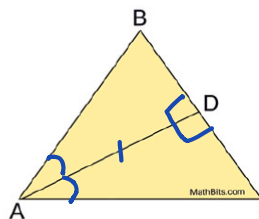
1	2	3	4	5
---	---	---	---	---

1

Given: \overline{AD} bisects $\angle BAC$

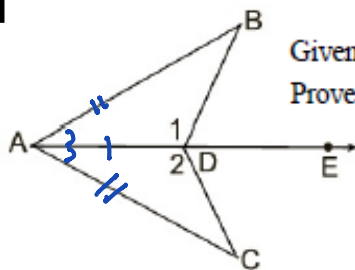
$\overline{AD} \perp \overline{BC}$

Prove: $\triangle ABC \cong \triangle ADC$



Statement	Reason
① \overline{AD} bisects $\angle BAC$	① given
② $\overline{AD} \perp \overline{BC}$	② given
③ $\overline{AD} \cong \overline{AD}$	③ Reflexive prop.
④ $\angle BAD \cong \angle CAD$	④ An angle bisector divides an \angle in 2 \cong parts
⑤ $\angle BDA$ and $\angle CDA$ are right \angle 's	⑤ \perp lines form right \angle 's
⑥ $\angle BDA \cong \angle CDA$	⑥ All right \angle 's are \cong
⑦ $\triangle ABC \cong \triangle ADC$	⑦ ASA \cong

2

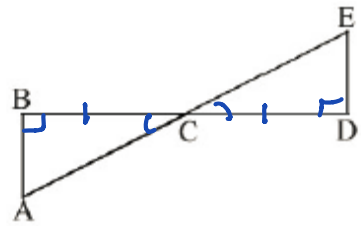


Given: \overline{AE} bisects $\angle BAC$; $\overline{AB} \cong \overline{AC}$

Prove: $\angle B \cong \angle C$

Statement	Reason
① \overline{AE} bisects $\angle BAC$	① given
② $\overline{AB} \cong \overline{AC}$	② given
③ $\overline{AD} \cong \overline{AD}$	③ Reflexive Prop.
④ $\angle BAD \cong \angle CAD$	④ An angle bisector divides an angle in 2 \cong parts
⑤ $\triangle BAD \cong \triangle CAD$	⑤ SAS \cong
⑥ $\angle B \cong \angle C$	⑥ CPCTC

3

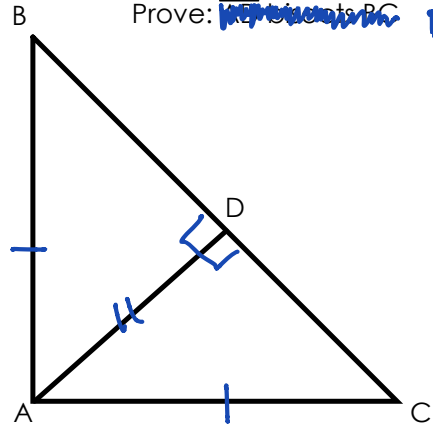


Given: C midpoint of \overline{BD}
 $\overline{AB} \perp \overline{BD}$; $\overline{ED} \perp \overline{BD}$
 Prove: $\angle A \cong \angle E$

Statement	Reason
① C is the midpoint	① given
② $\overline{AB} \perp \overline{BD}$	② given
③ $\overline{ED} \perp \overline{BD}$	③ given
④ $\angle BCA \cong \angle ECD$	④ vert. \angle s are \cong
⑤ $\overline{BC} \cong \overline{CD}$	⑤ A midpoint divides a line into 2 \cong parts
⑥ $\angle ABC$ and $\angle EDC$ are right \angle s	⑥ \perp lines form right \angle s
⑦ $\angle ABC \cong \angle EDC$	⑦ All right \angle s are \cong

4

Given: \overline{AD} is the altitude of $\triangle ABC$ and $\overline{AB} = \overline{AC}$
 Prove: ~~BD = DC~~ $\overline{BD} \cong \overline{DC}$

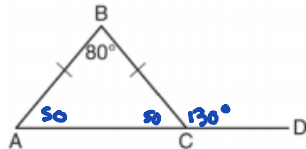


⑧ $\triangle ABD \cong \triangle ADC$	⑧ ASA \cong
⑨ $\angle A \cong \angle A$	⑨ CPCTC

Statement	Reason
① \overline{AD} is the alt. of $\triangle ABC$	① given
② $\overline{AB} \cong \overline{AC}$	② given
③ $\overline{AD} \cong \overline{AD}$	③ Reflexive Prop.
④ $\angle BDA$ and $\angle CDA$ are right \angle s	④ an Alt. makes a $90^\circ \angle$ with the base
⑤ $\angle BDA \cong \angle CDA$	⑤ All right \angle s are \cong
⑥ $\triangle ABD \cong \triangle ADC$	⑥ HL \cong
⑦ $\overline{BD} \cong \overline{DC}$	⑦ CPCTC

5

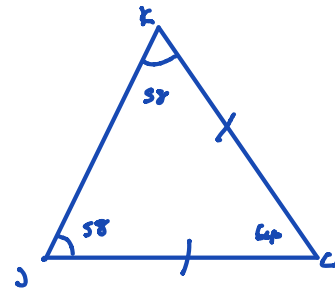
In the diagram below of isosceles $\triangle ABC$, the measure of vertex angle B is 80° . If \overline{AC} extends to point D , what is $m\angle BCD$?



$$\angle BCD = 130^\circ$$

6

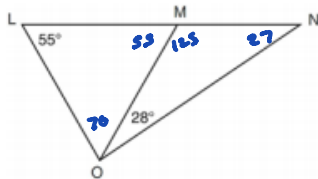
In $\triangle JKL$, $\overline{JL} \cong \overline{KL}$. If $m\angle J = 58$, then $m\angle L$ is



$$\angle L = 64^\circ$$

7

In the diagram below, $\triangle LMO$ is isosceles with $LO = MO$.

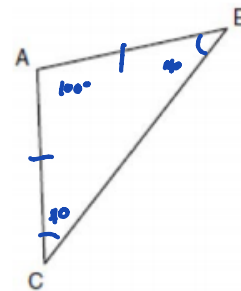


If $m\angle L = 55$ and $m\angle NOM = 28$, what is $m\angle N$?

$$\angle N = 27^\circ$$

8

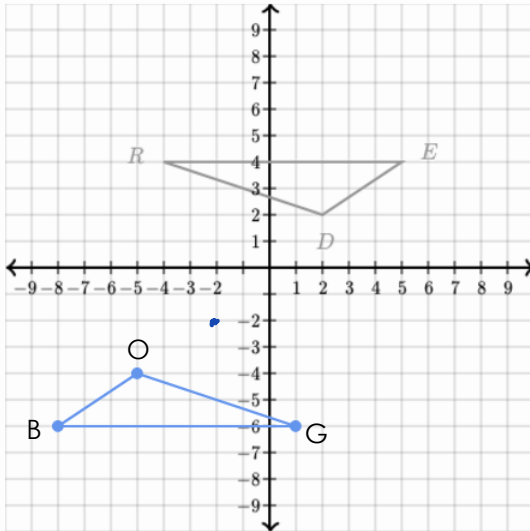
In the diagram of $\triangle ABC$ below, $\overline{AB} \cong \overline{AC}$. The measure of $\angle B$ is 40° .



What is the measure of $\angle A$?

$$\angle A = 100^\circ$$

9

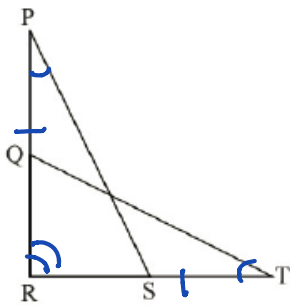


Using the properties of rigid motions,
prove $\triangle BOG \cong \triangle EDR$

A rotation 180° around the origin clockwise then a translation 3 units left and 2 down maps $\triangle BOG$ onto $\triangle EDR$.

A rotation and translation are rigid motions and rigid motions preserve side length and \angle measures.

10



Given: $\angle P \cong \angle T$
 $\overline{PR} \cong \overline{RT}$
Prove: $\overline{PQ} \cong \overline{TS}$

Statement	Reason
① $\angle P \cong \angle T$	① given
② $\overline{PR} \cong \overline{RT}$	② given
③ $\angle R \cong \angle R$	③ Reflexive prop.
④ $\triangle PRS \cong \triangle TRQ$	④ ASA
⑤ $\overline{PQ} \cong \overline{TS}$	⑤ CPCTC

Describe a sequence rigid motion that maps $\triangle PRT$ onto $\triangle TRQ$

A 90° clockwise rotation around point R then a reflection across \overline{RT}