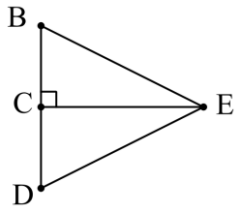
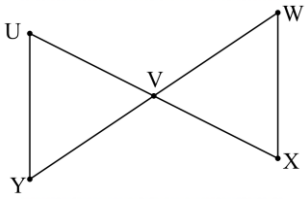
**Formal Geometry** **4.4 Worksheet**
**Do all work on your own paper!**

1) Given: $CE$ bisects $\angle BED$; $\angle BCE$ and $\angle ECD$ are right angles.
Prove: $\Delta ECB \cong \Delta ECD$

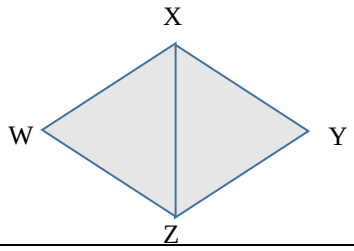



2) Given: $V$ is the midpoint of $YW$. $UY \parallel XW$.
Prove: $\Delta UVY \cong \Delta XVW$



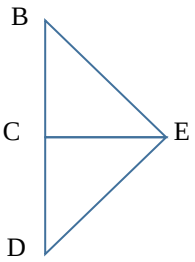

3) **Given:** $\angle W \cong \angle Y, \overline{YZ} \cong \overline{WZ}$, $\overline{XZ}$ bisects $\angle WZY$.

**Prove:** $\Delta XWZ \cong \Delta XYZ$

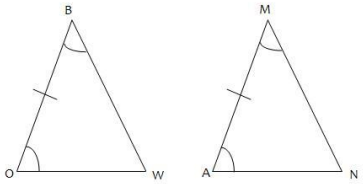



4) **Given:** $\angle BCE$ and $\angle ECD$ are right angles,
$\overline{CE}$ bisects $\angle BED$.

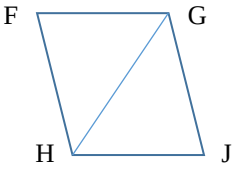
**Prove:** $\Delta ECB \cong \Delta ECD$



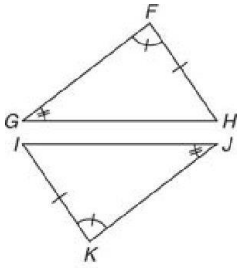

5) Are the following triangles congruent? If so, which theorem did you use?



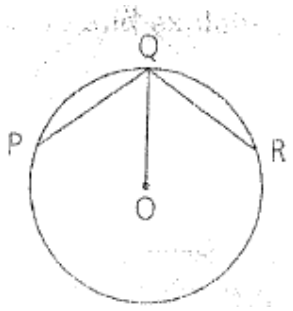

6) **Given:** $\angle F \cong \angle J, \overline{FH} \| \overline{GJ}$
**Prove:** $\overline{FH} \cong \overline{GJ}$



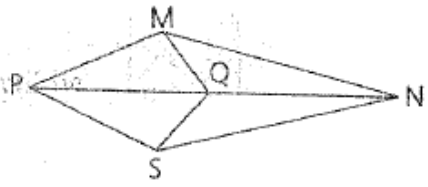

7) Are the following triangles congruent? If so, which theorem did you use?



8) Given: $\odot O$,
$\overline{PQ} \cong \overline{QR}$
Prove: $\overrightarrow{QO}$ bisects $\angle PQR$.

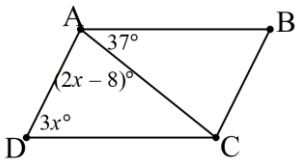



9) Given: $\overline{MN} \cong \overline{NS}$,
$\overline{MP} \cong \overline{PS}$
Prove: $\angle MQP \cong \angle SQP$




10) Name the third pair of congruent parts needed to prove that $\Delta ABC \cong \Delta XYZ$ using $ASA$, given the following information: $\angle A \cong \angle X$; $\angle B \cong \angle Y$.

11) Given that $\Delta ACD \cong \Delta CAB$ and $AD \parallel BC$, then what is the measure of $\angle CBA$?



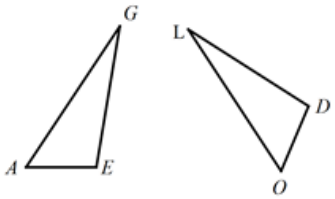

12) In the figure $\angle GAE \cong \angle LOD$ and $\overline{AE} \cong \overline{DO}$. What information is needed to prove that $\Delta AGE \cong \Delta OLD$ by SAS?

**A.** $\overline{GE} \cong \overline{LD}$

**B.** $\overline{AG} \cong \overline{OL}$

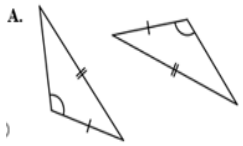
**C.** $\angle AGE \cong \angle OLD$

**D.** $\angle AEG \cong \angle ODL$

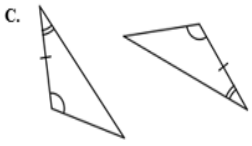



13) Which of the following sets of triangles can be proved congruent using the AAS Theorem?

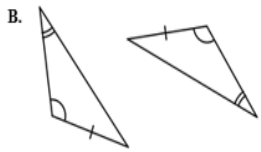
**A.**



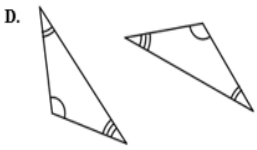
**C.**



**B.**



**D.**



14) If $\Delta ABC \cong \Delta DEF$, which of the following is true?

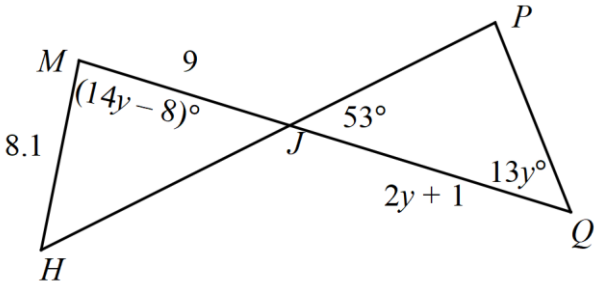
**A.** $\angle A \cong \angle D, \overline{BC} \cong \overline{EF}, \angle C \cong \angle F$

**B.** $\angle A \cong \angle D, \overline{AB} \cong \overline{DF}\ \angle C \cong \angle E$

**C.** $\angle A \cong \angle F, \overline{BC} \cong \overline{AC}, \angle C \cong \angle D$

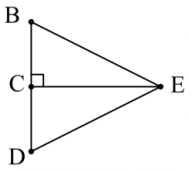
**D.** $\angle A \cong \angle E, \overline{DF} \cong \overline{EF}, \angle C \cong \angle F$

15) Find the perimeter of $\Delta PJQ$, given that $\Delta MHJ \cong \Delta PQJ$.



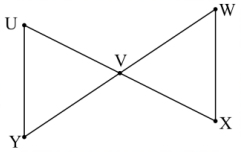
**Selected Answers:**

1) Given: $CE$ bisects $\angle BED$;
$\angle BCE$ and $\angle ECD$ are right angles.
Prove: $\Delta ECB \cong \Delta ECD$




| | |
|---|---|
| 1) $CE$ bisects $\angle BED$; $\angle BCE$ and $\angle ECD$ are right angles. | 1) Given |
| 2) $\angle BEC \cong \angle DEC$ | 2) If a ray bisects $\angle$, then it divides it into $\cong$ $\angle s$ |
| 3) $\angle BCE \cong \angle ECD$ | 3) If 2 $\angle s$ are right $\angle s$, then they are $\cong$. |
| 4) $CE \cong CE$ | 4) Reflexive Property |
| 5) $\Delta ECB \cong \Delta ECD$ | 5) ASA (2, 4, 3) |

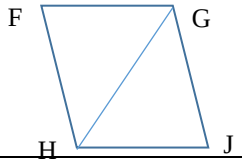
2) Given: $V$ is the midpoint of $YW$. $UY \parallel XW$.
Prove: $\Delta UVY \cong \Delta XVW$




| | |
|---|---|
| 1) $V$ is the midpoint of $YW$. $UY \parallel XW$. | 1) Given |
| 2) $YV \cong VW$ | 2) If midpoint, then divides the seg into 2$\cong$ segments. |
| 3) $\angle U \cong \angle X$ and $\angle Y \cong \angle W$ | 3) If // lines, then alt interior angles are congruent. |
| 4) $\Delta UVY \cong \Delta XVW$ | 4) AAS (3, 3, 2) |
| Note: if vertical angles were used, could have | proven this by using ASA. |

3) 3 steps 4) 5 steps 6) Yes, by ASA

6 ) **Given:** $\angle F \cong \angle J, \overline{FH} \| \overline{GJ}$
**Prove:** $\overline{FH} \cong \overline{GJ}$

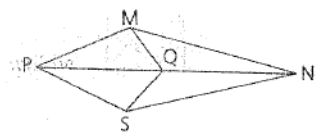



| | |
|---|---|
| 1) $\angle F \cong \angle J, \overline{FH} \| \overline{GJ}$ | 1) Given |
| 2) $\overline{GH} \cong \overline{GH}$ | 2) Reflexive Property |
| 3) $\angle FHG \cong \angle JGH$ | 3) If $\|$ lines, then alt int $\angle$s are congruent. |
| 4) $\Delta FHG \cong \Delta JGH$ | 4) AAS (1, 3, 2) |
| 5) $\overline{FH} \cong \overline{GJ}$ | 5) CPCTC: Corresponding Parts of Congruent Triangles are Congruent |

7) Yes, by AAS. 8) 7 steps

9)

Given: $\overline{MN} \cong \overline{NS}$, $\overline{MP} \cong \overline{PS}$
Prove: $\angle MQP \cong \angle SQP$




| | |
|---|---|
| 1) $\overline{MN} \cong \overline{NS}, \overline{MP} \cong \overline{PS}$ | 1) Given |
| 2) $\overline{PN} \cong \overline{PN}$ | 2) Reflexive |
| 3) $\Delta MPN \cong \Delta SPN$ | 3) SSS(1,1, 2) |
| 4) $\angle MPQ \cong \angle SPQ$ | 4) CPCTC |
| 5) $\overline{PQ} \cong \overline{PQ}$ | 5) Reflexive |
| 6) $\Delta MPQ \cong \Delta SPQ$ | 6) SAS(1, 4, 5) |
| 7) $\angle MQP \cong \angle SQP$ | 7) CPCTC |

10) $AB \cong XY$ 11) 90.6° 12) B 13) B 14) A 15) 28.1