

Naming and Notation: Unions and Intersections: Given each geometric figure below, write the requested name using appropriate symbols and notation according to each union and intersection.

1. $\overline{FG} \cap \overline{IG} = \underline{\hspace{2cm}}$

2. $\overrightarrow{FG} \cup \overrightarrow{FI} = \underline{\hspace{2cm}}$

3. $\overrightarrow{FH} \cup \overrightarrow{HJ} = \underline{\hspace{2cm}}$

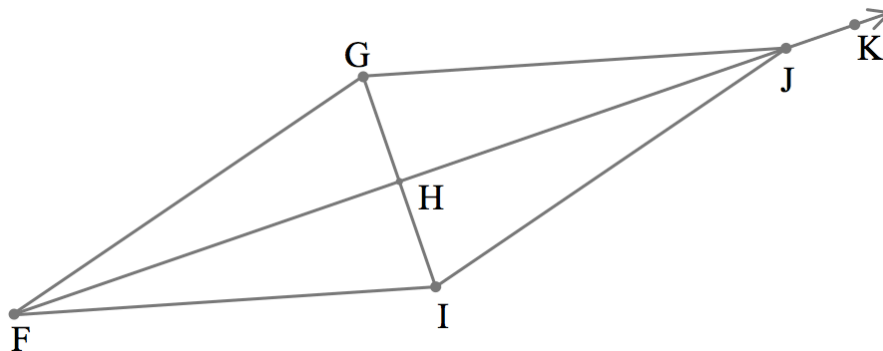
4. $\overline{FH} \cap \overline{HJ} = \underline{\hspace{2cm}}$

5. $\overrightarrow{FH} \cup \overrightarrow{HF} = \underline{\hspace{2cm}}$

6. $\overrightarrow{FH} \cap \overrightarrow{HJ} = \underline{\hspace{2cm}}$

7. $\overrightarrow{FH} \cup \overrightarrow{HI} \cup \overrightarrow{IF} = \underline{\hspace{2cm}}$

8. $\overline{FH} \cap \overline{HI} \cap \overline{IF} = \underline{\hspace{2cm}}$



Sketch the following figures. Label all figures appropriately according to the name provided.

9. Acute $\angle E$

10. Straight $\angle BCD$

11. \overline{GH}

12. Right $\angle JKL$

13. \overline{GH} is the perpendicular bisector of \overline{AB}

14. $\odot O$ with diameter \overline{AB}

Sketch the following figures:

15. In the space to the right, draw two points. Label the points A and B.

- Draw the **set of all points equidistant** from A and B.
- What is the **name** of the figure you drew in part a?

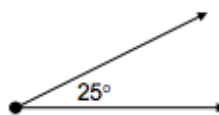
16. In the space to the right, draw one point. Label the points C.

- Draw the **set of all points equidistant** from C.
- What is the **name** of the figure you drew in part a?

Solve for the indicated variable or measures.

17. If the $m\angle A = 61^\circ$, write the measure of its **complementary** angle.

18. Given the angle below, write the measure of its **supplementary** angle.



19. If the measure of an angle is represented by $2x$:

- Circle the **expression** below that represents the measure of its complement?

(i) $180 - 2x$

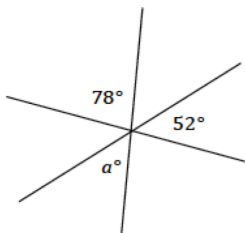
(ii) $90 + 2x$

(iii) $90 - 2x$

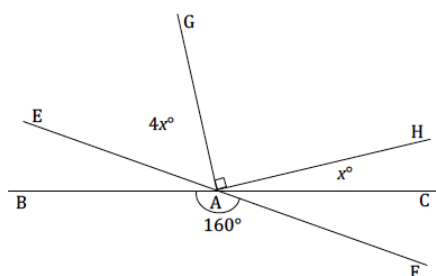
(iv) $88x$

- Write an **expression** for the supplement of the angle.

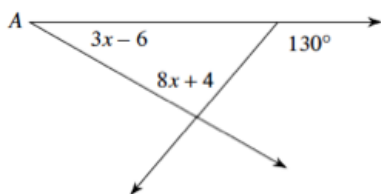
20. Solve for a .



21. Solve for x .



22. Solve for x .



23. Sketch obtuse $\angle JKL$.

- Sketch in an angle bisector ray KM .
- If $m\angle JKM = 72^\circ$,
then $m\angle JKL =$ _____

24. \overleftrightarrow{AB} and \overleftrightarrow{CD} intersect at E . Sketch the figure.

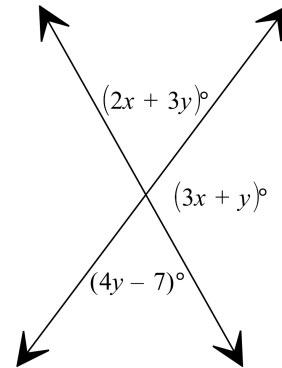
If $m\angle AEC = 5x - 20$ and
 $m\angle BED = x + 50$

Then: $m\angle CEB =$ _____

25. The sum of the measures of angles x and y is 180° . The measure of angle x is 24° greater than the measure of angle y .

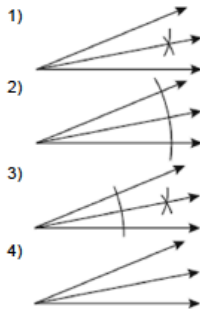
- Define the variables and write a system of equation for this situation
- Solve the system** and find the measure of each angle.

26. Use what you know about angle relationships to set up a system of equations.
Then **solve for x and y** .



27. Select the best answer to the multiple-choice questions below.

4. Which illustration shows the correct construction of an angle bisector?



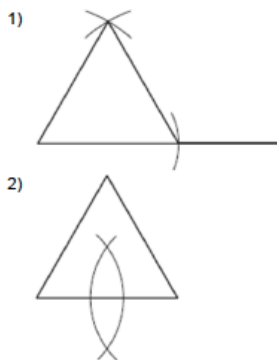
3)



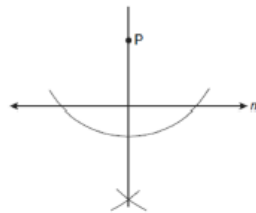
4)



5. Which diagram shows the construction of an equilateral triangle?



6. The diagram below shows the construction of a line through point P perpendicular to line m .



Which statement is demonstrated by this construction?

- 1) If a line is parallel to a line that is perpendicular to a third line, then the line is also perpendicular to the third line.
- 2) The set of points equidistant from the endpoints of a line segment is the perpendicular bisector of the segment.
- 3) Two lines are perpendicular if they are equidistant from a given point.
- 4) Two lines are perpendicular if they intersect to form a vertical line.

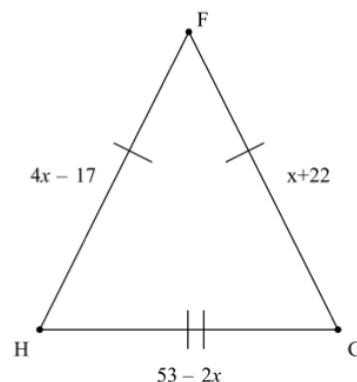
28.

$x =$ _____

$FH =$ _____

$FG =$ _____

$HG =$ _____



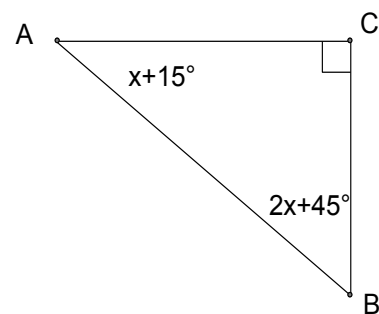
29.

$x =$ _____

$m\angle A =$ _____

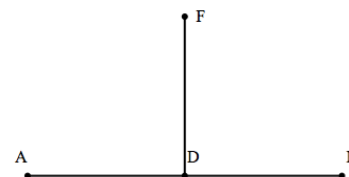
$m\angle B =$ _____

$m\angle C =$ _____



Write **reason** next to the appropriate statement in the right hand column.

30. Given: $\angle ADF = 90^\circ$, $\angle BDF$ is a right angle
 Prove: $\angle ADF \cong \angle BDF$

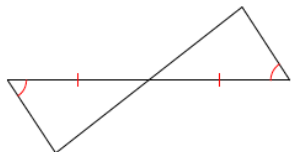


Statement	Reason
1) $\angle BDF$ is a right angle	1)
2) $m\angle BDF = 90^\circ$	2)
3) $m\angle ADF = 90^\circ$	3)
4) $m\angle BDF = m\angle ADF$	4)
5) $\angle ADF \cong \angle BDF$	5)

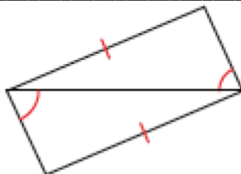
31. Determine if the triangles are congruent.

- If so, write the theorem (SAS, ASA, SSS, AAS, HL)
- If not, state “not congruent”.

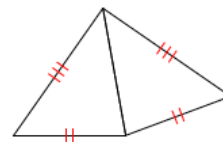
a. _____



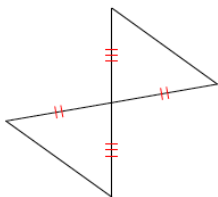
b. _____



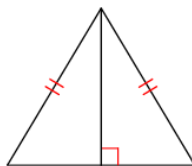
c. _____



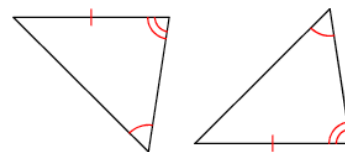
d. _____



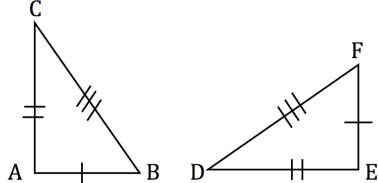
e. _____



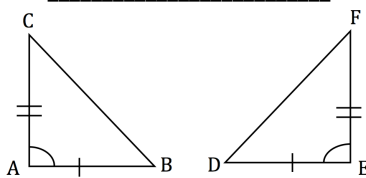
f. _____



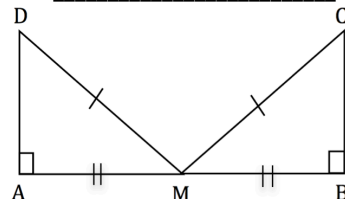
g. _____



h. _____



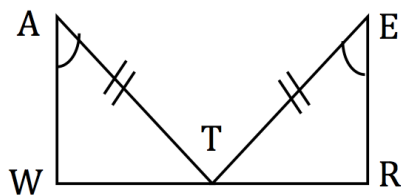
i. _____



For each pair of triangles, determine

- Are they congruent
- Write the triangle congruency statement
- Give the postulate that makes them congruent.
-

32. **Given:** T is the midpoint of \overline{WR}

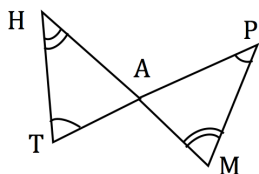


a. Yes No

b. Δ _____ \cong Δ _____

c. _____

33.

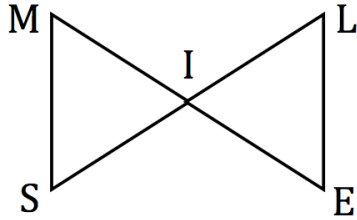


a. Yes No

b. Δ _____ \cong Δ _____

c. _____

34. Given: I is the midpoint of \overline{ME} and \overline{SL}

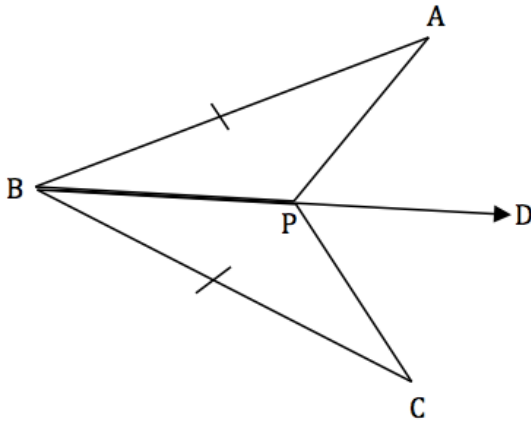


a. Yes No

b. Δ _____ \cong Δ _____

c. _____

35. Given: \overrightarrow{BD} bisects $\angle ABC$

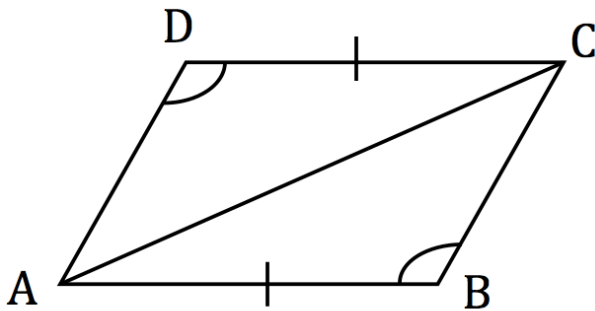


a. Yes No

b. Δ _____ \cong Δ _____

c. _____

36. The two triangles below are congruent by **Theorem ASA**.



a. Which parts of the pair of triangles must be shown congruent to satisfy ASA?

_____ \cong _____

b. Write the congruence statement for the two triangles:

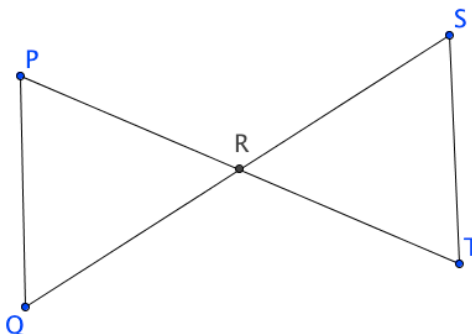
Δ _____ \cong Δ _____

37. Use the given information to mark the diagram. Then fill in the blank by writing the appropriate statement or reason for each step of the two-column proof.

Given: $\angle P \cong \angle T$

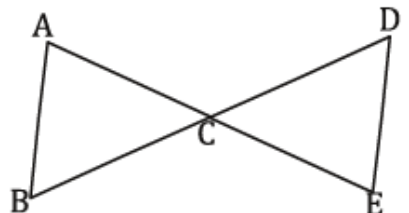
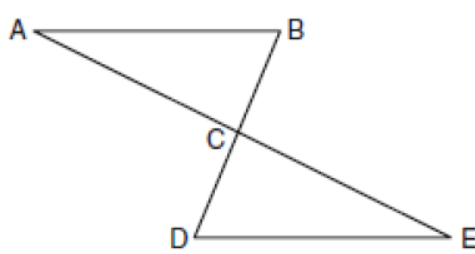
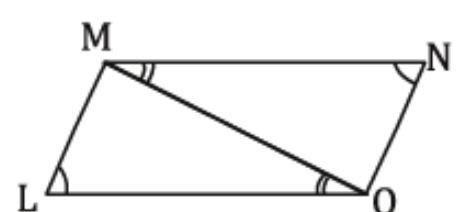
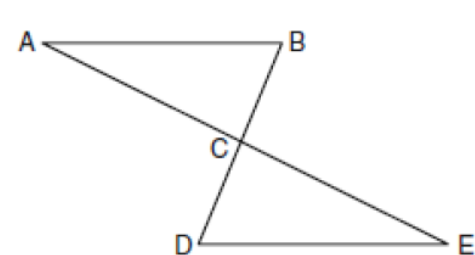
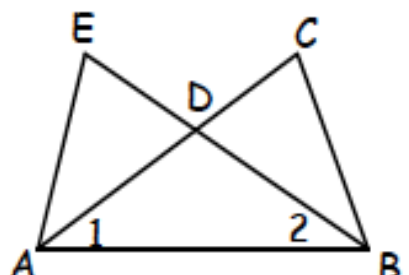
R is the midpoint of \overline{QS}

Prove: $\triangle PQR \cong \triangle TSR$



1) $\angle P \cong \angle T$ R is the midpoint of \overline{QS}	1)
2)	2) <i>Definition of Midpoint</i>
3)	3) <i>Definition of Vertical Angles (Given in diagram)</i>
4) $\angle PRQ \cong \angle TRS$	4)
5) $\triangle PQR \cong \triangle TSR$	5)

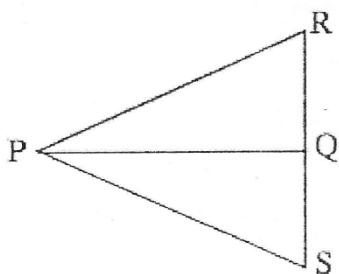
38. Write Proofs for each problem below. Do these on a separate sheet of paper.

<p>a.</p> <p>Given: \overline{AE} Bisects \overline{BD}, $\angle B \cong \angle D$</p>  <p>Prove: $\triangle ABC \cong \triangle EDC$</p>	<p>b.</p> <p>Given: C is the midpoint of BD and AE</p> <p>Prove: $\triangle ABC \cong \triangle EDC$</p> 
<p>c.</p> <p>Given: $\angle L \cong \angle N$, $\angle LOM \cong \angle NMO$</p>  <p>Prove: $\overline{ML} \cong \overline{ON}$</p>	<p>d.</p> <p>Given: C is the midpoint of BD and AE</p> <p>Prove: $\triangle ABC \cong \triangle EDC$</p> 
<p>e.</p>  <p>Given: $\overline{AE} \cong \overline{BC}$, $\angle EAB \cong \angle CBA$</p> <p>Prove: $\angle 1 \cong \angle 2$</p>	

f.

Given: $\overline{PQ} \perp \overline{RS}$, $\angle R \cong \angle S$

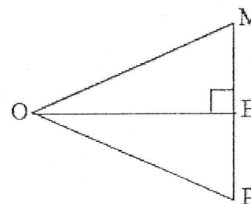
Prove: $\triangle PQR \cong \triangle PQS$



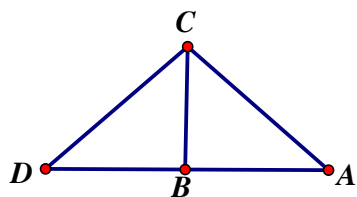
g.

Given: $\overline{OE} \perp \overline{MP}$, \overline{OE} bisects $\angle MOP$

Prove: $\triangle MOE \cong \triangle POE$



f.



Given: $\angle ABC$ and $\angle DBC$ are right angles, and $\overline{DC} \cong \overline{AC}$

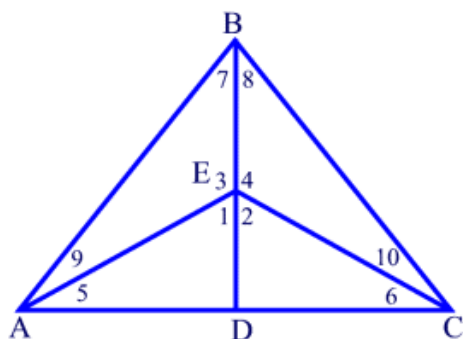
Prove: $\triangle DBC \cong \triangle ABC$

g.

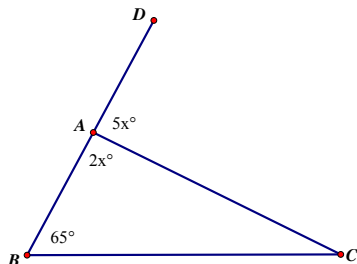
Given: $\angle 1 \cong \angle 2$

$\angle 7 \cong \angle 8$

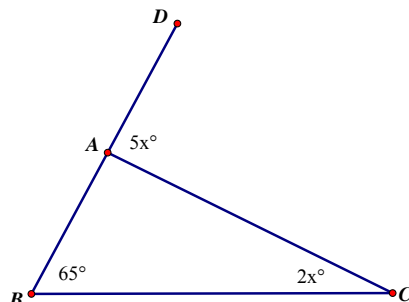
Prove: $\angle 5 \cong \angle 6$



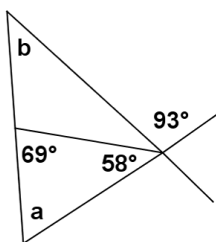
39. Find the measure of $\angle ACB$.



40. Find the value of x.



42. Find the value of a and b in the diagram below.



43. Find $m\angle j$

