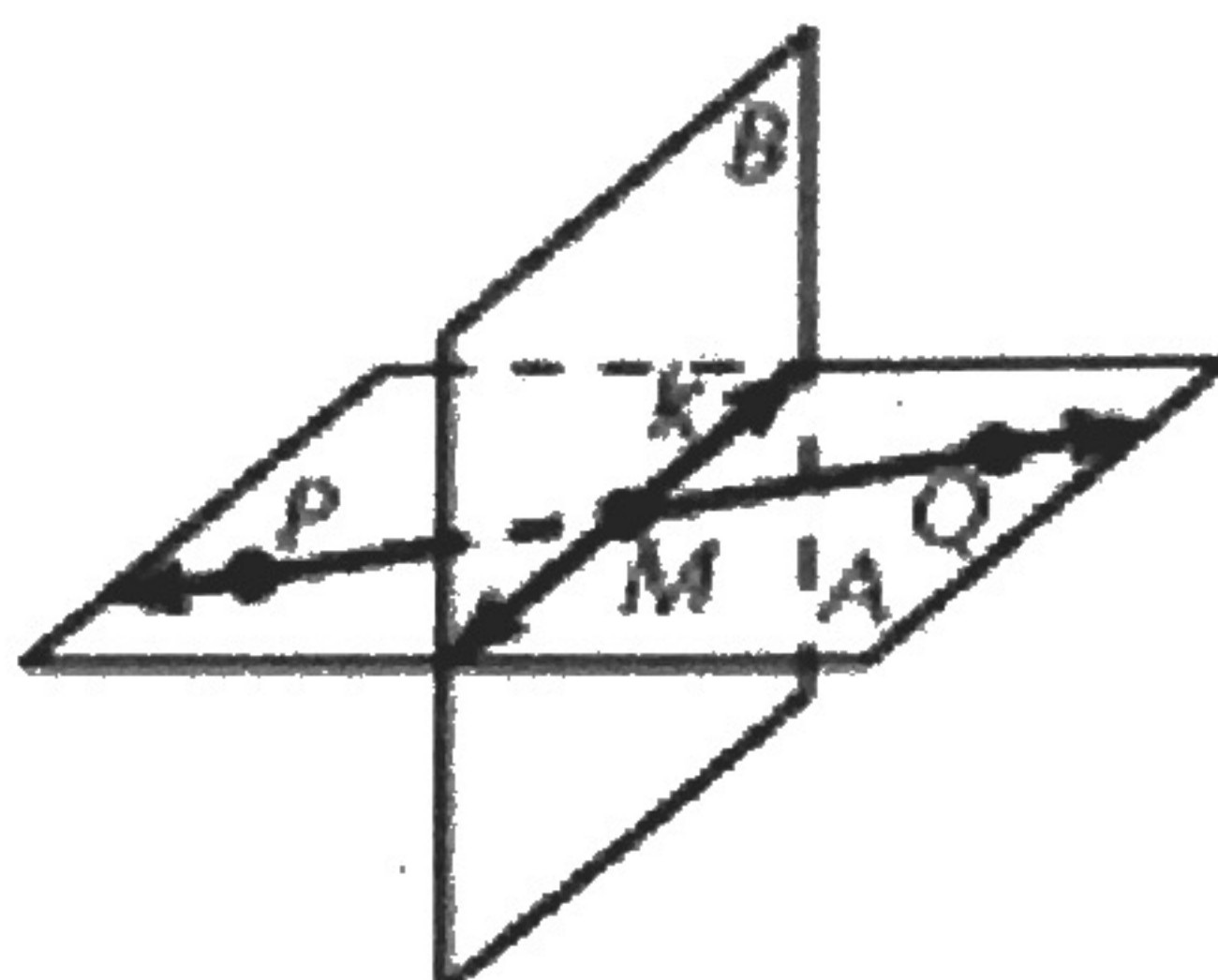


Geometry Practice Midterm

Unit 1: Basics of Geometry

1.1 Points, Lines, and Planes

Use the diagram for #1-7.



1. Name three collinear points.
 P, M, Q
2. Name 3 coplanar points.
 P, M, Q
3. Name a pair of opposite rays.
 \overrightarrow{MP} and \overrightarrow{MQ}
4. Give another name for \overrightarrow{PQ} .
 $\overrightarrow{QP}, \overrightarrow{PM}, \overrightarrow{MP}, \overrightarrow{QM}, \overrightarrow{MQ}$
5. Give another name for \overrightarrow{PM} .
 \overrightarrow{PQ}
6. Name the intersection of Plane A and Plane B.
 line k
7. Name the intersection of line k and \overrightarrow{PQ} .
 point M

1.2 Measuring and Constructing Segments

8. If $AC = 23$, find x .



$$x + 7 + 7x - 3 = 23$$

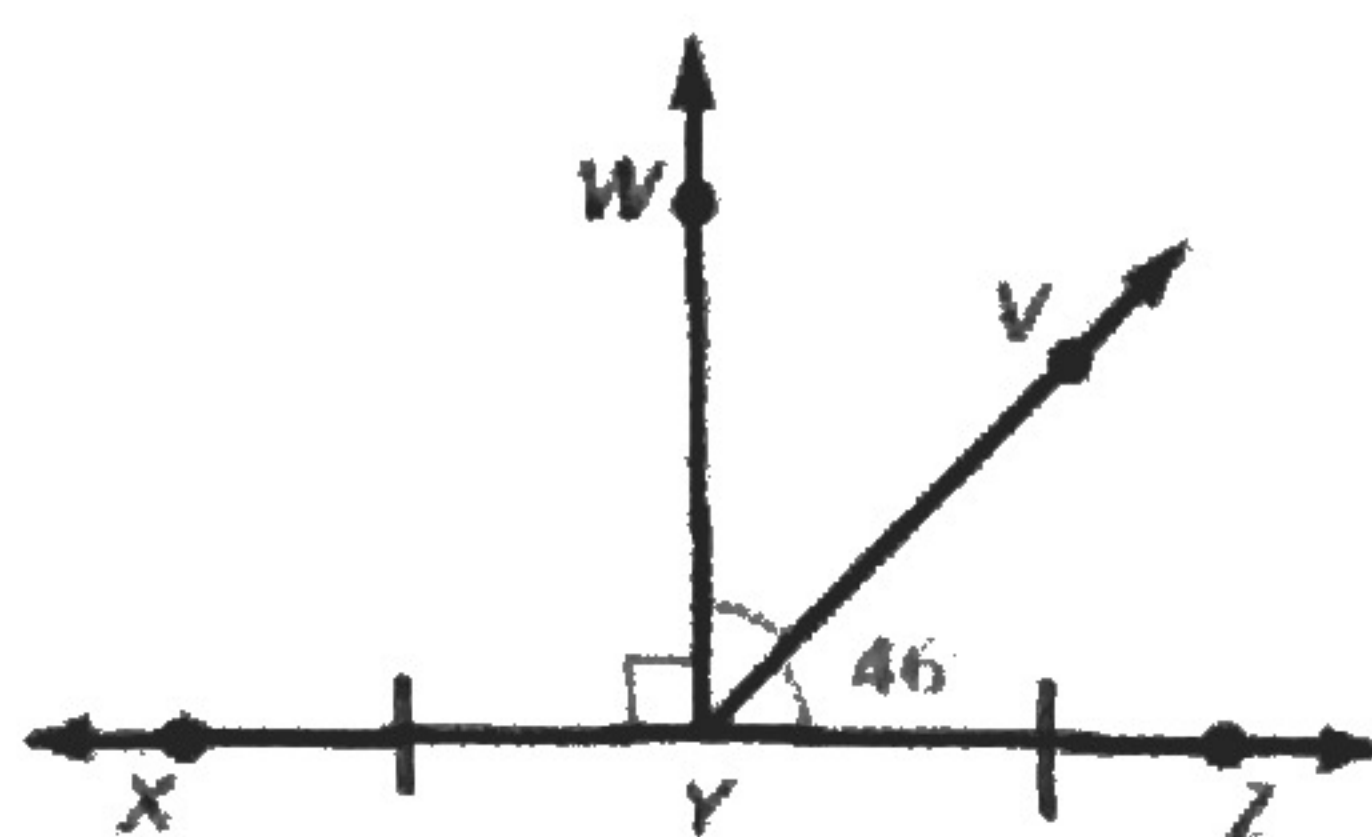
$$8x - 1 = 23$$

$$8x = 24$$

$x = 3$

1.5 Measuring and Constructing Angles

Use the diagram for #9-11. $\angle XYZ$ is a straight angle. $\overline{XY} \cong \overline{ZY}$.



9. If $XY = 4x - 1$ and $YZ = 3x + 3$, find XZ .
10. Find $m\angle XYV$.
11. Find $m\angle WYV$.

$$4x - 1 = 3x + 3$$

$$x = 4$$

$$XY = 4(4) - 1 = 15 = YZ$$

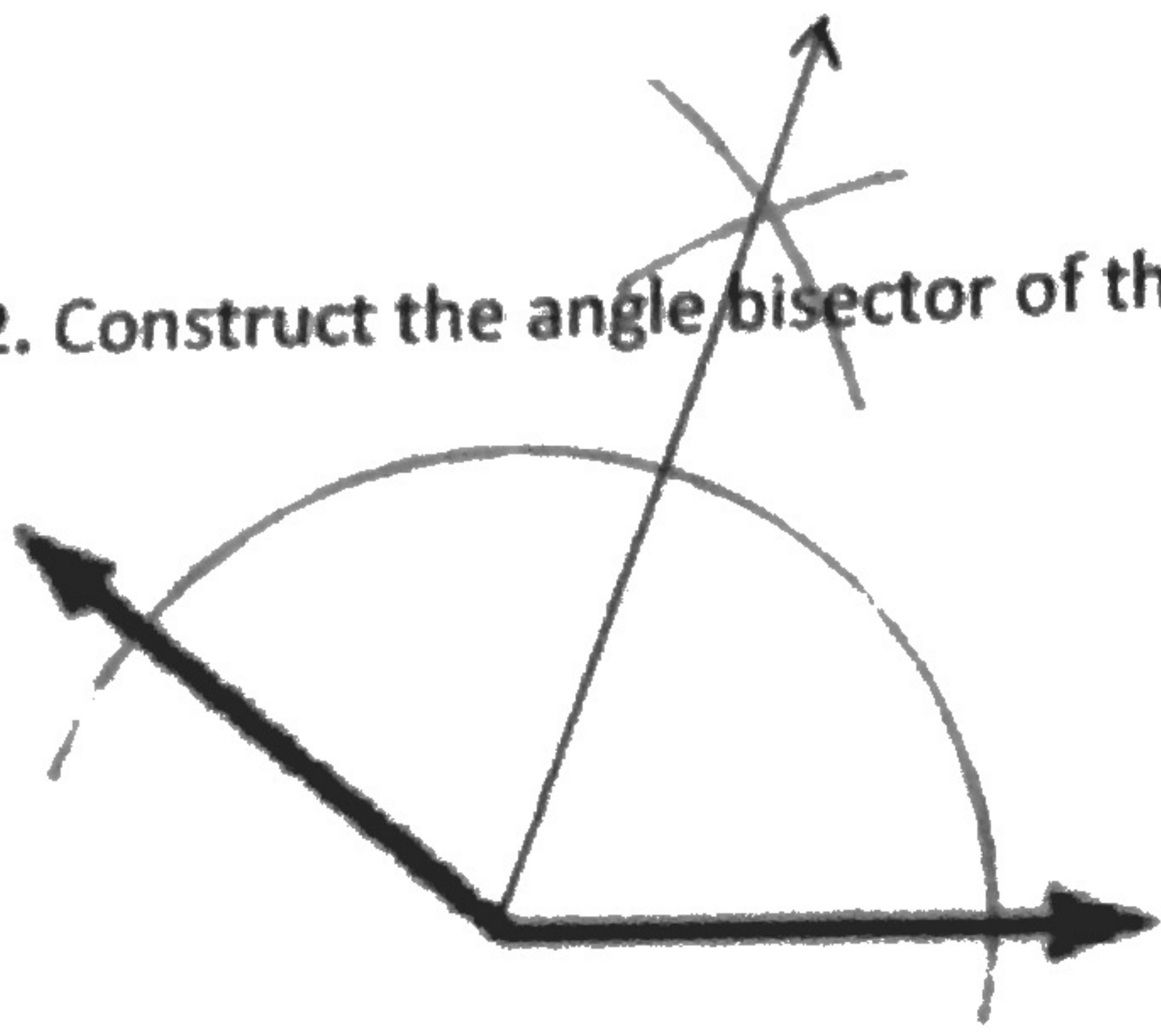
$$XZ = 2(15) = \boxed{30}$$

$$m\angle XYV = 90 + 46$$

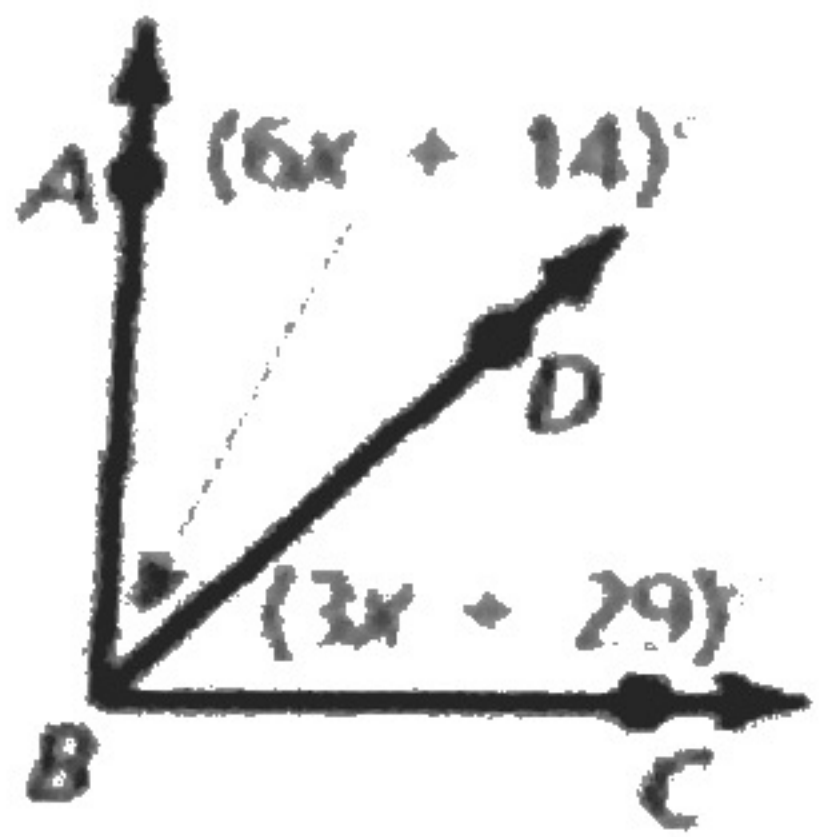
$m\angle XYV = 136^\circ$

$m\angle WYV = 46^\circ$

12. Construct the angle bisector of the given angle.



13. \overrightarrow{BD} bisects $\angle ABC$. Find $m\angle ABD$.



$$6x + 14 = 3x + 29$$

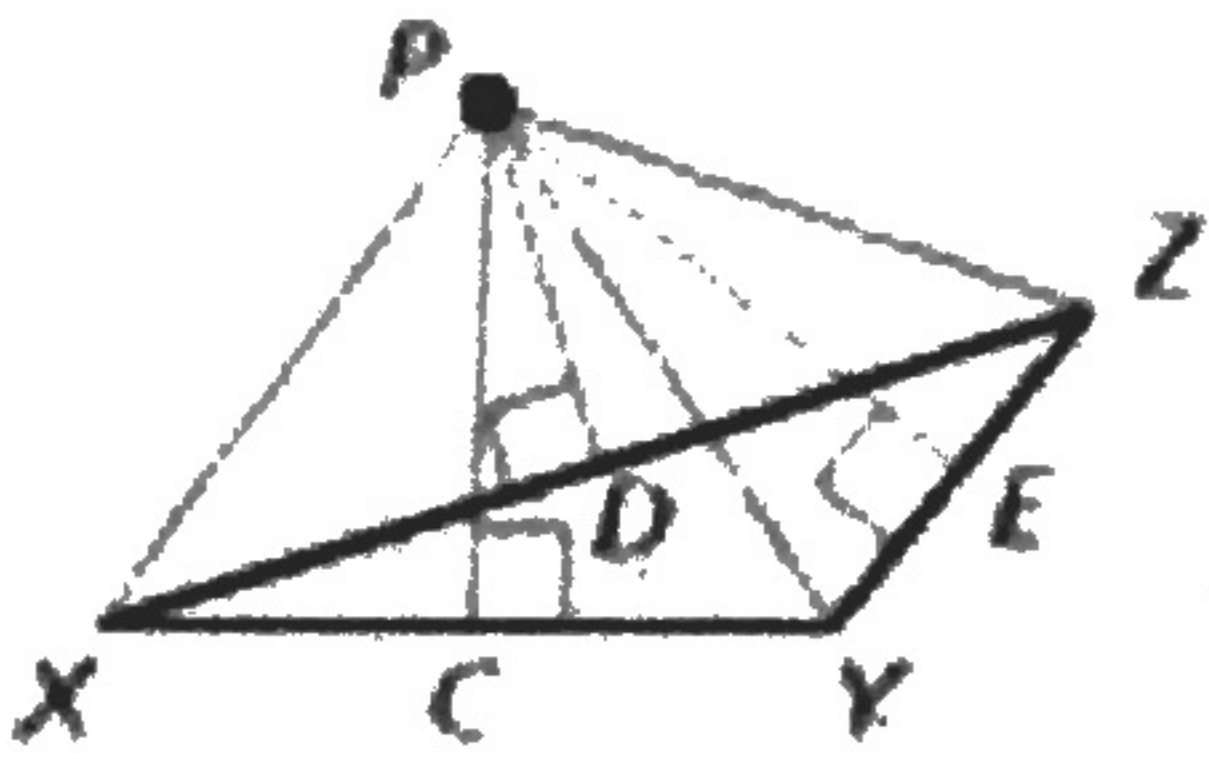
$$3x = 15$$

$$x = 5$$

$$m\angle ABD = 6(5) + 14$$

$$m\angle ABD = 44^\circ$$

14. Use the diagram to name an acute, obtuse, right, and straight angle.



acute: $\angle ZXY, \angle YZX$

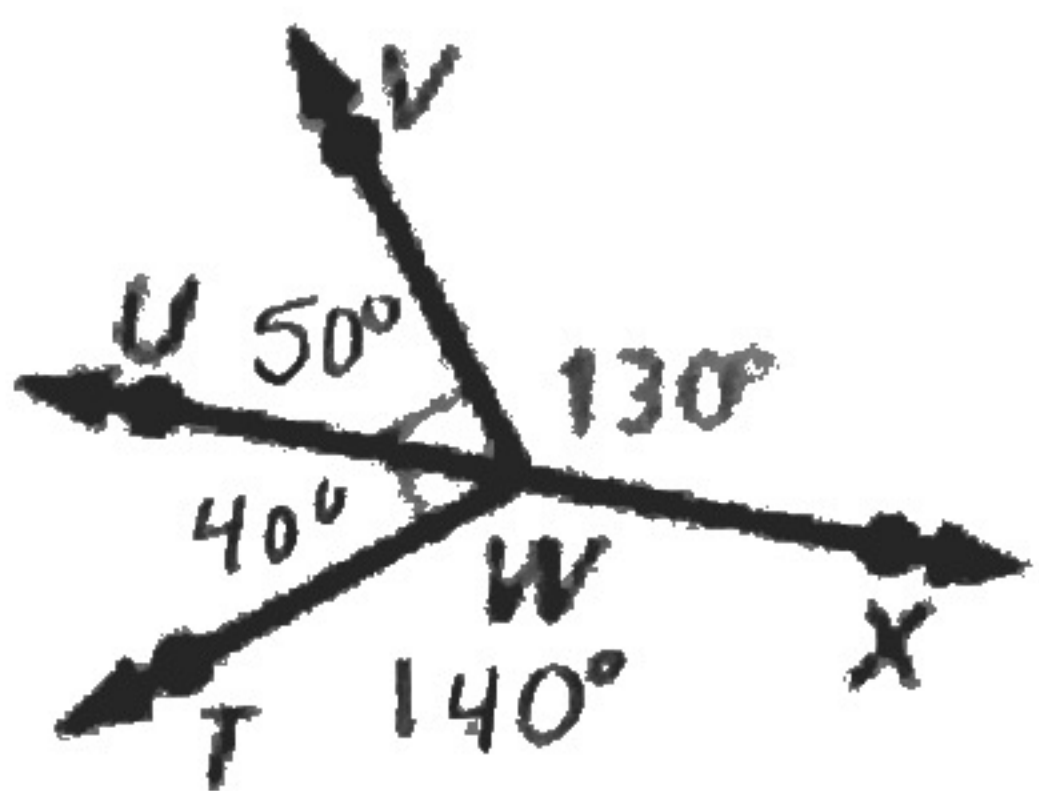
right: $\angle PCY, \angle PEY, \angle PDX$

obtuse: $\angle ZYX$

straight: $\angle XCY, \angle YEZ, \angle XDZ$

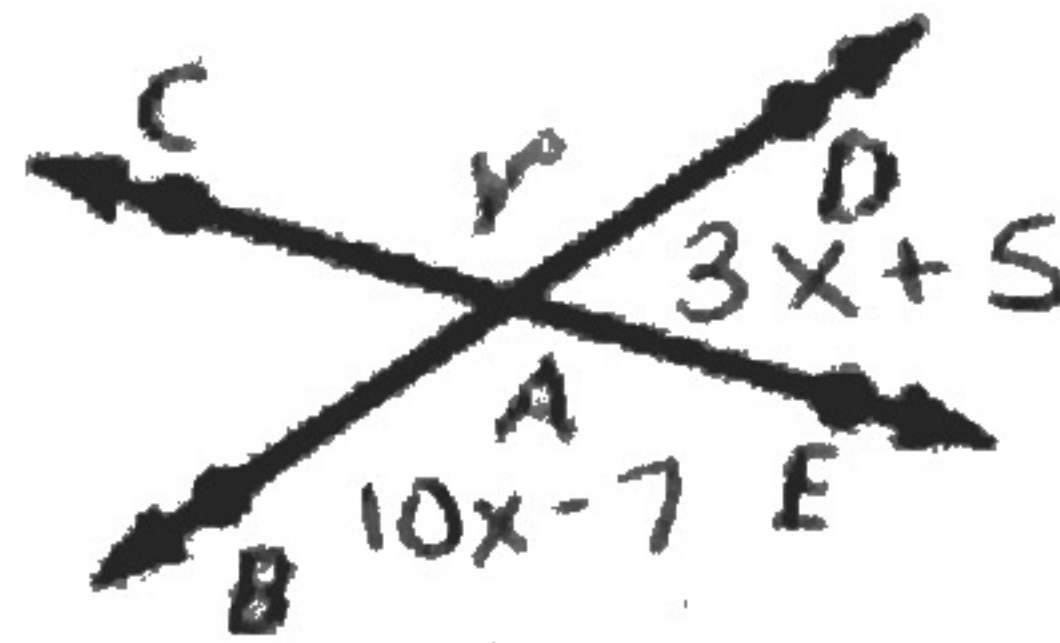
1.6 Describing Pairs of Angles

15. Find $m\angle TWU$.



$$m\angle TWU = 40^\circ$$

16. $m\angle DAE = 3x + 5, m\angle BAE = 10x - 7$. Find x and y .



$$3x + 5 + 10x - 7 = 180$$

$$13x - 2 = 180$$

$$13x = 182$$

$$x = 14^\circ$$

$$10(14) - 7 = y$$

$$140 - 7 = y$$

$$y = 133^\circ$$

Unit 2: Reasoning and Proof

2.1 Conditional Statements

17. Write the converse, inverse, contrapositive, and biconditional of the given conditional statement: If an angle is a right angle, then its measure is 90° .

converse: If an angle measures 90° , then it is a right angle.

inverse: If an angle is not a right angle, then its measure is not 90° .

contrapositive: If an angle does not measure 90° , then it is not a right angle.

biconditional: An angle is a right angle if and only if its measure is 90° .

2.2 Inductive and Deductive Reasoning

Decide if the statement is true or false. If false, find a counterexample.

18. If two angles are supplements of each other, then one of the angles must be acute.

False. Two angles could be right angles and supplements.

19. If a figure has four sides, then it is a rectangle.

False. The four-sided figure could be a square, parallelogram, rhombus, or kite.

Make a conclusion from the given information. State the law you used.

20. If you pass the midterm, then you pass the class. You passed the midterm.

You passed the class. Law of Detachment.

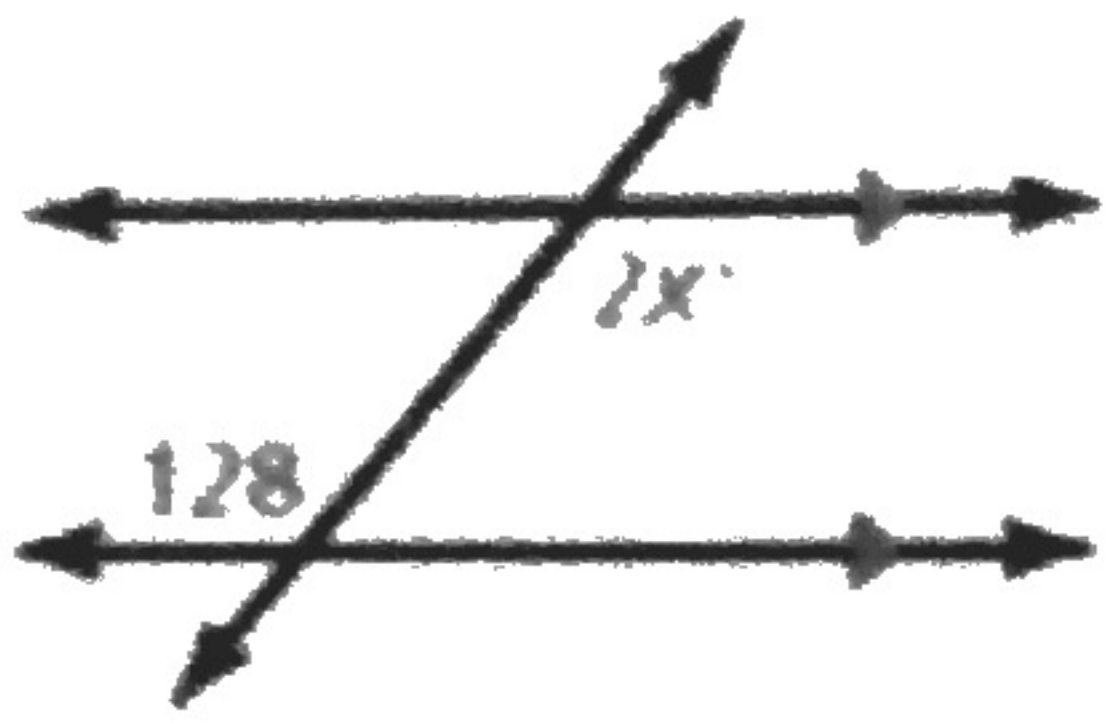
21. If you study hard, then you will pass the midterm. If you pass the midterm, then you will pass the class.

If you study hard, then you will pass the class. Law of Syllogism.

Unit 3: Parallel and Perpendicular Lines

3.2 Parallel Lines and Transversals

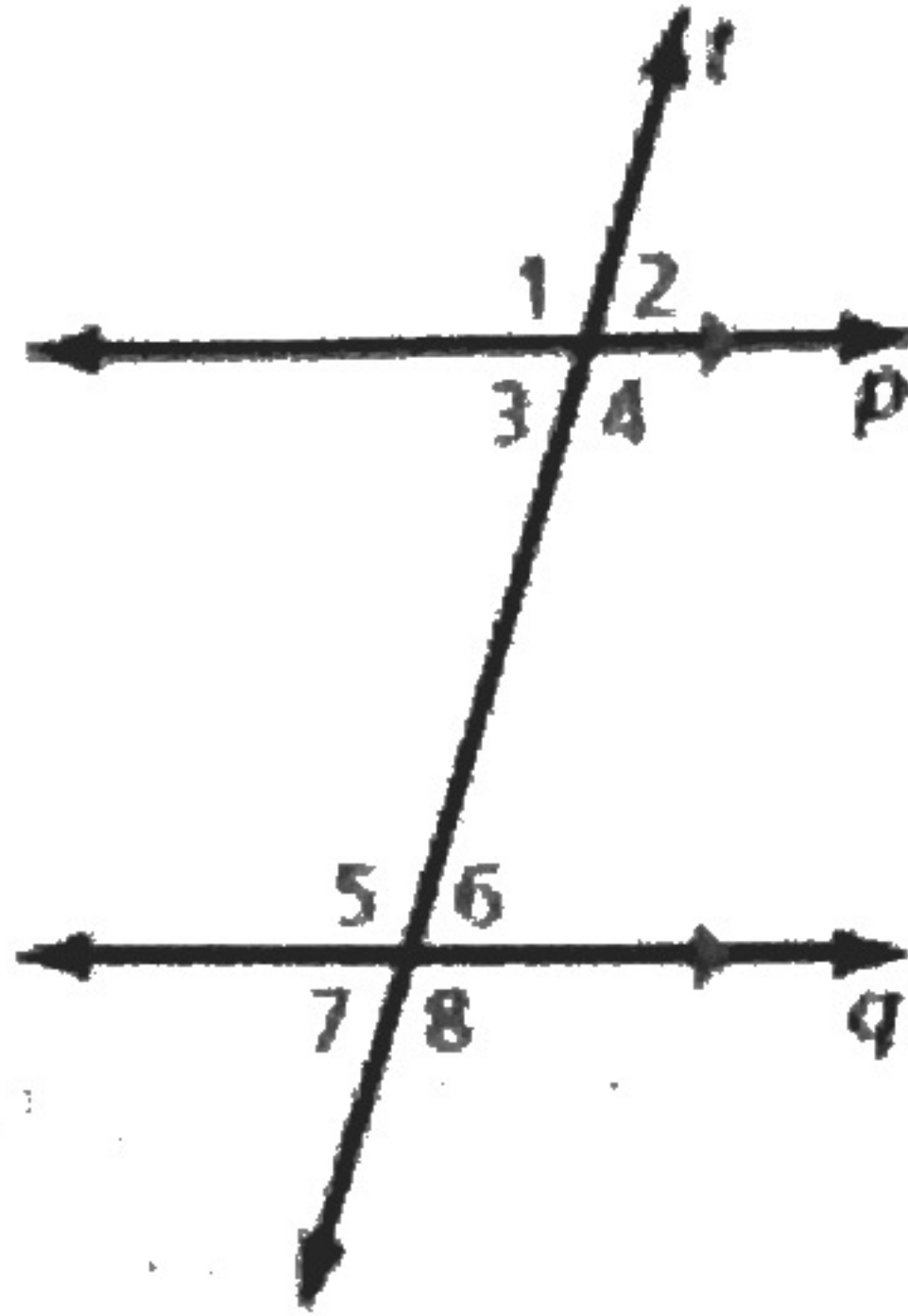
22. Find the value of x .



$$2x = 128$$

$$x = 64$$

Use the diagram for #23-26.



23. Name a pair of corresponding angles.

$\angle 1 \text{ and } \angle 5$

$\angle 3 \text{ and } \angle 7$

$\angle 2 \text{ and } \angle 6$

$\angle 4 \text{ and } \angle 8$

24. Name a pair of alternate interior angles.

$\angle 3 \text{ and } \angle 6$

$\angle 5 \text{ and } \angle 4$

25. Name a pair of alternate exterior angles.

$\angle 1 \text{ and } \angle 8$

$\angle 2 \text{ and } \angle 7$

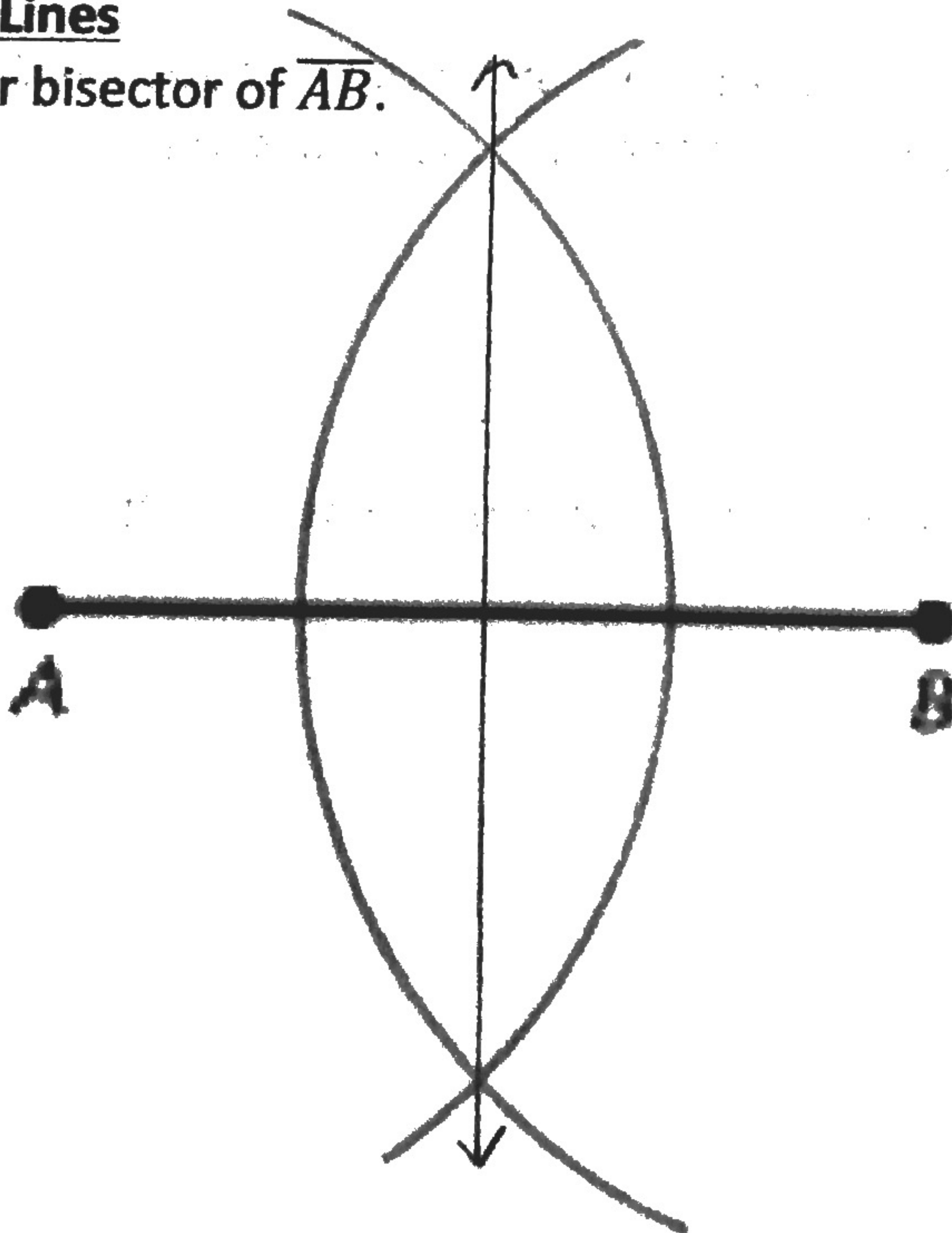
26. Name a pair of consecutive interior angles.

$\angle 3 \text{ and } \angle 5$

$\angle 4 \text{ and } \angle 6$

3.4 Proofs with Perpendicular Lines

27. Construct the perpendicular bisector of \overline{AB} .



Unit 4: Congruent Triangles

4.1 Angles of Triangles

28. The measures of the angles of a triangle are x , $3x$, and $3x - 30$. Find the value of x . Classify the triangle by its angles.

$$x + 3x + 3x - 30 = 180$$

$$x = 30$$

$$1x - 30 = 180$$

$$3x = 90$$

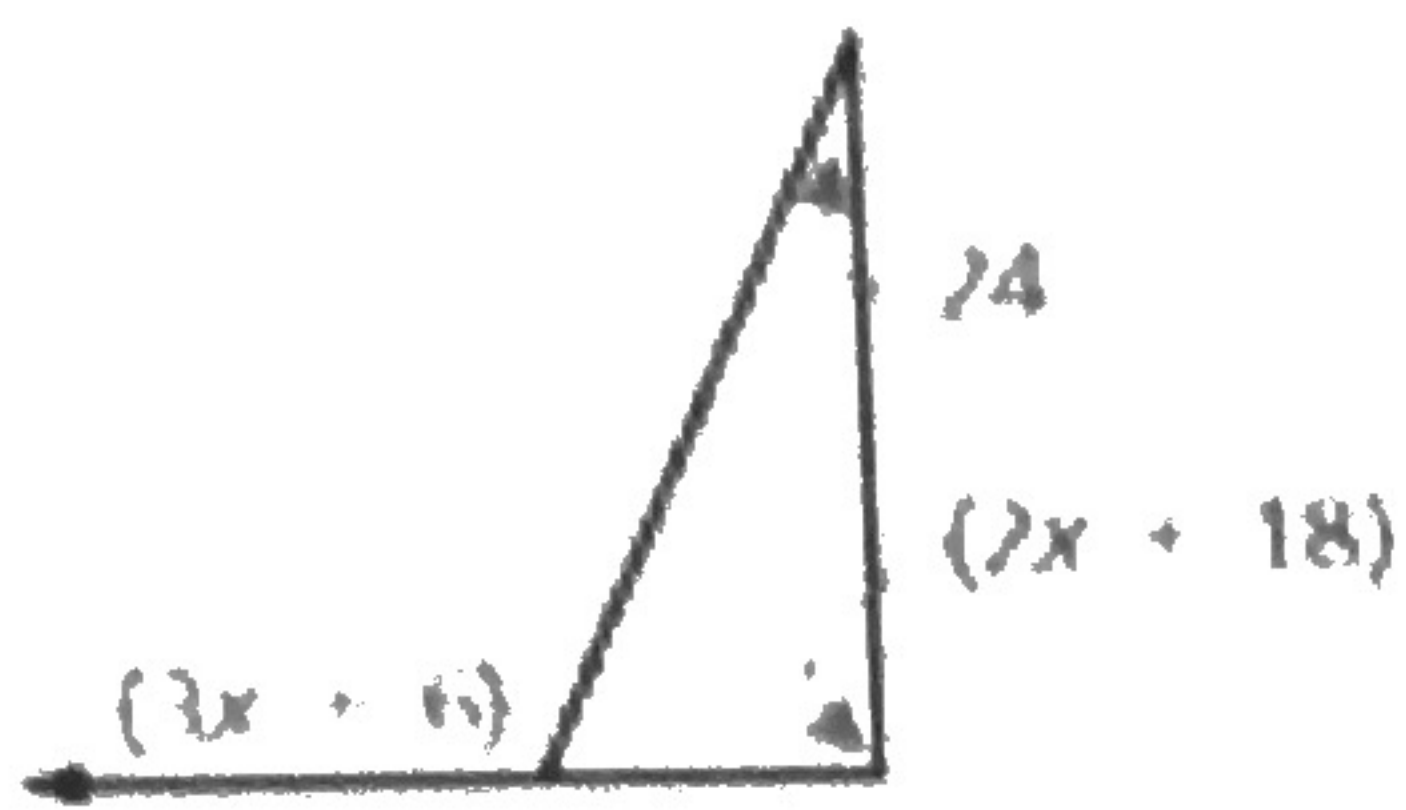
right triangle

$$7x = 210$$

$$3x - 30 = 60$$

$$x = 30$$

29. Find the measure of the exterior angle. What theorem did you use?



$$3x + 6 = 24 + 2x + 18$$

$$x = 36$$

$$3(36) + 6 = 114^\circ$$

Triangle Exterior Angle Theorem

4.2 Congruent Polygons

30. $\triangle JKL \cong \triangle TSR$. Identify all pairs of congruent corresponding parts.

$$\angle J \cong \angle T$$

$$\overline{JK} \cong \overline{TS}$$

$$\angle K \cong \angle S$$

$$\overline{KL} \cong \overline{SR}$$

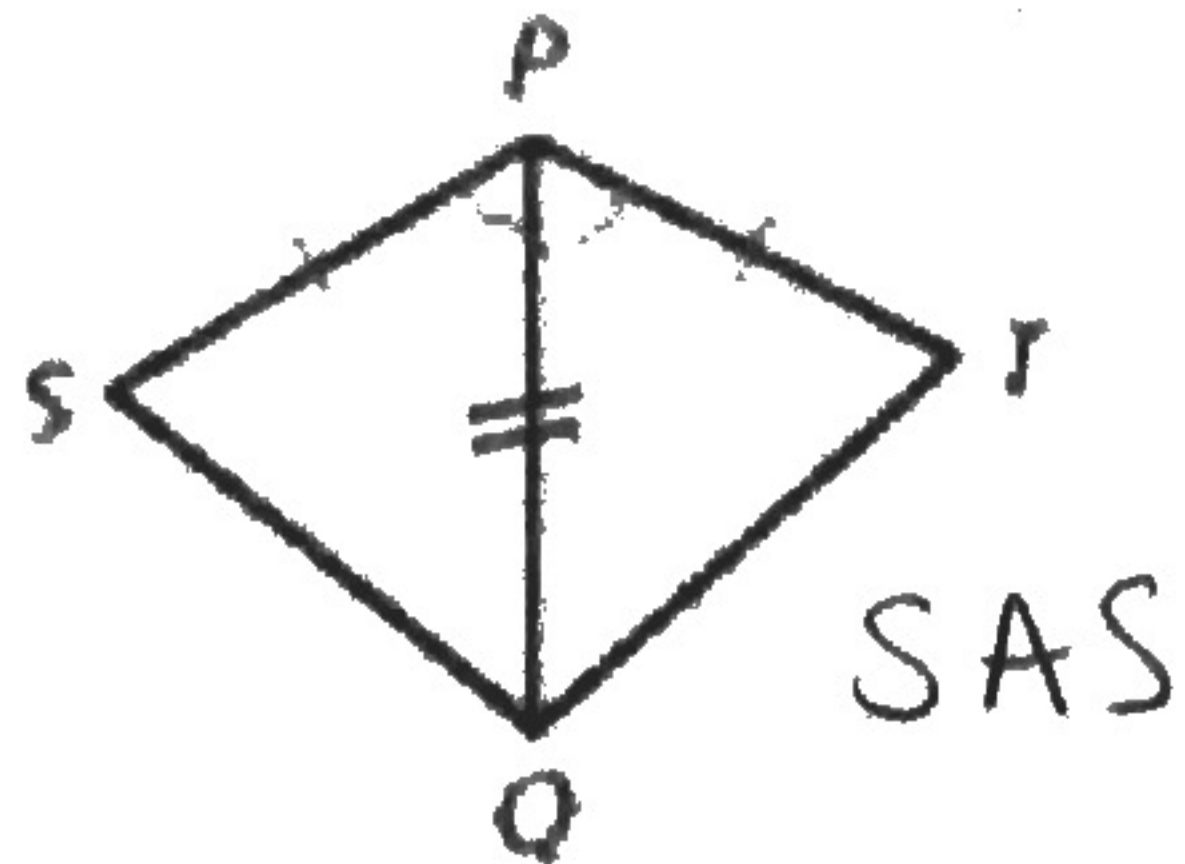
$$\angle L \cong \angle R$$

$$\overline{JL} \cong \overline{TR}$$

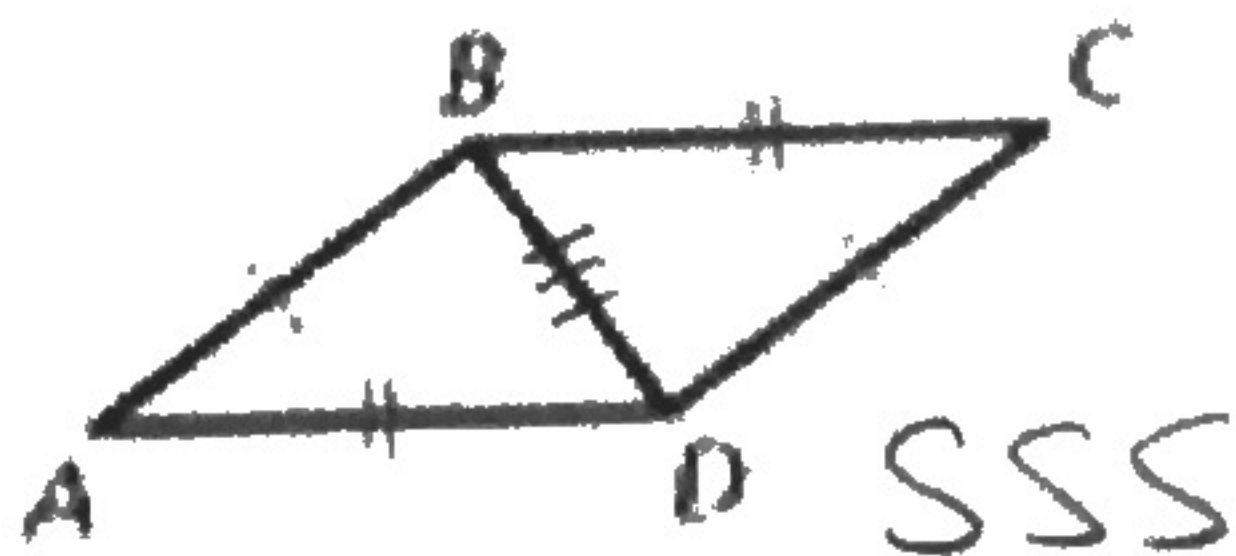
4.3-4.6 Proving Triangle Congruence by SAS, SSS, ASA, AAS, and HL

#31-36: Determine which theorem can be used to prove that the triangles are congruent. If it is not possible, write not possible.

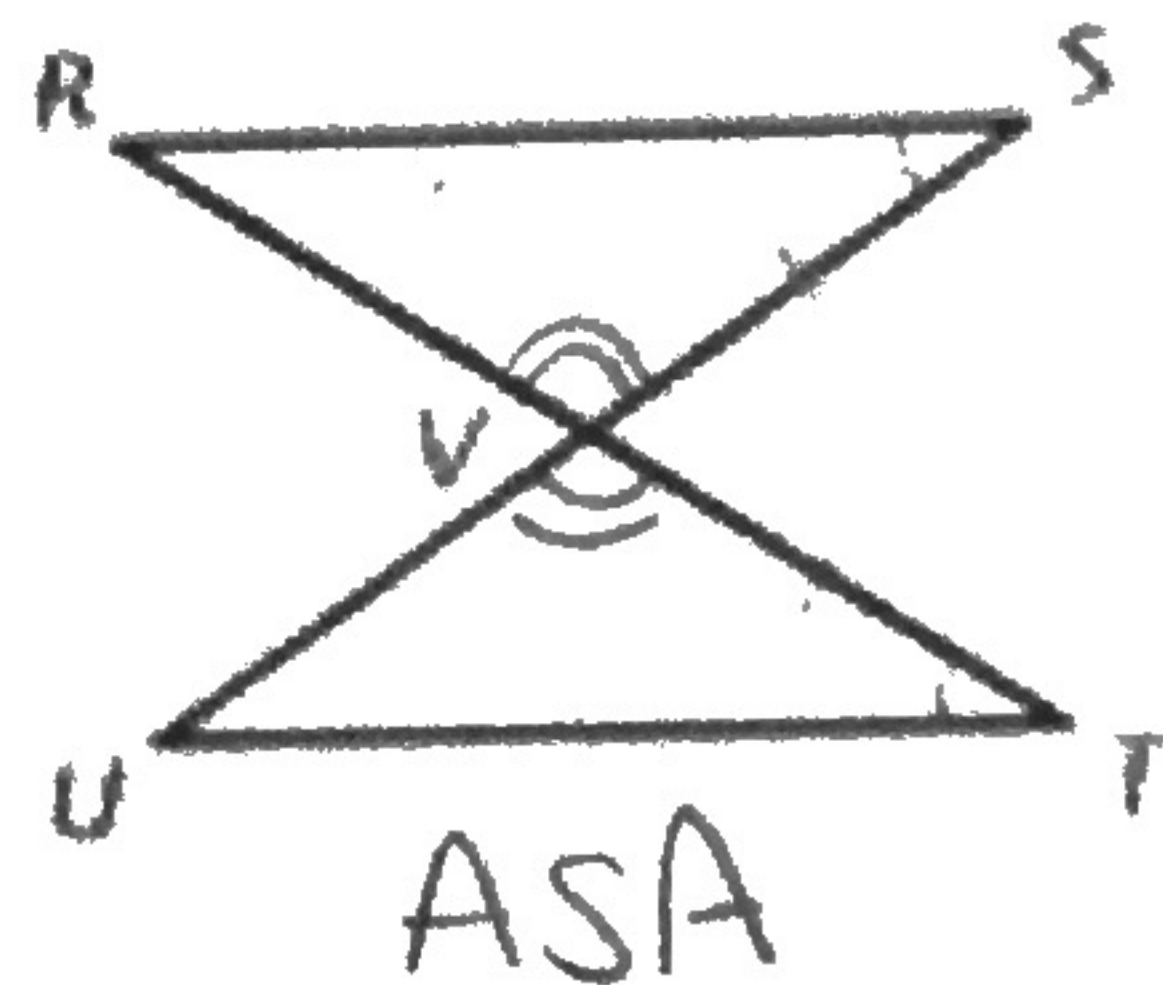
31.



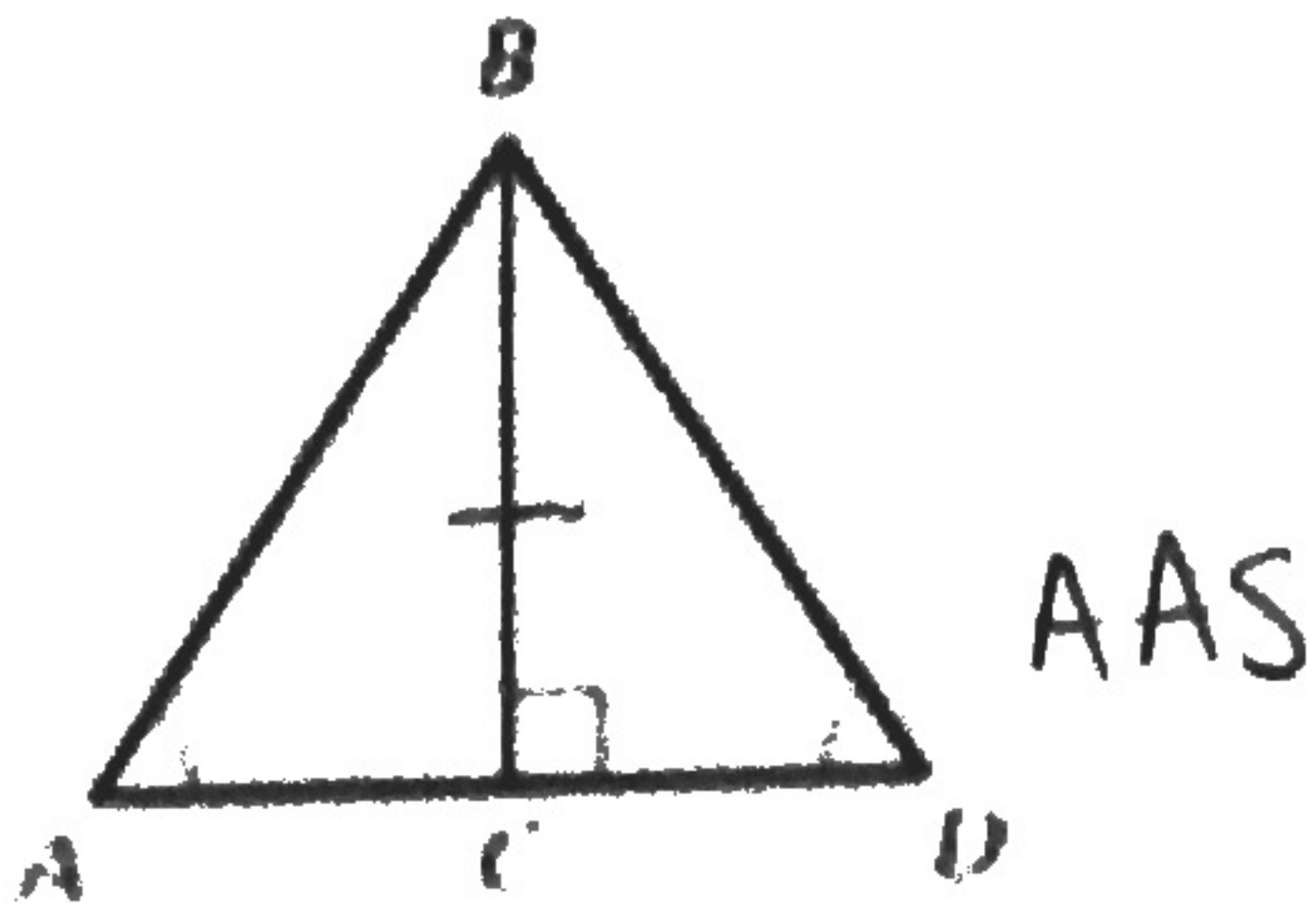
32.



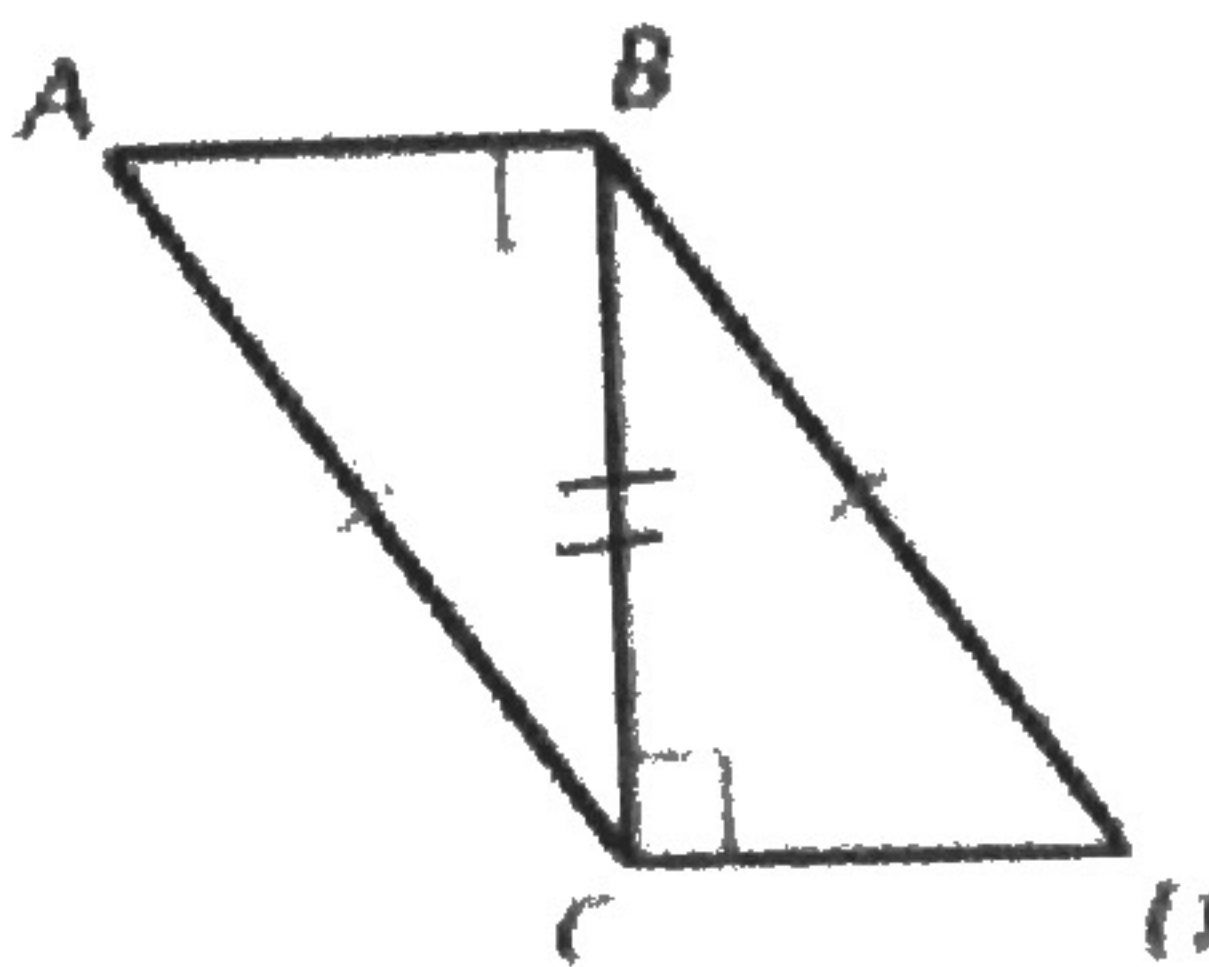
33.



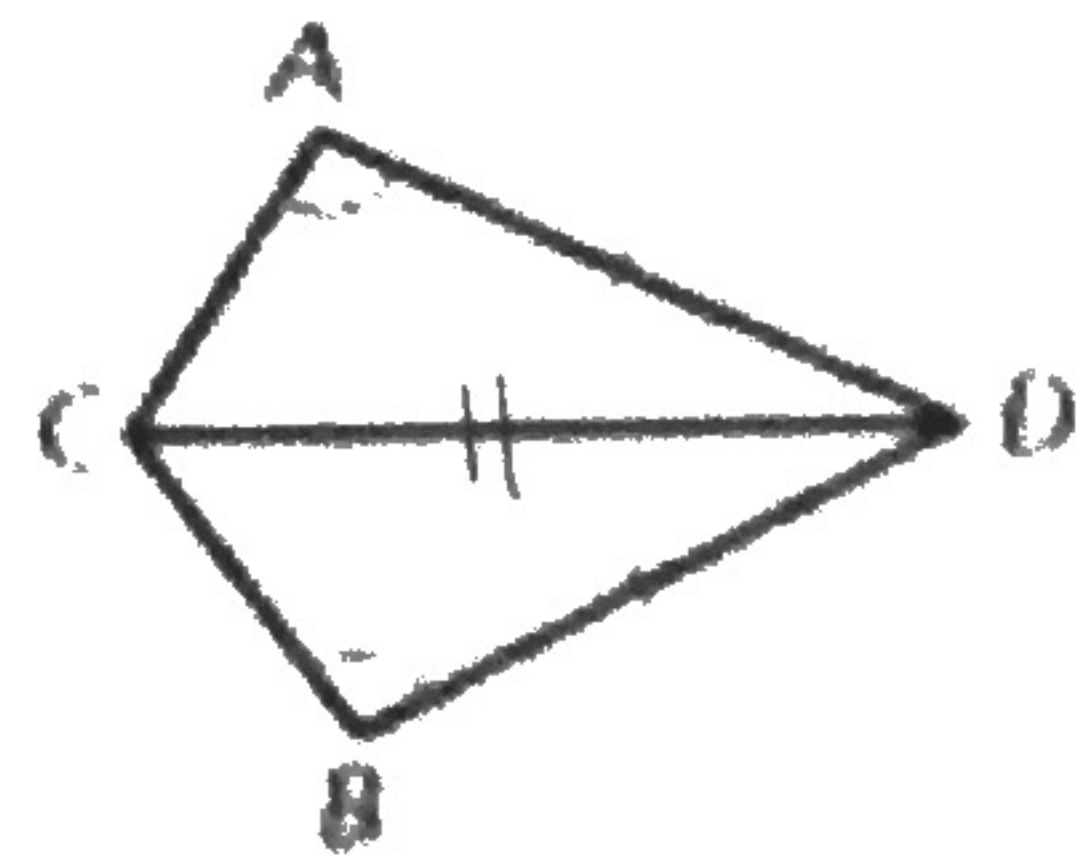
34.



35.



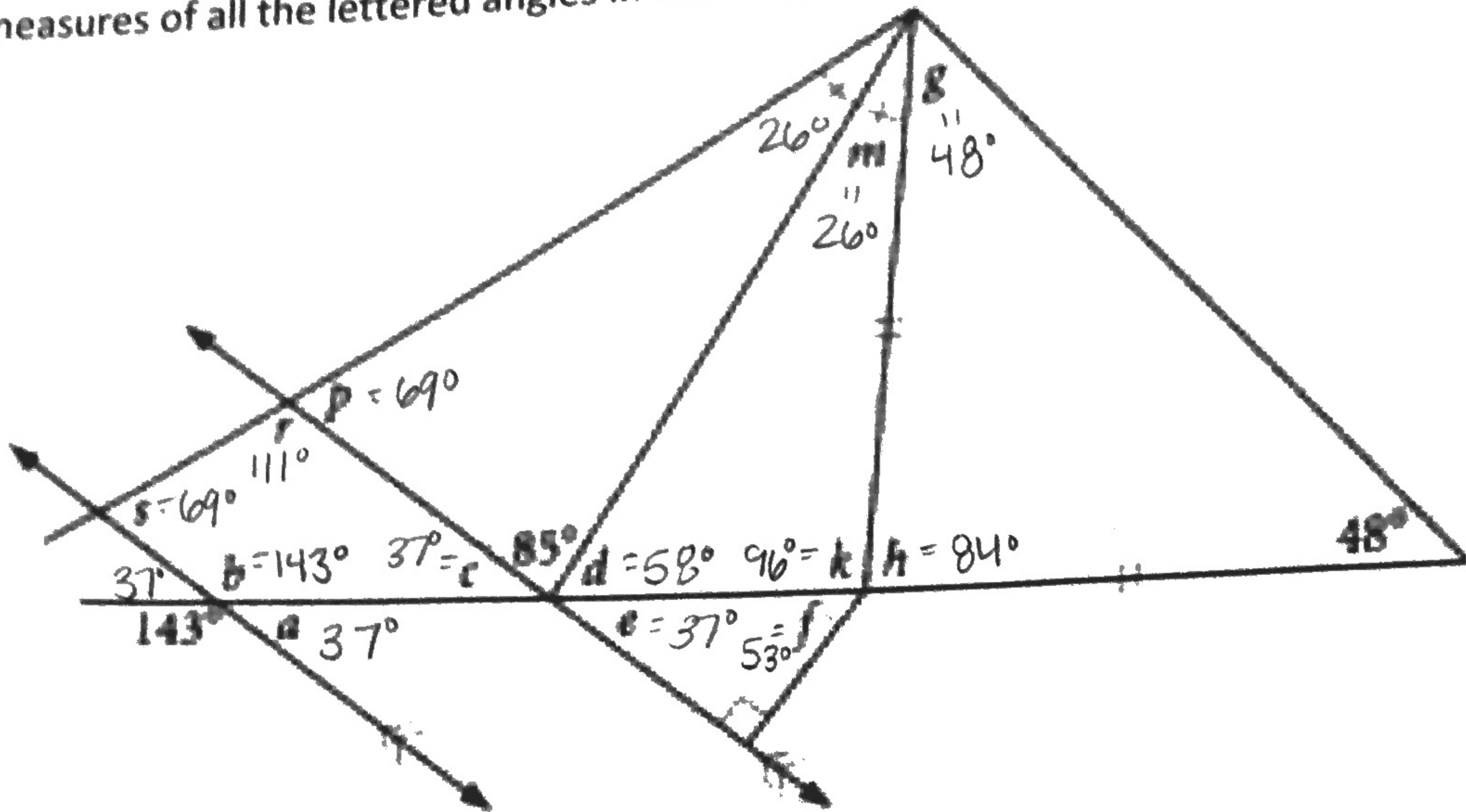
36.



not possible
(ASS) 5

4.4 Equilateral and Isosceles Triangles

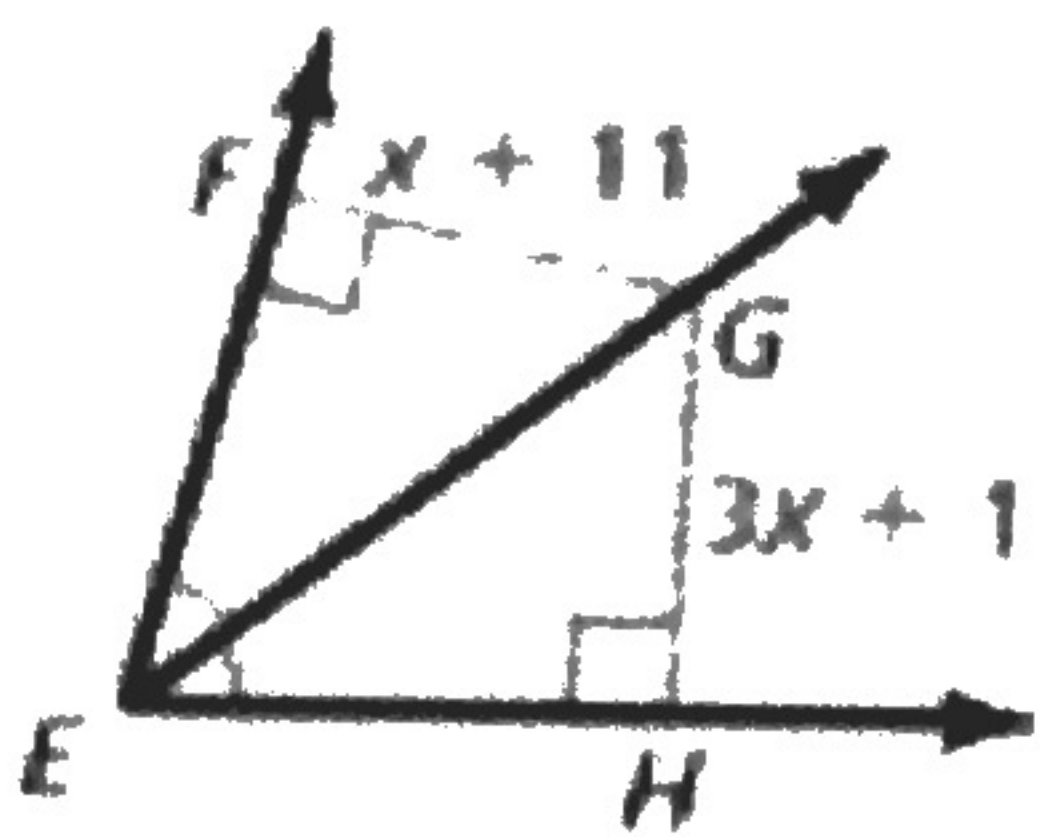
37. Find the measures of all the lettered angles in the diagram.



Unit 5: Relationships Within Triangles

5.1 Perpendicular and Angle Bisectors

38. Find x .



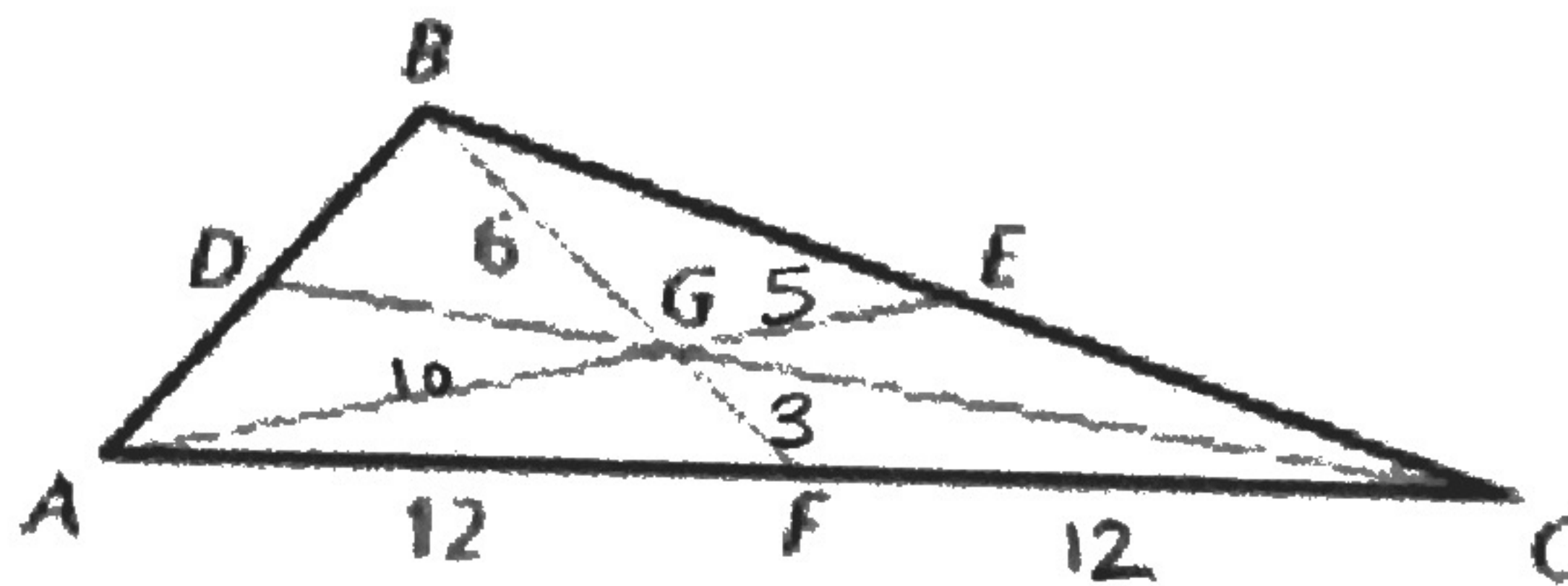
$$x+11 = 3x+1$$

$$10 = 2x$$

$$\boxed{5 = x}$$

5.2-5.3 Bisectors, Medians and Altitudes of Triangles

39. Point G is the centroid of $\triangle ABC$. $BG = 6$, $AF = 12$, and $AE = 15$. Find FC , BF , AG , and GE .



$$FC = 12$$

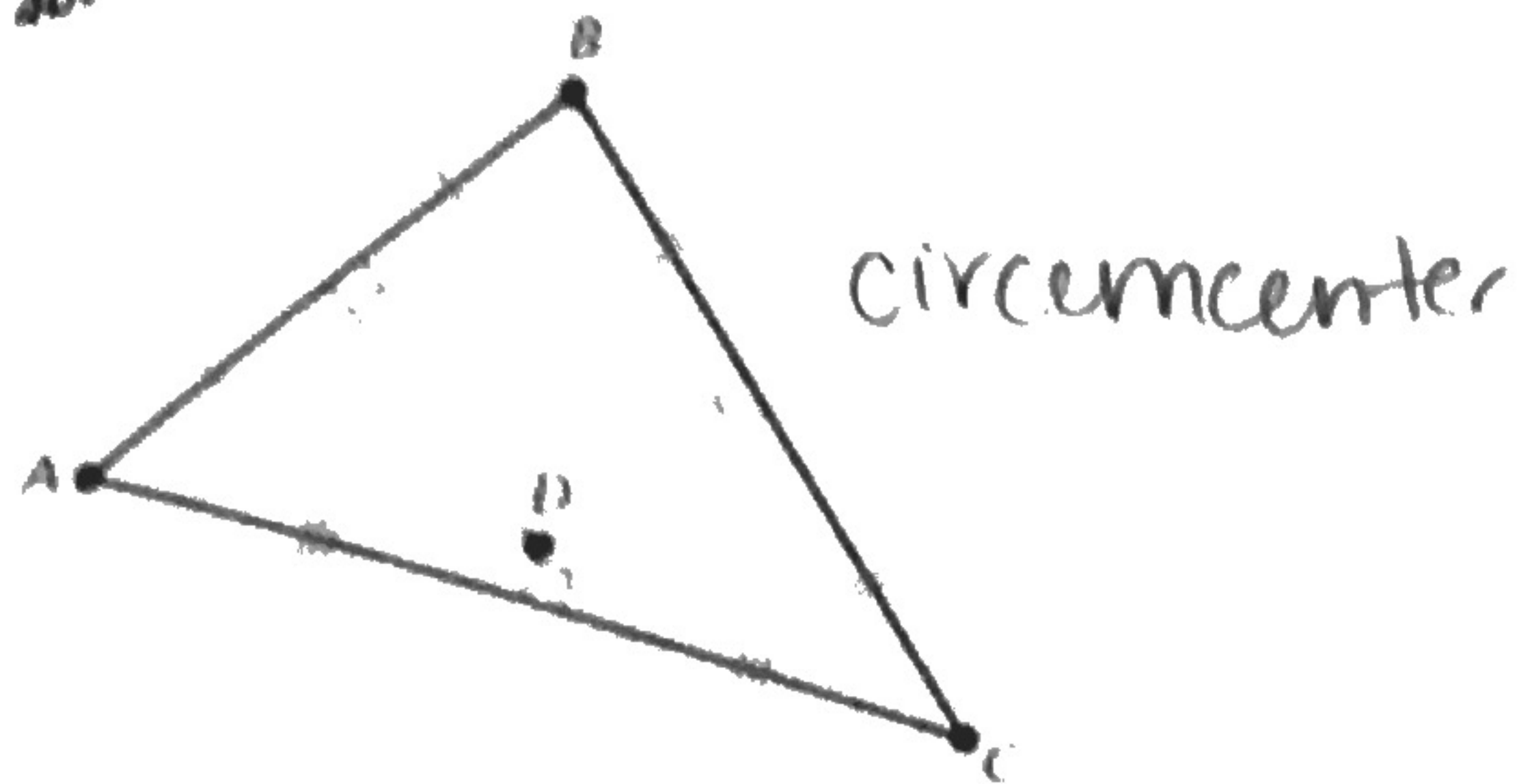
$$BF = 9$$

$$AG = 10$$

$$GE = 5$$

#40-43: Name the point of concurrency in the diagram.

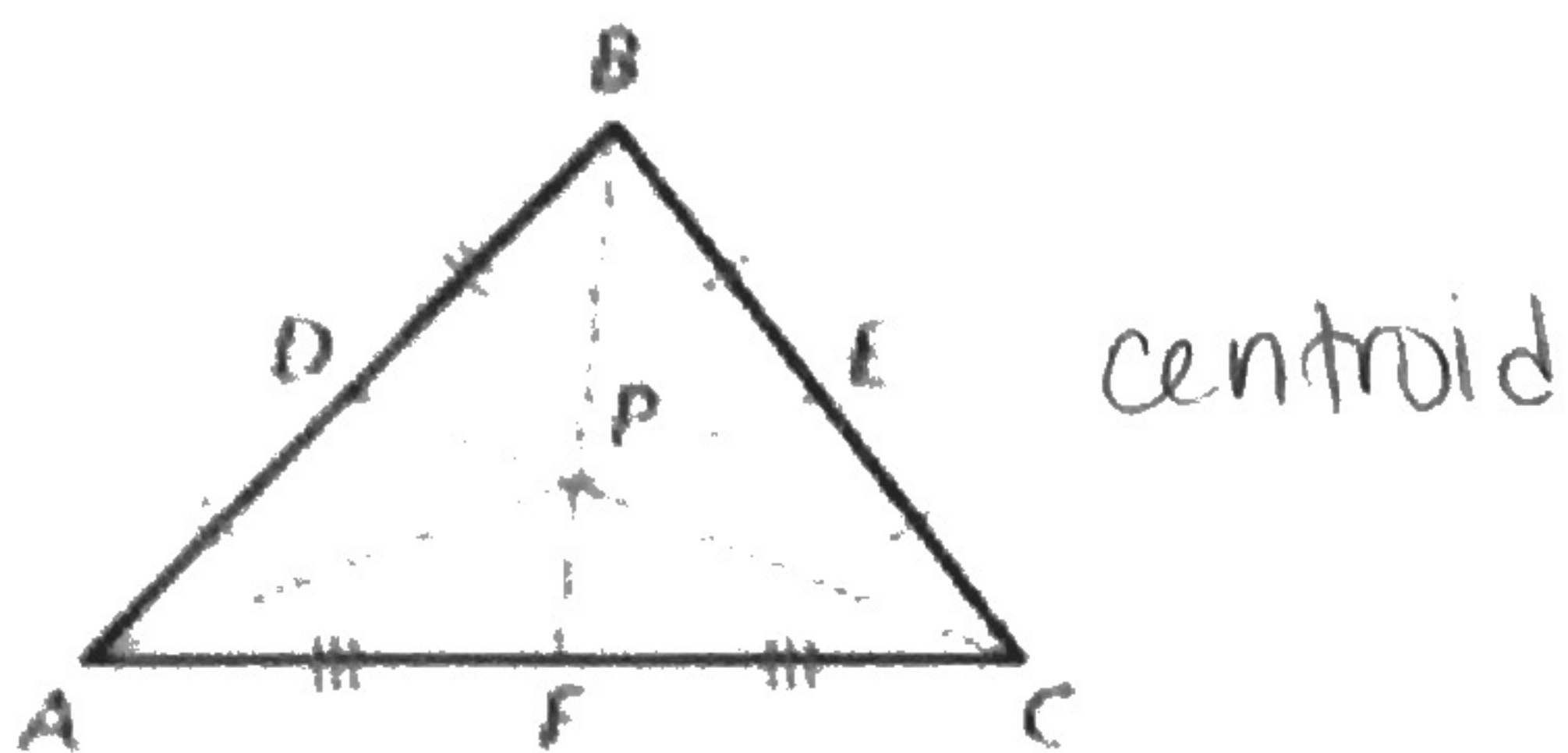
40. Point D



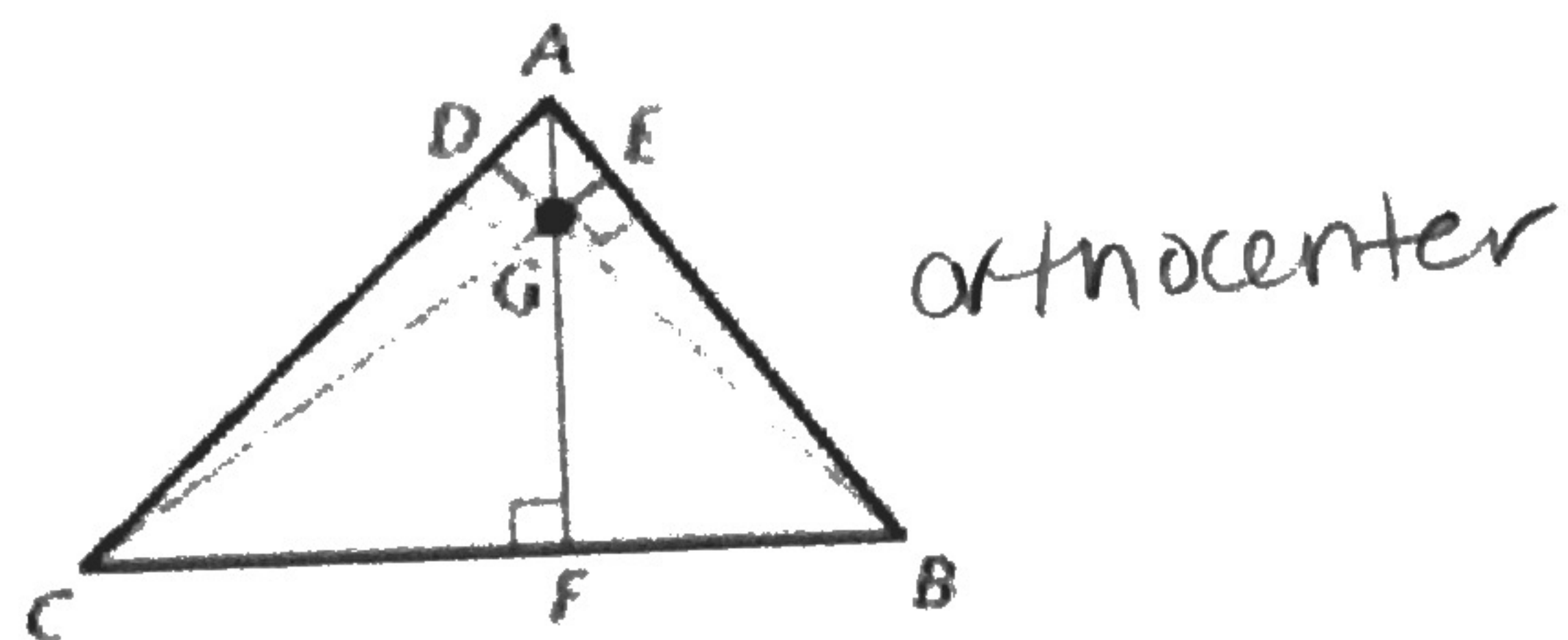
41. Point P



42. Point P

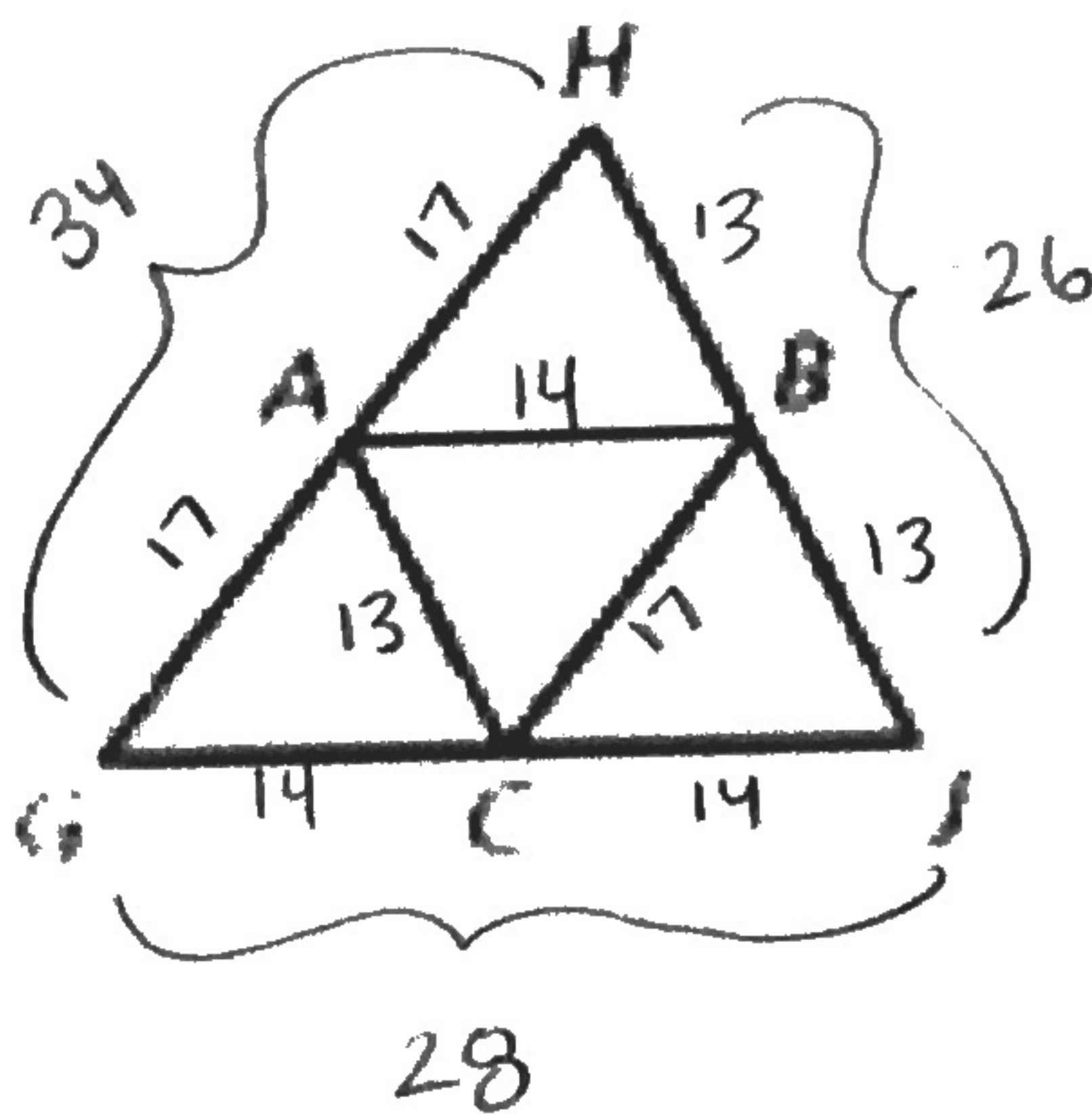


43. Point G



5.4 The Triangle Midsegment Theorem

44. In ΔGHJ , A, B, and C are midpoints of the sides. $AB = 14$, $HB = 13$, and $GA = 17$. Find the perimeter of ΔABC .



perimeter of ΔABC
 $= 13 + 14 + 17$
 $= \boxed{44}$

5.5 Inequalities in One Triangle

45. A triangle has one side of length 14 and another side of length 9. Describe the possible lengths of the third side.

$$14 + 9 > x$$

$$23 > x$$

$$14 + x > 9$$

$$x > -5$$

$$9 + x > 14$$

$$x > 5$$

$$\boxed{5 < x < 23}$$

PROOFS

Write a proof.

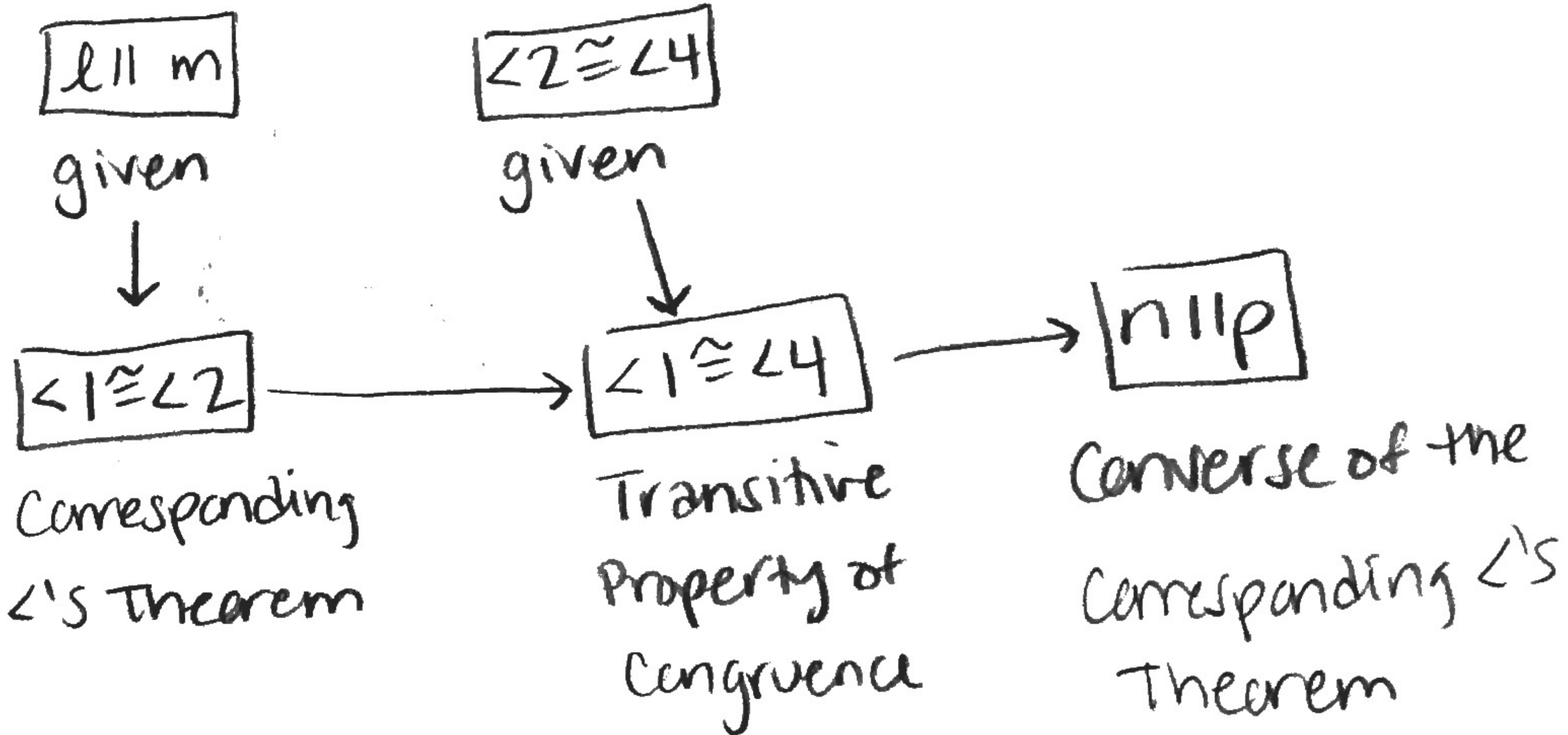
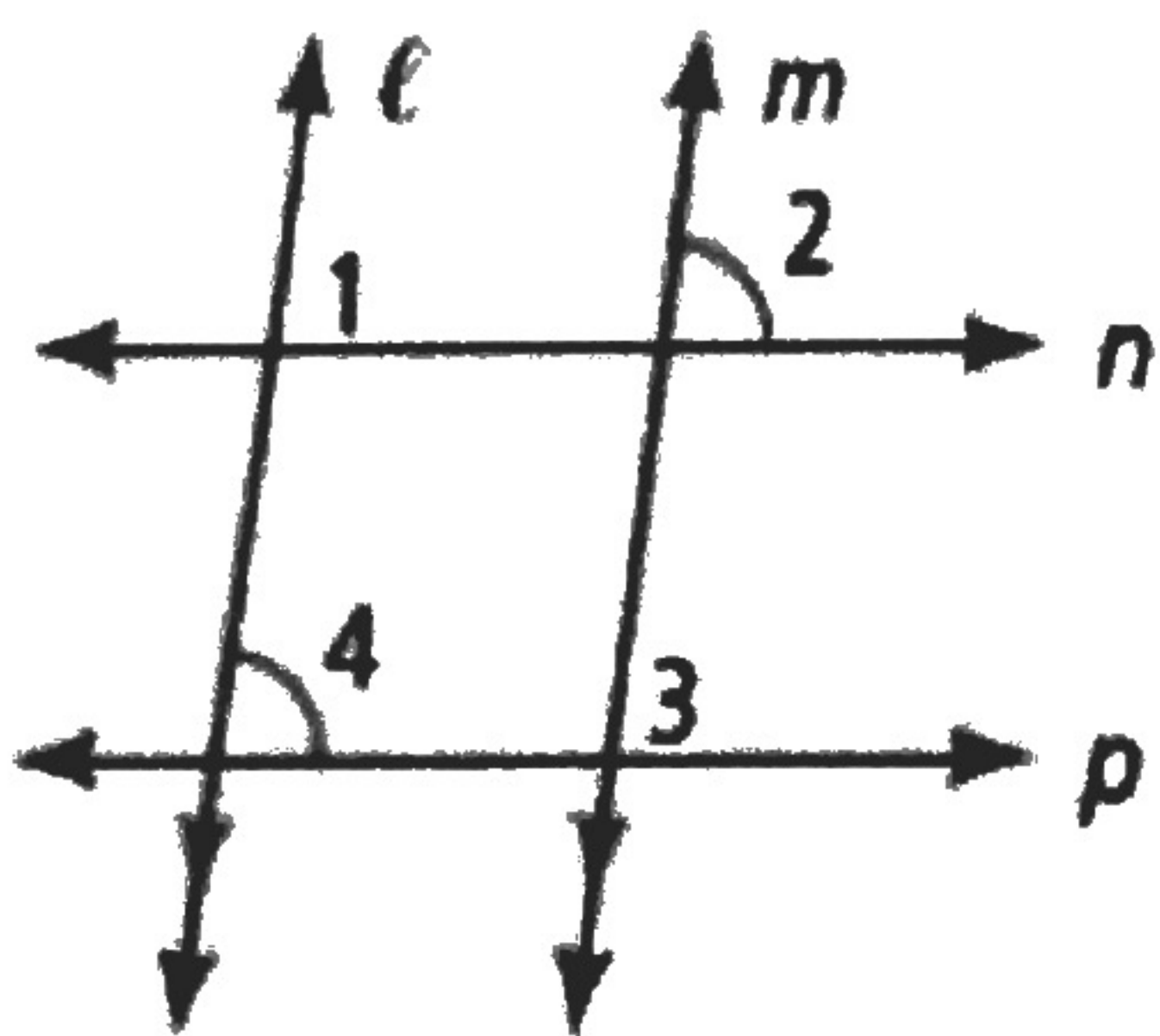
46. Given: $2(x + 3) = 5x + 9$

Prove: $x = -1$

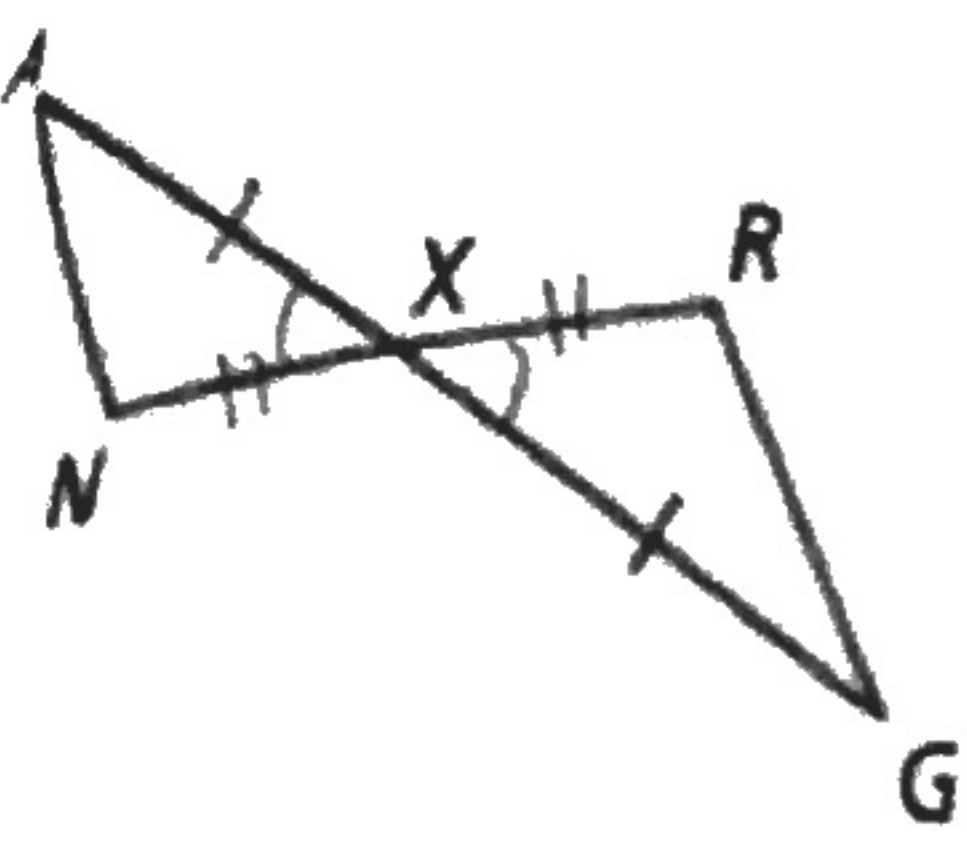
Statements	Reasons
① $2(x+3) = 5x+9$	① given
② $2x+6 = 5x+9$	② Distributive Property
③ $6 = 3x+9$	③ Subtraction Property of Equality
④ $-3 = 3x$	④ Subtraction Property of Equality
⑤ $-1 = x$	⑤ Division Property of Equality

47. Given: $l \parallel m, \angle 2 \cong \angle 4$

Prove: $n \parallel p$



Given: \overline{AG} and \overline{NR} bisect each other at point X
 Prove: $\triangle AXN \cong \triangle GRX$



\overline{AG} and \overline{NR} bisect each other at point X

given

$\overline{AX} \cong \overline{GX}$

Def. of bisector

$\overline{RX} \cong \overline{NX}$

Def. of bisector

$\angle AXN \cong \angle GRX$

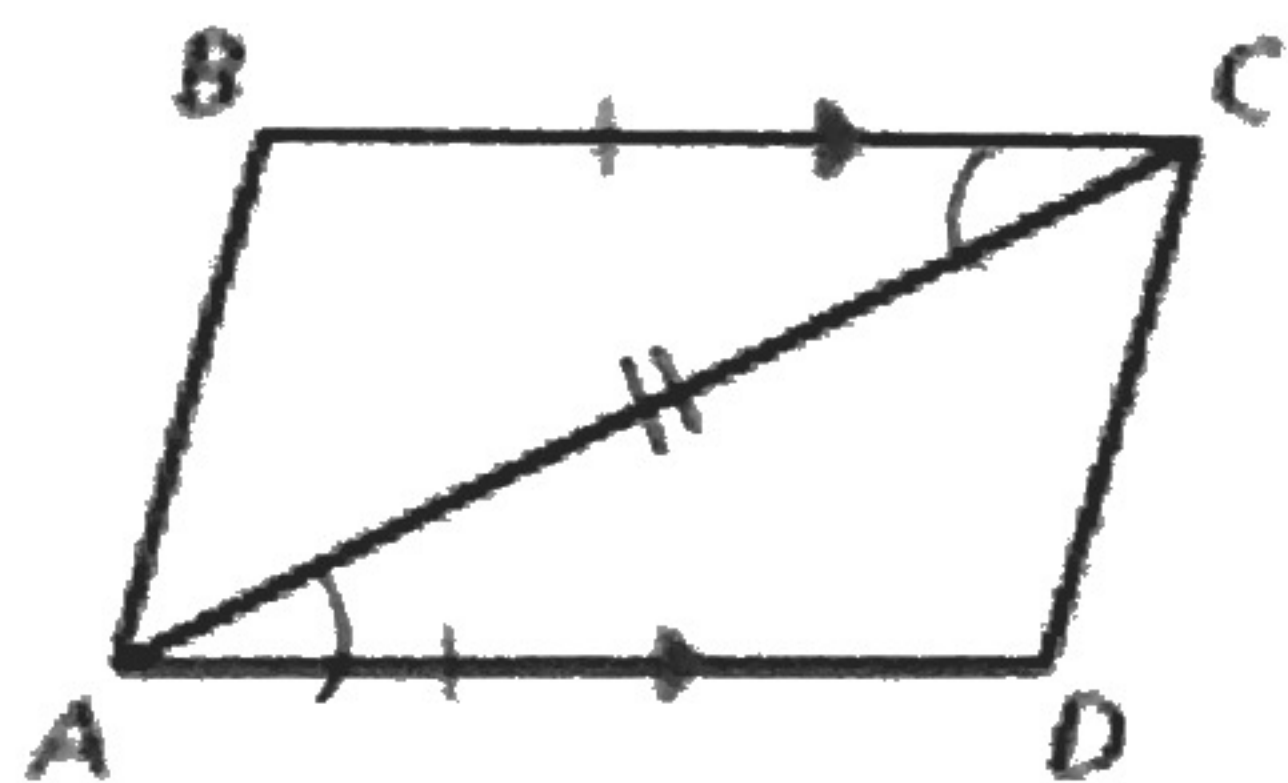
V.A.C.T

$\triangle AXN \cong \triangle GRX$

SAS

49. Given: $\overline{BC} \cong \overline{DA}$, $\overline{BC} \parallel \overline{AD}$

Prove: $\overline{BA} \cong \overline{DC}$



$\overline{BC} \cong \overline{DA}$

given

$\overline{BC} \parallel \overline{AD}$

given

$\angle BCA \cong \angle DAC$

Alternate Interior \angle 's Theorem

$\overline{AC} \cong \overline{CA}$

Reflexive Property of Congruence

$\triangle BAC \cong \triangle DCA$

SAS

$\overline{BA} \cong \overline{DC}$

C.P.C.T.C