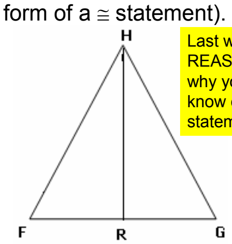
Warm-up: Drawing Conclusions

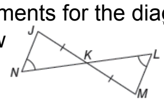
Copy the questions on the right. For each question #1-6:

- Sketch the diagram below (you will do this 6 times!)
- Add congruency marks.
- Write a conclusion (in the form of a ≅ statement).



Last write the REASONS why you know each statement!

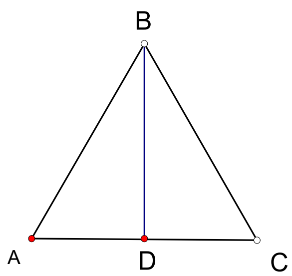
1. R is a midpoint of $\overline{FG}$.
2. $\overline{HR}$ bisects $\overline{FG}$ at R.
3. $\overline{HR}$ bisects ∠FHG.
4. $\overline{HR} \perp \overline{FG}$.
5. ΔFHG is isosceles with vertex angle H. (You will have 2 conclusions on this one.)
6. $\overline{HR}$ is the perpendicular bisector of $\overline{FG}$. (You will have 2 conclusions on this one.)
7. Write **3** pairs of ≅ statements for the diagram below



Congruent Figures

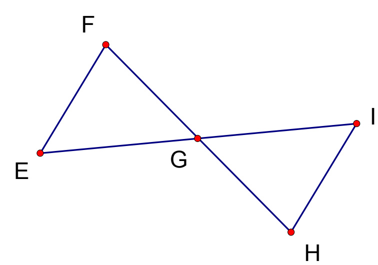
- Same shape AND same size
  - All corresponding angles congruent
  - All corresponding sides congruent
- 5 shortcuts for congruent triangles…

Use the given diagram and statement to prove that ΔADB ≅ Δ___.



$\overline{BD}$ is the perpendicular bisector of $\overline{AC}$

Use the given diagram and statement to prove that ΔEFG ≅ Δ___.



G is the midpoint of $\overline{EI}$

$\overline{EF} \parallel \overline{HI}$

Name: ____ Date: __________ Period: ____

Proofs fill-in-the-word-bank (these are some of the "reasons" used in proofs)

Segments and Angles (textbook 1-5, 1-6, 1-7, 2-5):

Segment Addition Postulate		Definition of midpoint	
Angle Addition Postulate		Definition of bisector	
Definition of supplementary angles		Definition of complementary angles	
Congruent Supplements Theorem	If two angles are __________ of the same angle (or of congruent angles), then the two angles are congruent.	Congruent Complements Theorem	If two angles are complements of the same angle (or of congruent angles), then the two angles are __________.
Definition of perpendicular lines		?	All right angles are congruent
Definition of linear pair		?	Linear pair → supplementary
Definition of vertical angles		Vertical Angles Theorem	Vertical angles are __________.

Baby Proofs / Reasoning in Algebra (textbook 2-4):

Properties of EQUALITY: Addition Prop. Subtraction Prop. Multiplication Prop Division Prop. Reflective Prop. Symmetric Prop. Transitive Prop. Substitution Prop. Distributive Prop.		Properties of CONGRUENCE: Reflective Prop. Symmetric Prop. Transitive Prop.	$\angle A \cong$ _____ If $\angle A \cong \angle B$, then $\angle B \cong$ _____. If $\angle A \cong \angle B$ and $\angle B \cong \angle C$, then $\angle A \cong$ _____.
		Simplify	

Parallel Lines and Angle Relationships (textbook 3-1, 3-2, 3-3):

Corresponding Angles Postulate	If a __________ intersects two parallel lines, then corresponding angles are __________.	Converse of the Corresponding Angles Postulate	If two lines and a transversal form __________ angles that are congruent, then the two lines are parallel.
Alternate Interior Angles Theorem	If a transversal intersects two __________lines, then __________ __________ angles are congruent.	Converse of the Alternate Interior Angles Theorem	If two _______ and a transversal form alternate interior angles that are __________, then the two lines are parallel.
Same-Side Interior Angles Theorem	If a transversal intersects two parallel lines, then same-side interior angles are __________.	Converse of the Same-Side Interior Angles Theorem	If two lines and a transversal form same-side interior angles that are supplementary, then the two lines are __________.

Alternate Exterior Angles Theorem	If a transversal intersects two parallel lines, then __________ exterior angles are congruent.
Same-Side Exterior Angles Theorem	If a transversal __________ two parallel lines, then __________ __________ angles are supplementary.

Converse of the Alternate Exterior Angles Theorem	If two lines and a __________ form __________ __________ angles that are congruent, then the two lines are parallel.
Converse of the Same-Side Exterior Angles Theorem	If two lines and a transversal form same-side exterior angles that are __________, then the two lines are parallel.

Theorem 3-9	If two lines are parallel to the same _______, then they are __________ to each other.
Theorem 3-10	In a plane, if two lines are perpendicular to the ________ line, then they are __________ to each other.

Theorem 3-11	In a plane, if a line is perpendicular to one of two __________ lines, then it is also __________ to the other.

Triangles and Polygons (textbook 3-4, 3-5, 4-5):

Triangle Angle-Sum Theorem	The sum of the measures of the angles of a __________ is __________.
Definition of isosceles triangle	
Isosceles triangle theorem	
Polygon Angle-Sum Theorem	

Triangle Exterior-Angle Theorem	The measure of each __________ angle of a triangle equals the ____ of the measures of its two remote interior angles.
?	Equilateral triangle ↔ equiangular triangle
Converse of the isosceles triangle theorem	
Polygon Exterior-Angle Theorem	

Congruent Triangles (textbook 4-1, 4-2, 4-3, 4-4, 4-6, 4-7):

SSS ≅	
ASA ≅	
HL ≅	

SAS ≅	
AAS ≅	
CPCTC	

Similar Triangles (textbook 7-3):

SSS ~	
AA ~	

SAS ~	

Geometry

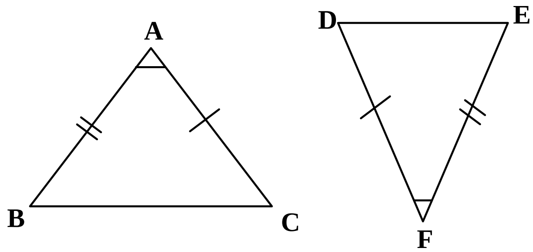
Solving Congruent Triangles and CPCTC

Name: ______________________________

Period: ______ Date: ____________________

For each of the triangles, state how the two triangles are congruent. Then solve for the missing variable.

1.

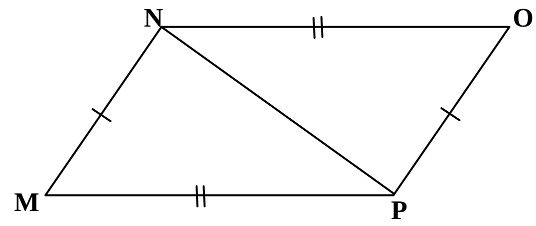


$\Delta ABC \cong \Delta$ ________ by __________.

Given: $\overline{AC} = 3x$, $\overline{AB} = -3y + 20$, $\overline{DF} = x + 6$, $\overline{FE} = 2y - 10$

$x =$ __________ $y =$ __________

2.

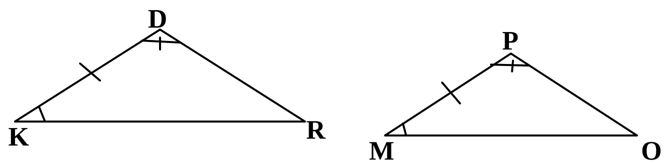


$\Delta MNP \cong \Delta$ ________ by __________.

Given: $\overline{MN} = 2x + 10$, $\overline{OP} = 40$, $\overline{MP} = 50$, $\overline{NO} = 7y - 20$

$x =$ __________ $y =$ __________

3.



$\Delta KDR \cong \Delta$ ________ by __________.

Then, $\overline{KR} \cong$ _____ by __________.

Given: $\overline{KD} = 2x + 3y$, $\overline{KR} = -2x + 5y$, $\overline{MP} = 11$, $\overline{MO} = 13$

$x =$ __________ $y =$ __________

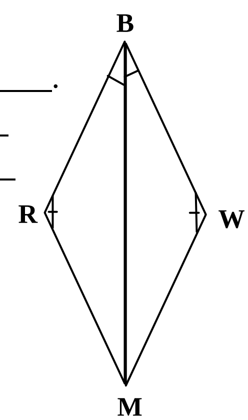
4.

$\Delta RBM \cong \Delta$ ________ by __________.

Then, $\overline{RB} \cong$ _____ by __________

and $\overline{RM} \cong$ _____ by __________

Given: $\overline{RB} = y$, $\overline{BW} = 3x + 2$, $\overline{RM} = x + 2y$, $\overline{MW} = 11$



$x =$ __________ $y =$ __________

5. Which of the following sets of information does not allow you to conclude that $\Delta ABC \cong \Delta DEF$?

A) $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, $\angle B \cong \angle E$

B) $\overline{AC} \cong \overline{DF}$, $\overline{BC} \cong \overline{EF}$, $\overline{BA} \cong \overline{DE}$

C) $\overline{AB} \cong \overline{DF}$, $\overline{AC} \cong \overline{DE}$, $\angle C \cong \angle E$

D) $\overline{AB} \cong \overline{DE}$, $\overline{AC} \cong \overline{DF}$, $\angle A \cong \angle D$

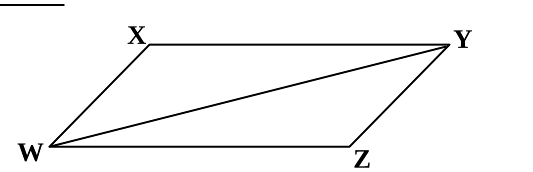
6. Use the diagram to name the included angle between the given pair of sides.

A) $\overline{XY}$ and $\overline{YW}$ is $\angle$ __________

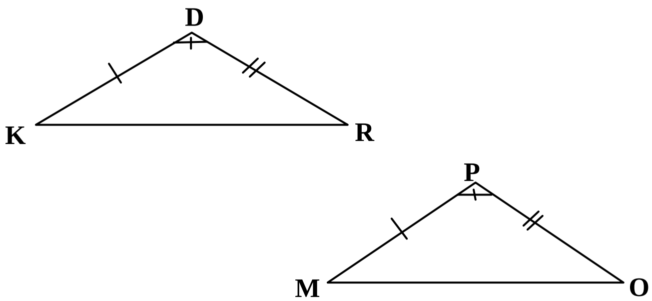
B) $\overline{ZW}$ and $\overline{YW}$ is $\angle$ __________

C) $\overline{WZ}$ and $\overline{ZY}$ is $\angle$ __________

What is the included side between $\angle$W and $\angle$Y? __________



7.

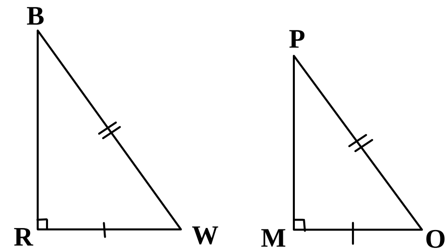


$\Delta KDR \cong \Delta$ _________ by ___________.
Then, $\overline{KR} \cong$ _____ by ___________.

Given: $\overline{KD} = x + y$, $\overline{KR} = -2x + y$, $\overline{MP} = 1$,
$\overline{MO} = 4$

$x =$ ___________ $y =$ ___________

8.

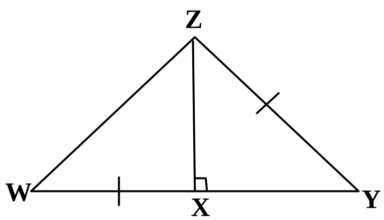


$\Delta RBW \cong \Delta$ _________ by ___________.
Then, $\overline{RB} \cong$ _____ by ___________.

Given: $\overline{RB} = 3x - y$, $\overline{RW} = 6$, $\overline{MP} = 30$,
$\overline{MO} = -3x + 7y$

$x =$ ___________ $y =$ ___________

9. Decide whether enough information is given to prove that the triangles are congruent using SAS Congruence Postulate. If not, state the missing information.



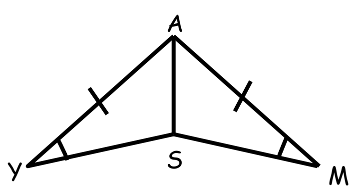
10. Suppose $\Delta ABC \cong \Delta EFD$, $\Delta EFD \cong \Delta GIH$, $m\angle A = 90°$, and $m\angle F = 20°$. What is $m\angle H$?

11. Are the triangles congruent? If so, give the congruence statement and postulate.
If not, what other information is needed to prove the triangles congruent by SSS?

ASA?

SAS?

HL?



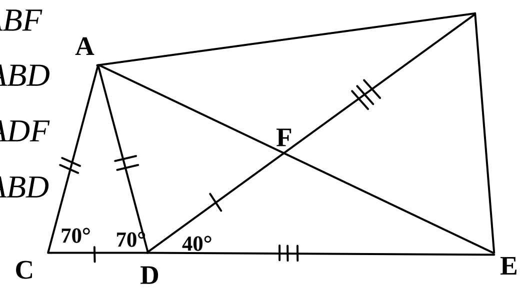
12. Which triangle congruence can you prove, then use to prove that $\angle FED \cong \angle ABF$?

a.) $\Delta ABE \cong \Delta ABF$

b.) $\Delta AED \cong \Delta ABD$

c.) $\Delta ACD \cong \Delta ADF$

d.) $\Delta AEC \cong \Delta ABD$

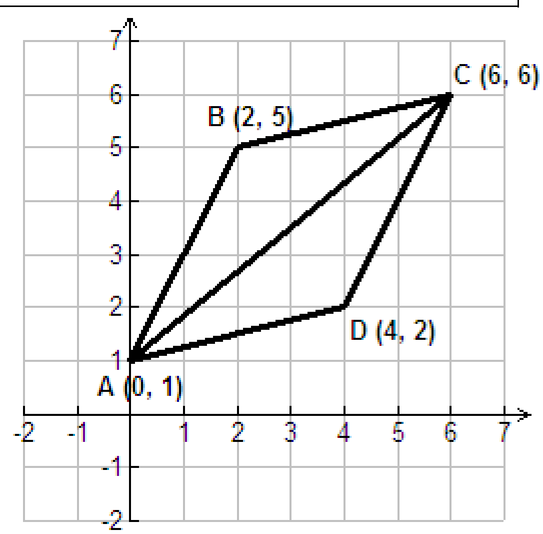


13. Use the graph at the right.

a.) Show that $\angle CAD \cong \angle ACB$. Explain your reasoning.

b.) Show that $\angle ACD \cong \angle CAB$. Explain your reasoning.

c.) Show that $\Delta ABC \cong \Delta CDA$. Explain your reasoning.



Pg 201 #29-31. **Pg 208** #2,6-7,26-27,38. **Pg 222** #2-10 evens. **Pg 238** #10, 13-14, 21.

Pg 201:
29. B
30. x = 15, t = 2
31. 5

Pg 208:
2.
6. No, either PQ ≅ QS is needed for SSS, or ∠T ≅ ∠R for SAS.
7. Yes, since AC ≅ AC by the Reflexive Prop. Of Congr., the ∆s are ≅ by SAS.
26.
27.
38.

Pg 222:
2.
4. a) SSS. b) CPCTC.
6.
8.
10.

Pg 238:
10. x = 3, y = 2
13.
14.
21.

* If blank, see next slide for the proof.

Pg 201, 208, 222, 238 continued…

Your answers should be **two-column proofs** or **flowchart proofs**. To save space, below are the **reasons** only (not the statements). The reasons don't need to be in the same order, except that "CPCTC" should be **last** and the congruence theorem should be **next-to-last**. Be careful when writing statements though, especially with the order of vertices in the congruence statements and with vertical angles.

Pg 208:
2. Given. Given. Given. Def of midpoint. SSS.
26. Given. Given. Def of angle bisector. Reflexive Prop of ≅. SAS.
27. Given. Def of bisector. Def of bisector. Vertical angles are ≅. SAS.
38. Given. Given. Alternate Interior Angles Theorem. Reflexive Prop of ≅. SAS.

Pg 222:
2. Given. Given. Reflexive Prop of ≅. ASA. CPCTC.
6. Given. Given. Reflexive Prop of ≅. SAS. CPCTC.
8. Given. Given. Def of angle bisector. Reflexive Prop of ≅. SAS. CPCTC.
10. Given. Given. Def of perpendicular lines. All right angles are ≅. Def of angle bisector. Reflexive Prop of ≅. ASA. CPCTC.

Pg 238:
13. Given (x4). Def of perpendicular lines (x2). Def of midpoint. HL.
14. Given (x3). Def of perpendicular lines. Def of right angle. Alternate Interior Angles Theorem. Def of right angle. Reflexive Prop of ≅. HL.
21. Given (x3). Def of angle bisector. Def of perpendicular lines (x2). All right angles are ≅ (x2). Reflexive Prop of ≅. AAS.

Pg 216 #12-15, 20-22. **Pg 243** #4, 5, 8, 10, 22.

Pg 216:
12.
13. ∆PMO ≅ ∆NMO; ASA
14. ∆UTS ≅ ∆RST; AAS
15. ∆ZVY ≅ ∆WVY; AAS
20.
21.
22.

Pg 244:
4. Segment PQ
5. ∠B
8.
10.
22.

* If blank, see next slide the for proof.

Pg 216 and 243 continued…

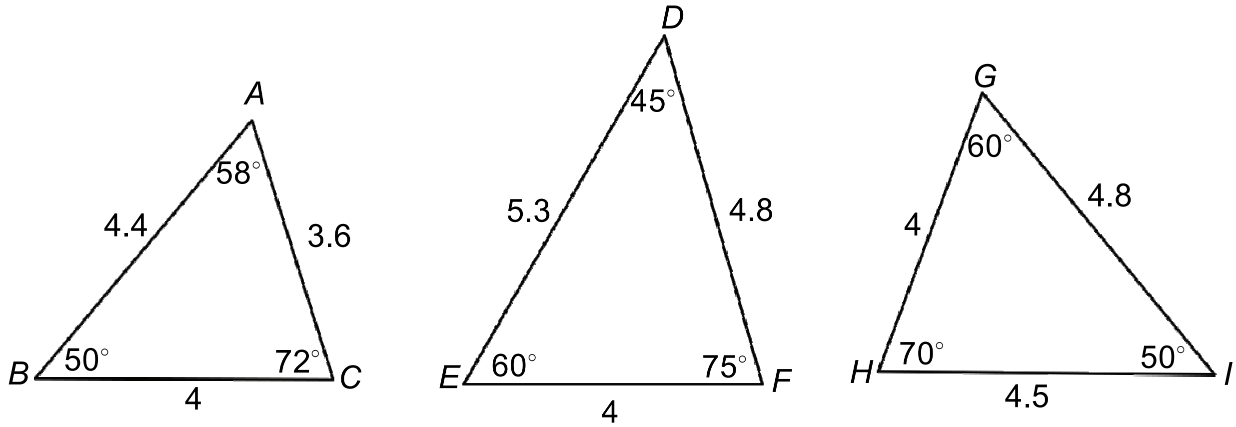
Your answers should be **two-column proofs** or **flowchart proofs**. To save space, below are the **reasons** only (not the statements).

Pg 216:
12. Given (x3). Def of perpendicular lines (x2). All right angles are ≅ (x2). Vertical angles are ≅. AAS.
20. Given. Given. Vertical angles are ≅. AAS.
21. Given. Given. Alternative Interior Angles Theorem. Reflexive Prop of ≅. AAS.
22. Given (x3). Corresponding Angles Postulate. ASA.

Pg 244:
8. Given. Given. Reflexive Prop of ≅. SSS.
10. Given. Given. Reflexive Prop of ≅. ASA. CPCTC. Reflexive Prop of ≅. SAS.
22. Given. Given. Given. Reflexive Prop of ≅. HL. CPCTC. CPCTC. Vertical angles are ≅. AAS. CPCTC.

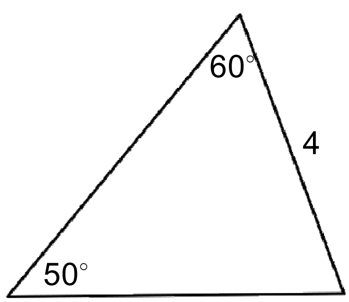
Student Name: ______________________________ Date: ______________

What's the Same?



For each triangle below, determine its congruent triangle from the above triangles. Circle the correct triangle congruence postulate that justifies your choice.

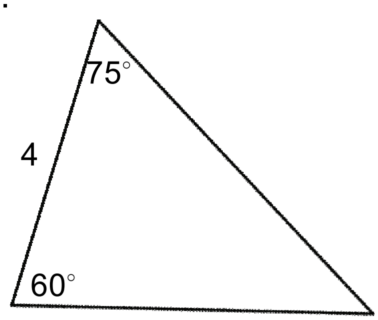
1.



Is congruent to ________

SSS SAS AAS ASA

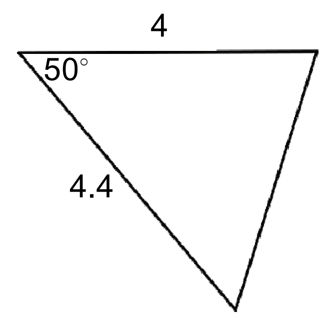
2.



Is congruent to ________

SSS SAS AAS ASA

3.



Is congruent to ________

SSS SAS AAS ASA

Communicating About Mathematics

Could you use a different postulate to prove triangle congruence in problem 1? Justify your reponse.

____

____

____

____

____

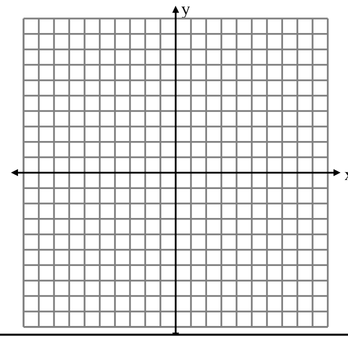
Triangles: Congruent or Not Congruent? (G.10A)

A.

ΔABC with	and	ΔMNP with
A(1,2), B(1, -1), C(6, 2)		M(-2,2), N(-5,2), and P(-2,7)

Congruent or not congruent?

Explain:



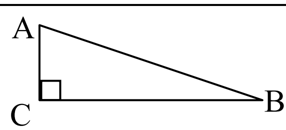
B.

ΔABC with	and	ΔRVT with
AB = 5, m∠B = 35, and m∠C = 63		RT = 5, m∠V = 35, and m∠R = 63

Congruent or not congruent?

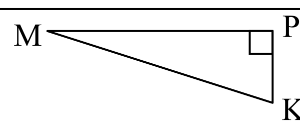
Explain:

C.



AC = 8, m∠B = 35

and



PK = 8, m∠M = 35

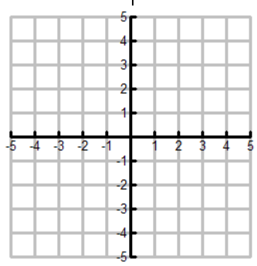
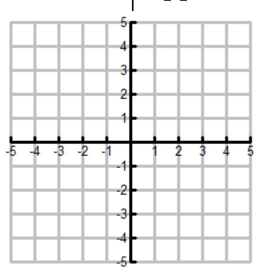
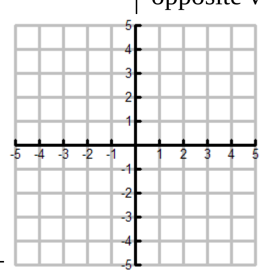
Congruent or not congruent?

Explain:

Special Segments in Triangles
Equations of Lines

Name________________________________
Date______________________ Period ____

There are *four* special segments that we can draw and use in any type of triangle. We can write the equation for three of them. Here are examples for each of the *three*:

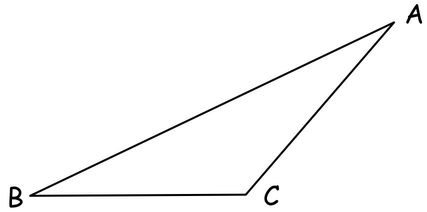
Given: A(-4, 1), B(2, 5), and C (4, -3)			
Special Segment	Description	Given Information	Equation
Median 	Goes through the *midpoint* of a side and connects to the opposite *vertex*	Point C (4, -3) Midpoint of side AB (_____, _____)	Write the equation of the median to side AB. (Use the two points to find the slope, then plug into point-slope form.)
Altitude 	Must be *perpendicular* to a side, *and* go through the opposite vertex	Point C (4, -3) Slope Slope of side AB = ______ Slope of Altitude = ______	Write the equation of the altitude to side AB. (Use the point-slope form of the equation of the line.)
Perpendicular Bisector 	Goes through the *midpoint* of a side, and is *perpendicular* to the side. (does *not* have to go through the opposite vertex)	Point (midpoint of side AB) (_____, ______) Slope Slope of side AB = _____ Slope of perpendicular bisector = _______	Write the equation of the perpendicular bisector of side AB. (Use point-slope form of the equation.)

Special Segments in Triangles
Practice

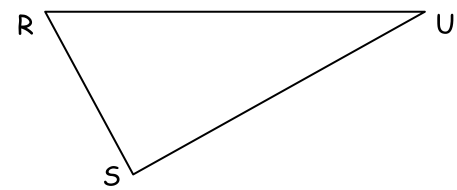
Name______________________________
Date______________________ Period___

Draw the special segments on the triangles below. Include all necessary markings!

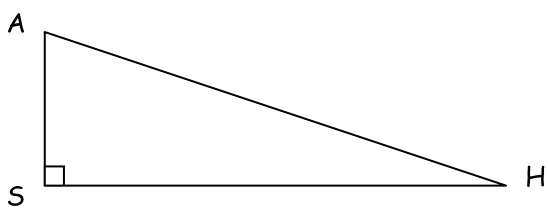
1. Draw the median to side BC *and* the altitude to side BC. (put a "m" by the median and an "a" by the altitude)



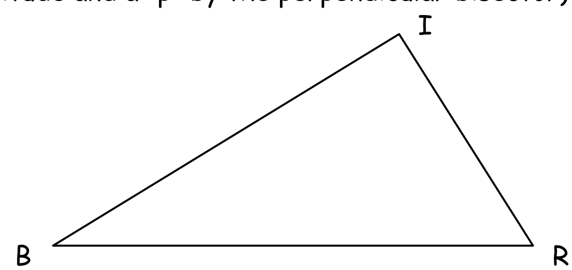
2. Draw the perpendicular bisector of side RU *and* the median to side RU. (put "p" by the perpendicular bisector and a "m" by the median)



3. Draw the angle bisector of ∠S *and* the altitude to side HA. (put a "b" by the bisector of ∠S and an "a" by the altitude)

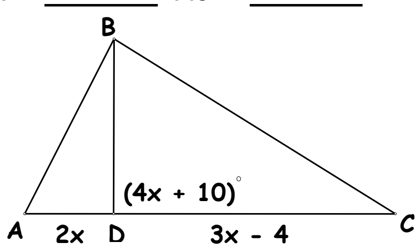


4. Draw the altitude to side BR *and* the perpendicular bisector of side BR. (put an "a" by the altitude and a "p" by the perpendicular bisector)



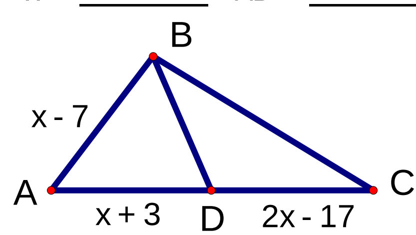
Solve for x and find the indicated measure. Beware of extra information!

5) x = _______ AC = _______



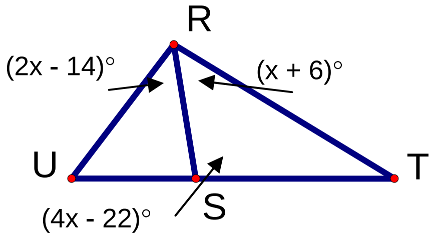
$\overline{BD}$ is an altitude of ΔABC.

6) x = ________ AB = _________



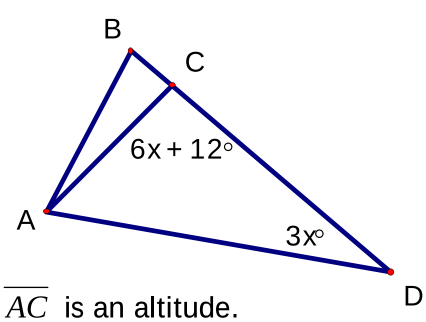
$\overline{BD}$ is a median.

7) x = _______ m∠ RST = _______



$\overline{RS}$ is an angle bisector.

8) x = ________ m∠ADC = ________



$\overline{AC}$ is an altitude.

Congruent Triangles on the Coordinate Plane

Name: ___________________________
Date: ________________ Period: _____

We know that triangles are congruent if corresponding parts are congruent (CPCTC). We have also learned that triangles can be determined to be congruent with less information, namely using SSS, SAS, ASA, AAS, and HL theorems. Determining if two triangles on the coordinate plane are congruent becomes more difficult, because, at this point in our studies, the only angle that we can truly prove its measure is the right, or 90°, angle. Thus we are limited to using only SSS and SAS theorems to test for congruency. Remember this as you complete the following.

In your group, discuss the following questions. Come to an agreement on each question and then record your answers independently.

1. How can you determine if two sides of a triangle form a right angle? __________________________
____
____

2. What is the slope formula? ____

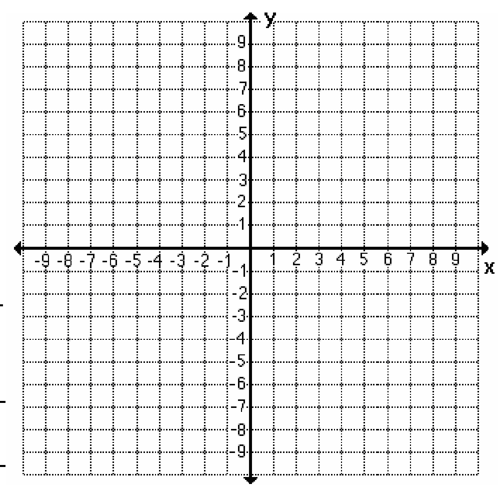
3. Describe another method for finding slope of a line or segment on the coordinate plane.
____
____

4. What is the distance formula? ____

5. Is there another method for finding distance? If so, describe it.______________________________
____
____

Use the above answers to complete the questions below. Show your work below or on a separate sheet of paper.

I. Given: ΔABC with A(0,5) B(-3,7) C(-5, 4)
ΔXYZ with X(4,0) Y(7,2) Z(6,-3)



a. AB = __________ BC = $\sqrt{13}$ CA = __________

b. XY = $\sqrt{13}$ YZ = __________ ZX = __________

c. Are the triangles congruent? __________ yes/no

d. If so, write the congruency statement. ________________________

e. By which theorem? ______________

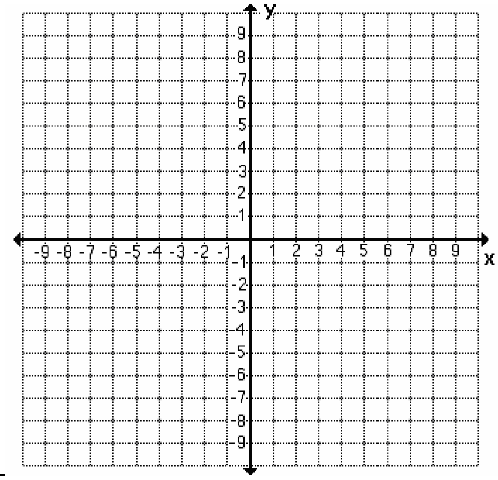
f. $Slope_{AB}$ = __________ $Slope_{BC}$ = __________ $Slope_{CA}$ = __________

g. $Slope_{XY}$ = __________ $Slope_{YZ}$ = __________ $Slope_{ZX}$ = __________

h. Is ΔABC a right triangle? __________ ΔXYZ? __________
Justify your answer. ____

i. By what other theorem are the two triangles congruent? ____________
Justify your answer. ____

II. Given: ΔABC with A(1,1) B(2, 5) C(6,5)
ΔXYZ with X(-8,-1) Y(-4,-2) Z(-4,-6)



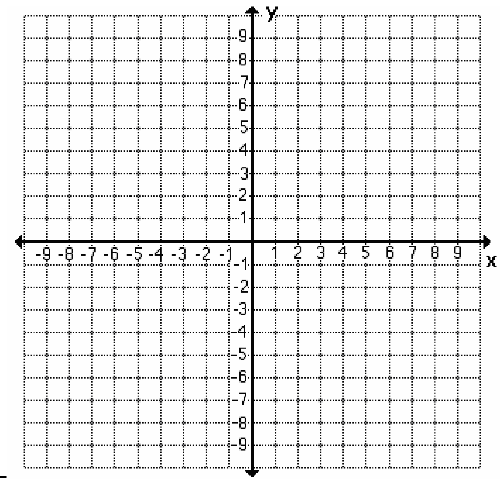
a. Are the two triangles congruent? ____________ yes/no

b. If so, by what theorem? ____________________

c. Justify your answer.

d. If so, write the congruency statement. ____________________

III. Given: ΔABC with A(-1,6) B(3, 5) C(10,8)
ΔXYZ with X(-5,-7) Y(2,-4) Z(6, -5)



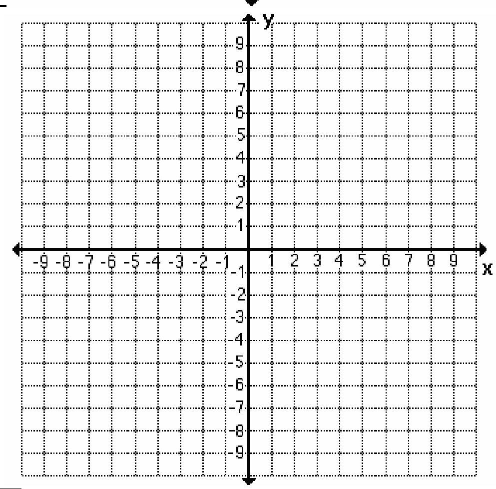
a. Are the two triangles congruent? ____________ yes/no

b. If so, by what theorem? ____________________

c. Justify your answer.

d. If so, write the congruency statement. ____________________

IV. Given: ΔABC with A(-8,1) B(-3,6) C(-7,8)
ΔXYZ with X(3,3) Y(7,-2) Z(6,5)



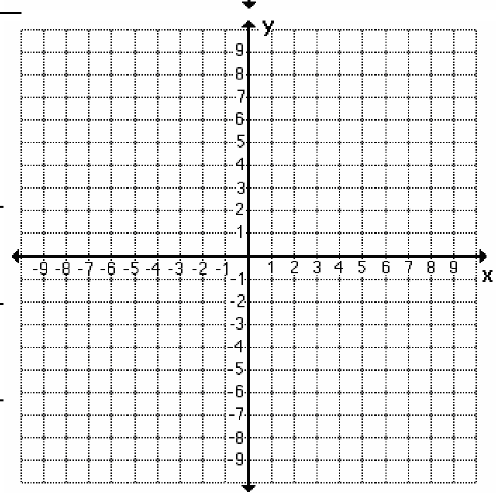
a. Are the two triangles congruent? ____________ yes/no

b. If so, by what theorem? ____________________

c. Justify your answer.

d. If so, write the congruency statement. ______________________

V. For the following, find the missing coordinates to make ΔTEX ≅ ΔLHN
If there is more than one answer, give all possibilities.

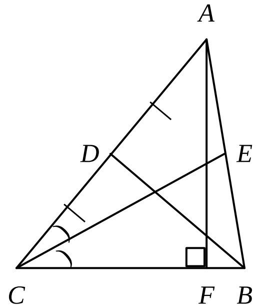


a. T(0,2) E(0,8) X(6,4) A(-1,1) G(-1,-5) S(? ?) ______________

b. T(? ?) E(-7,-3) X(-5, -5) A(-3, 5) G(-9,7) S(-7,9) ____________

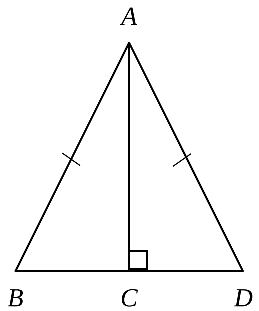
c. T(5,5) E(8,3) X(10,-2) A(1,-9) G(? ?) S(6,-2) _____________

____ 7. Name a median for $\triangle ABC$.



a. $\overline{AD}$ b. $\overline{CE}$ c. $\overline{AF}$ d. $\overline{BD}$

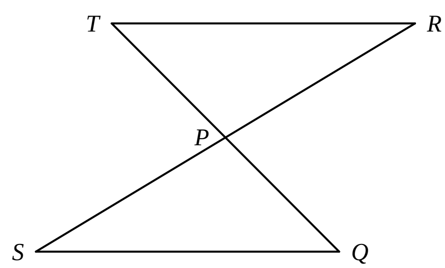
____ 12. Is there enough information to conclude that the two triangles are congruent? If so, what is a correct congruence statement?



a. Yes; $\triangle CAB \cong \triangle DAC$.
b. Yes; $\triangle ACB \cong \triangle ACD$.
c. Yes; $\triangle ABC \cong \triangle ACD$.
d. No, the triangles cannot be proven congruent.

____ 13. **Given:** *P* is the midpoint of $\overline{TQ}$ and $\overline{RS}$.
Prove: $\triangle TPR \cong \triangle QPS$
Complete the proof.

Statements	Reasons
1. *P* is the midpoint of $\overline{TQ}$ and $\overline{RS}$.	1. Given
2. $\overline{TP} \cong \overline{QP}$, $\overline{RP} \cong \overline{SP}$	2. [1]
3. [2]	3. Vertical Angles Theorem
4. $\triangle TPR \cong \triangle QPS$	4. [3]



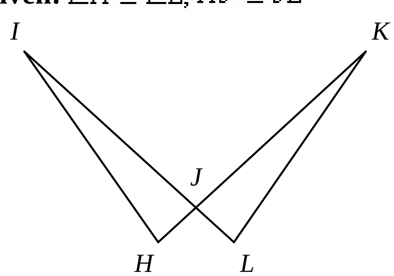
a. [1]. Definition of midpoint
[2] $\angle TPR \cong \angle QPS$
[3] SAS

b. [1] Definition of midpoint
[2] $\overline{RT} \cong \overline{SQ}$
[3] SSS

c. [1] Definition of midpoint
[2] $\angle PRT \cong \angle PSQ$
[3] SAS

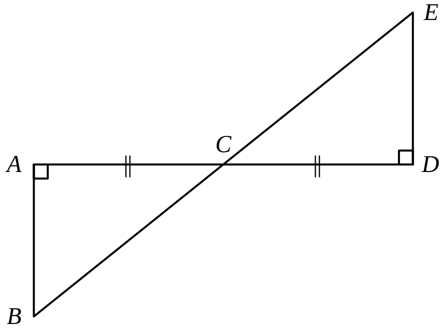
d. [1] Definition of midpoint
[2] $\angle TPR \cong \angle QPS$
[3] SSS

____ 14. Based on the given information, what can you conclude, and why?
Given: $\angle H \cong \angle L$, $\overline{HJ} \cong \overline{JL}$



a. $\triangle HIJ \cong \triangle LKJ$ by ASA
b. $\triangle HIJ \cong \triangle JLK$ by SAS
c. $\triangle HIJ \cong \triangle JLK$ by ASA
d. $\triangle HIJ \cong \triangle LKJ$ by SAS

_____ 15. Determine if you can use ASA to prove $\triangle CBA \cong \triangle CED$. Explain.



a. $\overline{AC} \cong \overline{DC}$ is given. $\angle CAB \cong \angle CDE$ because both are right angles. No other congruence relationships can be determined, so ASA cannot be applied.

b. $\overline{AC} \cong \overline{DC}$ is given. $\angle CAB \cong \angle CDE$ because both are right angles. By the Adjacent Angles Theorem, $\angle ACB \cong \angle DCE$. Therefore, $\triangle CBA \cong \triangle CED$ by ASA.

c. $\overline{AC} \cong \overline{DC}$ is given. $\angle CAB \cong \angle CDE$ because both are right angles. By the Vertical Angles Theorem, $\angle ACB \cong \angle DCE$. Therefore, $\triangle CBA \cong \triangle CED$ by ASA.

d. $\overline{AC} \cong \overline{DC}$ is given. $\angle CAB \cong \angle CDE$ because both are right angles. By the Vertical Angles Theorem, $\angle ACB \cong \angle DCE$. Therefore, $\triangle CBA \cong \triangle CED$ by SAS.

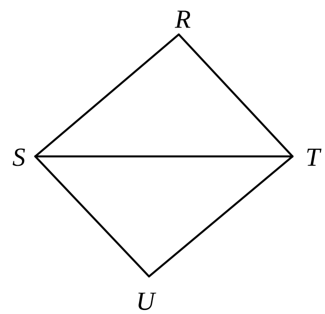
_____ 16. Justify the last two steps of the proof.

Given: $\overline{RS} \cong \overline{UT}$ and $\overline{RT} \cong \overline{US}$

Prove: $\triangle RST \cong \triangle UTS$

Proof:

1. $\overline{RS} \cong \overline{UT}$	1. Given
2. $\overline{RT} \cong \overline{US}$	2. Given
3. $\overline{ST} \cong \overline{TS}$	3. ?
4. $\triangle RST \cong \triangle UTS$	4. ?



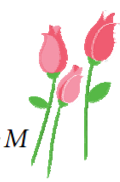
a. 3. Symmetric Property of $\cong$
4. SSS

b. 3. Reflexive Property of $\cong$
4. SAS

c. 3. Reflexive Property of $\cong$
4. SSS

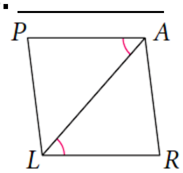
d. 3. Symmetric Property of $\cong$
4. SAS

Exercises for Unit 2.3 (chapters 4 & 5): Congruence and Special Segments in Triangles

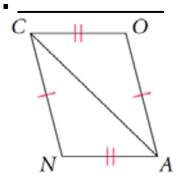


Give the reason (SSS, SAS, ASA, AAS, or HL) that would be used to prove the triangles congruent.

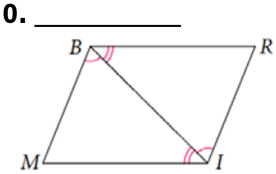
68. ___________



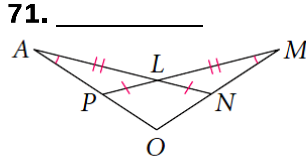
69. ___________



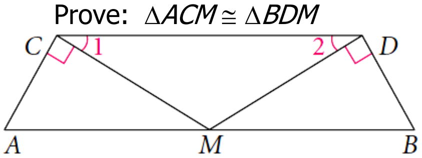
70. ___________



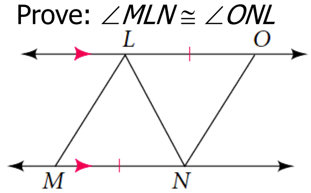
71. ___________



72. Given: M is the midpoint of $\overline{AB}$, $\overline{MC} \perp \overline{AC}$, $\overline{MD} \perp \overline{BD}$, $\angle 1 \cong \angle 2$.
Prove: $\triangle ACM \cong \triangle BDM$

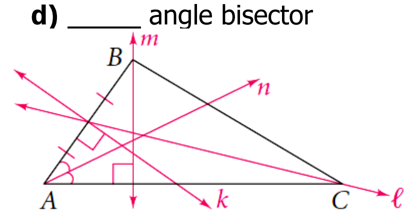


73. Given: $\overline{MN} \cong \overline{LO}$, $\overleftrightarrow{MN} \parallel \overleftrightarrow{LO}$.
Prove: $\angle MLN \cong \angle ONL$



74. Tell which line contains each special segment for $\triangle ABC$.

a) _____ perpendicular bisector
b) _____ altitude
c) _____ median
d) _____ angle bisector



75. ___________ Find an equation in slope-intercept form for the perpendicular bisector of the segment with endpoints H(-3, 2) and K(7, -5).